



1976/78
GRADUATE
BULLETIN

STATE UNIVERSITY OF NEW YORK AT
STONY BROOK

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Graduate students at Stony Brook may specialize in any of the following fields. Page numbers refer the reader to the graduate department or program in which the particular area of specialization is offered.

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1976-77

Academic Calendar

Fall Semester 1976

August 24, Tuesday	CED Final Registration and Payment of Fees for Continuing Students
August 26, Thursday	CED Final Registration and Payment of Fees for All, New Beginning Students
August 29, Sunday	Foreign Students Must Arrive
August 29-September 6 Sunday-Monday	Foreign Student Orientation
August 30, Monday	All Residence Halls Open Begin Final Registration Week and Payment of Fees (or properly deferred) for All Students not Previously Registered (schedule announced prior to registration)
August 31-September 2 Tuesday-Thursday	Undergraduate Student Orientation for All Students not Having Previously Participated
September 6, Monday	Labor Day (no classes; offices closed)
September 7, Tuesday*	Classes Begin*—Late Registration Period Begins with \$20 Late Fee Assessed
September 17, Friday	End of Late Registration Period for All Graduate, Undergraduate and CED Students LAST DAY for Graduate Students to ADD or DROP a Course

* Classes in the Health Science Center begin on this date but follow a modular schedule consistent with this calendar. NOTE, however, that courses may vary in length and require attendance during periods when the rest of the campus is not in session.

October 1, Friday	LAST DAY for Undergraduate Students to ADD a Course
	LAST DAY for All Students Who Have not previously filed (except CED and Graduates) to FILE for DECEMBER GRADUATION at the Office of Records
	LAST DAY for Graduate Students to FILE DEGREE CARDS in the Graduate School Office for DECEMBER GRADUATION
October 4, Monday	Yom Kippur (no day or evening classes)
October 8, Friday	LAST DAY for Undergraduate Students to DROP a Course without Withdrawing from the University
	LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/ No Credit
October 15, Friday	LAST DAY for CED Students to FILE for DECEMBER GRADUATION at the CED Office
October 19, Tuesday	LAST DAY for Final Payment of Fees for Fall Semester
October 30, Saturday	First Quarter Fall Housing Period Ends
November 1, Monday	LAST DAY for REMOVAL of INCOMPLETES and NR (No Record) GRADES for All Students from Spring Semester and Summer Session
November 8, Monday	ADVANCE REGISTRATION Period Begins for Spring Semester for All Students Including CED (schedule announced prior to registration)
November 24, Wednesday	Thanksgiving Recess Begins at Close of Classes
November 29, Monday	Classes Resume

- December 17, Friday LAST DAY of Classes—LAST DAY to WITHDRAW from the University
- December 18, Saturday Final Examinations Begin—Final Grades Due in Registrar's Office 72 Hours after Last Class Meeting or after Scheduled Examination, or as arranged
- December 20, Monday LAST DAY for MAIL PAYMENT of Spring Semester Fees for All Students Advance Registered (payment returned if post-marked later)
- LAST DAY for Graduate Students to SUBMIT THESES and DISSERTATIONS for DECEMBER GRADUATION
- December 23, Thursday Final Examinations End—Fall Semester Ends
- December 24, Friday Residence Halls Close
- December 29, Wednesday LAST DAY for Departments to SUBMIT COMPLETION STATEMENTS for December Masters and Doctoral Candidates

Spring Semester 1977

- January 17, Monday Begin Final Registration Week and Payment of Fees (or properly deferred) for All Students not Previously Registered (schedule announced prior to registration)
- Undergraduate Student Orientation Program Available for New Students
- January 23, Sunday All Residence Halls Open
- Foreign Students Must Arrive
- January 24, Monday Classes Begin
- Final Registration for New Students only Residing on Campus Unable to Register on January 19, 20, or 21

January 25, Tuesday	Late Registration Period Begins with \$20 Late Registration Fee Assessed Payment of Fees and Pickup of Class Schedules by Students Registered in Advance not Meeting Payment Deadlines, with \$20 Late Payment Fee Assessed at Time of Payment ADD/DROP and/or SECTION CHANGE Period Begins
February 4, Friday	End of Late Registration Period for All Students Including CED Students LAST DAY for Undergraduate Students to ADD a Course
February 11, Friday	LAST DAY for All Students Who Have not Previously Filed (except CED and Graduate) to FILE for MAY GRADUATION at Office of Records
February 18, Friday	LAST DAY for Graduate Students to ADD or DROP a Course
February 22, Tuesday	LAST DAY for CED Students to FILE for MAY GRADUATION at the CED Office
February 25, Friday	LAST DAY for Undergraduate Students to DROP COURSES without Withdrawing from the University LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/ No Credit LAST DAY for Graduate Students to FILE DEGREE CARDS in the Graduate School Office for MAY GRADUATION
March 4, Friday	LAST DAY for Final PAYMENT of FEES for the Spring Semester
March 19, Saturday	First Quarter Spring Housing Period Ends
April 2, Saturday	Spring Recess Begins at Close of Classes

April 11, Monday	Classes Resume LAST DAY for REMOVAL OF INCOMPLETES and NR (No Record) Grades from the Fall Semester for All Students
April 11-15 Monday-Friday	Advance Room Deposits for Fall 1977 Semester Due
April 25, Monday	ADVANCE REGISTRATION Period Begins for Fall Semester for All Students Including CED Students (schedule announced prior to registration) ADVANCE REGISTRATION for 1977 Summer Session (except CED) with Summer Term Fees Payable at Time of Registration LAST DAY for Graduate Students to SUBMIT THESES and DISSERTATIONS for MAY GRADUATION LAST DAY for PAYMENT of FEES by MAIL for Fall Semester, July 26 (payment returned if postmarked later), LAST DAY for In-Person Payment, August 20
April 25 & 27 Monday & Wednesday	CED Advance Registration and Payment of Fees for Summer Term I and/or Summer Term II
May 2, Monday	LAST DAY for Departments to SUBMIT COMPLETION STATEMENTS for May Doctoral Candidates
May 13, Friday	LAST DAY of Classes—LAST DAY to WITHDRAW from the University
May 16, Monday	Final Examinations Begin—Final Grades Due in Registrar's Office 72 Hours after Last Class Meeting, or after Scheduled Examination, or as Arranged
May 21, Saturday	Final Examinations End—Spring Semester Ends

All Residence Halls Close

May 22, Sunday Commencement

May 24, Tuesday LAST DAY for Departments to SUBMIT COMPLETION STATEMENTS for May Masters Candidates

Summer Session I 1977

May 26, Thursday Final Registration and Payment of Fees for Summer Term I and/or Summer Term II and Special Terms for all Students not Previously Registered except CED Students (CED Students see special instructions issued separately)

May 30, Monday Memorial Day (no classes; offices closed)
Summer Session Residence Halls Open

May 31, Tuesday Classes Begin—Late Registration Period Begins with \$20 Late Fee Assessed

June 2, Thursday Late Registration Period Ends for All Students

LAST DAY to ADD a Course

June 10, Friday LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/No Credit

June 22, Wednesday LAST DAY to DROP a Course without Withdrawing from Summer Term I

LAST DAY for CED Students to FILE for AUGUST GRADUATION at the CED Office

July 1, Friday Summer Term I Ends—Final Grades Due in the Registrar's Office 72 Hours after Last Class Meeting or as Arranged

LAST DAY for All Students who have not previously filed (except CED and Graduates) to FILE for AUGUST GRADUATION at the Office of Records

LAST DAY for Graduate Students to FILE
DEGREE CARDS in the Graduate School
Office for AUGUST GRADUATION

- July 4, Monday Independence Day (no classes; offices closed)
- July 5, Tuesday Final Registration and Payment of Fees for Summer Term II and Special Terms for All Students not Previously Registered
- July 6, Wednesday Classes Begin—Late Registration Period Begins with \$20 Late Fee Assessed
- July 8, Friday Late Registration Period Ends for All Students
- LAST DAY to ADD a Course
- July 15, Friday LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/No Credit
- July 27, Wednesday LAST DAY to DROP a Course without Withdrawing from Summer Term II
- August 5, Friday Summer Term II Ends—Final Grades Due in the Registrar's Office 72 Hours after Last Class Meeting or as Arranged
- August 12, Friday LAST DAY for Departments to SUBMIT COMPLETION STATEMENTS for August Masters and Doctoral Candidates
- August 19, Friday All Summer Terms End—End of Summer Session

1977-78

Academic Calendar

Fall Semester 1977

August 23, Tuesday	CED Final Registration and Payment of Fees for Continuing Students
August 25, Thursday	CED Final Registration and Payment of Fees for All New Beginning Students
August 28, Sunday	Foreign Students Must Arrive
August 28-September 5 Sunday-Monday	Foreign Student Orientation
August 29, Monday	All Residence Halls Open
	Begin Final Registration Week and Payment of Fees (or properly deferred) for All Students not Previously Registered (schedule announced prior to registration)
August 30-September 1 Tuesday-Thursday	Undergraduate Student Orientation for All Students not Having Previously Participated
September 5, Monday	Labor Day (no classes; offices closed)
September 6, Tuesday*	Classes Begin*—Late Registration Period Begins with \$20 Late Fee Assessed
September 13, Tuesday	Rosh Hashanah (no classes)
September 16, Friday	End of Late Registration Period for All Graduate, Undergraduate and CED Students
	LAST DAY for Undergraduate Students to ADD a Course

* Classes in the Health Science Center begin on this date but follow a modular schedule consistent with this calendar. NOTE, however, that courses may vary in length and require attendance during periods when the rest of the campus is not in session.

September 22, Thursday	Yom Kippur (no classes)
September 30, Friday	LAST DAY for Graduate Students to ADD or DROP a Course LAST DAY for All Students Who have not previously Filed (except CED and Graduates) to FILE for DECEMBER GRADUATION at the Office of Records LAST DAY for Graduate Students to FILE DEGREE CARDS in the Graduate School Office for DECEMBER GRADUATION LAST DAY for Undergraduate Students to DROP a Course without Withdrawing from the University LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/No Credit
October 14, Friday	LAST DAY for CED Students to file for DECEMBER GRADUATION at the CED Office
October 18, Tuesday	LAST DAY for Final Payment of Fees for Fall Semester
October 29, Saturday	First Quarter Fall Housing Period Ends
November 1, Tuesday	LAST DAY for REMOVAL of INCOMPLETES and NR (No Record) GRADES for All Students from Spring Semester and Summer Session
November 7, Monday	ADVANCE REGISTRATION Period Begins for Spring Semester for All Students including CED (schedule announced prior to registration)
November 23, Wednesday	Thanksgiving Recess Begins at Close of Classes
November 28, Monday	Classes Resume
December 16, Friday	LAST DAY of Classes—LAST DAY to WITHDRAW from the University

- December 19, Monday Final Examinations Begin—Final Grades Due in Registrar's Office 72 Hours after Last Class Meeting or after Scheduled Examination, or as Arranged
- December 19, Monday LAST DAY for MAIL PAYMENT of Spring Semester Fees for All Students Registered in Advance (payment returned if post-marked later)
- LAST DAY for Graduate Students to SUBMIT THESES and DISSERTATIONS for DECEMBER GRADUATION
- December 23, Friday Finals Examinations End—Fall Semester Ends
- LAST DAY for Departments to SUBMIT COMPLETION STATEMENTS for December Masters and Doctoral Candidates
- December 24, Saturday Residence Halls Close

Spring Semester 1978

- January 16, Monday Begin Final Registration Week and Payment of Fees (or properly deferred) for All Students not Previously Registered (schedule announced prior to registration)
- Undergraduate Student ORIENTATION Program Available for New Students
- January 23, Monday All Residence Halls Open
- Foreign Students Must Arrive
- January 23, Monday Classes Begin
- FINAL REGISTRATION for New Students only Residing on Campus and Unable to Register on January 19, 20, or 21
- January 24, Tuesday Late Registration Period Begins with \$20 Late Registration Fee Assessed

Payment of Fees and Pickup of Class Schedules by Students Registered in Advance not Meeting Payment Deadlines, with \$20 Late Payment Fee Assessed at Time of Payment

ADD/DROP and/or SECTION CHANGE Period Begins

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|----------------------|--|
| February 3, Friday | End of Late Registration Period for All Students including CED Students |
| | LAST DAY for Undergraduate Students to ADD a COURSE |
| February 10, Friday | LAST DAY for All Students Who Have Not Previously Filed (except CED Graduates) to FILE for MAY GRADUATION at Office of Records |
| February 17, Friday | LAST DAY for Graduate Students to ADD or DROP a Course |
| February 21, Tuesday | LAST DAY for CED Students to FILE for MAY GRADUATION at the CED Office |
| February 24, Friday | LAST DAY for Undergraduate Students to DROP COURSES without Withdrawing from the University |
| | LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/No Credit |
| | LAST DAY for Graduate Students to FILE DEGREE CARDS in the Graduate School Office for MAY GRADUATION |
| March 3, Friday | LAST DAY for Final PAYMENT of FEES for the Spring Semester |
| March 18, Saturday | First Quarter Spring Housing Period Ends |
| April 1, Saturday | Spring Recess Begins at Close of Classes |
| April 10, Monday | Classes Resume |

- April 10-14
Monday-Friday Advance Room Deposits for Fall 1978
Fall Semester Due
- April 10, Monday LAST DAY for REMOVAL of INCOM-
PLETES and NR (No Record) Grades from
the Fall Semester for All Students
- April 24, Monday ADVANCE REGISTRATION Period Begins
for Fall Semester for All Students
including CED Students (schedule
announced prior to registration)
- ADVANCE REGISTRATION for 1978
Summer Session (except CED), with
Summer Term Fees Payable at Time of
Registration
- LAST DAY for Graduate Students to
SUBMIT THESES and DISSERTATIONS
for MAY GRADUATION
- LAST DAY for PAYMENT of FEES by
MAIL for Fall 1978 Semester: July 26
(payment returned if postmarked later);
LAST DAY for In-Person Payment:
August 20
- May 24 & 26
Monday & Wednesday CED ADVANCE REGISTRATION and
Payment of Fees for Summer Term I
and/or Summer Term II
- May 1, Monday LAST DAY for Departments to SUBMIT
COMPLETION STATEMENTS for May
Doctoral Candidates
- May 12, Friday LAST DAY of Classes—LAST DAY to
WITHDRAW from the University
- May 15, Monday Final Examinations Begin—Final Grades
Due in Registrar's Office 72 Hours after
Last Class Meeting, or after Scheduled
Examination, or as Arranged
- May 20, Saturday Final Examinations End—Spring Semester
Ends
- All Residence Halls Close

- May 21, Sunday Commencement
- May 22, Monday LAST DAY for Departments to SUBMIT COMPLETION STATEMENTS for May Masters Candidates

Summer Session 1978

- May 26, Friday Final Registration and Payment of Fees for Summer Term I and/or Summer Term II and Special Terms for All Students not Previously Registered except CED Students (CED Students see special instructions issued separately)
- May 28, Sunday Summer Session Residence Halls Open
- May 29, Monday Classes Begin—Late Registration Period Begins with \$20 Late Fee Assessed
- May 30, Tuesday Memorial Day (no classes; offices closed)
- June 1, Thursday Late Registration Period Ends for All Students
- LAST DAY to ADD a Course
- June 9, Friday LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/No Credit
- June 21, Wednesday LAST DAY to DROP a Course without Withdrawing from Summer Term I
- LAST DAY for CED Students to FILE for AUGUST GRADUATION at the CED Office
- June 30, Friday Summer Term I Ends—Final Grades Due in the Registrar's Office 72 Hours after Last Class Meeting or as Arranged
- LAST DAY for All Students Who have not previously filed (except CED and Graduates) to file for AUGUST GRADUATION at the Office of Records

LAST DAY for Graduate Students to FILE DEGREE CARDS in the Graduate School Office for AUGUST GRADUATION

- July 3, Monday Final Registration and Payment of Fees for Summer Term II and Special Terms for All Students not Previously Registered
- July 4, Tuesday Independence Day (no classes; offices closed)
- July 5, Wednesday Classes Begin—Late Registration Period Begins with \$20 Late Fee Assessed
- June 7, Friday Late Registration Period Ends for All Students
- LAST DAY to ADD a Course
- July 14, Friday LAST DAY for Undergraduate Students to CHANGE COURSES to or from Pass/No Credit
- July 26 Wednesday LAST DAY to DROP a Course without Withdrawing from Summer Term II
- August 4, Friday Summer Term II Ends—Final Grades Due in the Registrar's Office 72 Hours after Last Class Meeting or as Arranged
- LAST DAY for Graduate Students to SUBMIT THESES and DISSERTATIONS for AUGUST GRADUATION
- August 11, Friday LAST DAY for Departments to SUBMIT COMPLETION STATEMENTS for August Masters and Doctoral Candidates
- August 18, Friday All Summer Terms End—End of Summer Session

General Information

Background

"The initial mission of the State University of New York at Stony Brook was to become an institution of national stature in the time-honored and traditional terms of the outstanding private universities and of such public institutions as Berkeley, Michigan, and Illinois. In this it has succeeded outstandingly well. It is remarkable in what short a time Stony Brook has come to be thought of as being among that distinguished company."

That observation, from the opening paragraph of a Middle States Association reaccreditation report dramatically summarizes an extraordinary development process that began less than two decades ago. Since then, the State University of New York at Stony Brook has grown to be one of the nation's major public university centers, completing nearly \$500 million in campus construction and consolidating extensive academic programs, all within perhaps the shortest time span in the history of higher education.

What was to become the State University of New York at Stony Brook began in 1957 at Oyster Bay, Long Island, as a State University College to prepare secondary school teachers of math and science. In 1962, with a new mandate to become the State University's fourth regional university center, the young school moved to a parcel of land in Stony Brook given to the state by industrial-philanthropist Ward Melville.

Since then, Stony Brook has grown to encompass 81 buildings on 1100 acres. The faculty has grown from about 175 to 1400, the student body from 1000 to 16,000, and the annual budget from about \$3 million to \$69 million.

Of the 64 institutions comprising the State University of New York, Stony Brook is the only comprehensive university center for the entire New York metropolitan region, one of the nation's fastest growing, most complex population areas. In carrying out its mission, including research and public service in this region, Stony Brook strives to be a responsive university of excellence.

Location

Stony Brook is about 60 miles east of Manhattan on the wooded north shore of Long Island, within a few miles of picturesque villages, harbors and beaches. Yet the Long Island Expressway and the Long Island Rail Road provide the campus ready access to the cultural, scientific, and commercial resources of New York City.

Degree Opportunities

Graduate study is offered in 24 of Stony Brook's present 29 academic departments, as well as in five of the six schools of the Health Sciences Center, and the Center for Continuing Education. The Ph.D. degree is offered through 20 departments, the M.A. through 15 and the M.S. through seven. There are also two interdisciplinary M.S. programs, an M.Mus. (master in music) and a terminal M.A. designed specifically for teachers in biology, chemistry, English, French, history, mathematics, philosophy, physics, sociology, or Spanish. In the Health Sciences Center, the M.D. degree is offered by the School of Medicine, the D.D.S. by the School of Dental Medicine, the M.S. degree by the School of Social Welfare, the M.S. degree by the School of Allied Health Professions and the Ph.D. by the School of Basic Health Sciences. The evening Continuing Education program, primarily for working adults, offers the degree of Master of Arts in Liberal Studies (M.A./L.S.). At the undergraduate level, many departmental major programs and interdisciplinary programs leading to the B.A., B.S. and B.E. (engineering) degrees are offered by the College of Arts and Sciences, College of Engineering and Applied Sciences and Health Sciences Center.

Accreditation

As part of the State University of New York, Stony Brook is accredited by the Middle States Association of Colleges and Secondary Schools. The College of Engineering and Applied Sciences is accredited by the Engineer's Council for Professional Development. The Department of Chemistry is accredited by the American Chemical Society.

Organization of the Graduate School

Under the direction of the Office of the Vice President for Academic Affairs, the Graduate School administration rests with the Dean of the Graduate School and his administrative staff in conjunction with the Graduate Council, comprised of faculty, students, and administrators. The chairman and the secretary of the Graduate Council are elected by the Council from among its elected members. The membership of the Council includes the Vice President for Academic Affairs, *ex officio*, the Dean of the Graduate School, one faculty member elected from and by each of the following groups: Arts and Humanities, Behavioral Sciences, Biological Sciences, Engineering Sciences, Mathematical Sciences, Physical Sciences, Social Sciences, and two faculty members elected from the Health Sciences. In addition, one faculty member chosen from and by the CED Council; one faculty member of the Library elected by the library faculty; one elected member of the Executive Committee designated by the Executive Committee; four graduate student members with no more than one from any graduate department (three chosen by the Graduate Student Council, and one chosen by the CED Graduate Student Council). Elected faculty mem-

bers shall serve for three years with staggered terms. Among other duties detailed in the "Faculty By-Laws," the Council must approve all graduate programs before their submission to the SUNY Central Office and the State Department of Education.

Each department exercises a large measure of responsibility for its graduate program. Under the general responsibility of the department chairman, each department has a departmental committee on graduate students and a graduate program director who administers departmental graduate activities. Under the guidance of the Graduate Council, individual departments select graduate applicants and recommend them for admission to the Dean of the Graduate School. The departments are responsible also for the nomination of students and applicants for fellowships, traineeships and assistantships, as well as for the administration of graduate programs, including course work, supervised research, teaching apprenticeships, and graduate examinations. It is the departments which certify to the Graduate School that the student has completed all degree requirements.

University Health Service

The University Health Service, located in the Infirmary, primarily concerns itself with student health needs. It is available to faculty and staff only on an emergency basis. There is a registered nurse on duty in the Infirmary 24 hours a day. During the week there are scheduled hours for physicians; a physician is on call at other times. For information or help, call the Infirmary at 4-2273 (4-CARE).

Campus

The Frank Melville, Jr. Memorial Library provides both an intellectual and physical focal point for the campus. The combined collections of the Melville Library, its five departmental branch libraries and the University's Health Science Library this year reached 1,000,000 volumes. In addition, library collections include 1,200,000 items in micro-format and subscriptions to 9,187 periodicals. Radiating out from the center campus Melville Library in a circular zone pattern are the major academic buildings for arts and sciences and engineering, the Van de Graaff nuclear accelerator, the Administration Building, Lecture Center, Laboratory-Office Building, Instructional Resources Center, Computing Center (its new sophisticated Univac 1110 dual processor system provides both batch processing and interactive time sharing services for student and faculty research and administrative data processing), Stony Brook Union, Gymnasium and other service and activities buildings. The first phase of Stony Brook's new Fine Arts Center has opened, between the Library and Administration Building, with a second Fine Arts phase to be finished in 1977, providing extensive performing arts facilities along with an outdoor plaza connecting the Library, Stony Brook Union and Fine Arts Center in the middle of the campus. Under con-

struction southeast of the Administration Building is a new Social and Behavioral Sciences Building to be completed in 1978.

Encircling the academic buildings are six residential quadrangles with living space for 1000 students each. They are the basic social units for on-campus students, providing residence halls, dining rooms, and a diversity of student-sponsored enterprises and social facilities. Each quadrangle consists of 3-5 coeducational colleges, or residence halls, housing 200-400 students each. About half the undergraduate students live on campus.

South of the main campus is the 26-acre Ashley Schiff nature preserve. Beyond these woods and linked to the Main Campus by a free shuttle bus service is the South Campus, where 11 functionally adaptable single story buildings provide flexible space for newer, growing University programs. (A number of Health Sciences programs, for example, are still located on the South Campus while permanent Health Sciences facilities are being completed at the east end of the campus.) The permanent Health Sciences Center facilities include an extensive seven-story megastructure. Rising above the megastructure is a 10-story Clinical Sciences tower. Both megastructure and tower are largely completed with many Health Sciences programs scheduled to move into these facilities in 1976. The concrete Clinical Sciences tower already has become a landmark as Long Island's highest building above sea level. A 540-bed University Hospital tower of equal height is under construction southeast of and linked to the Clinical Sciences tower. Scheduled for completion in 1978 is a Basic Health Sciences tower, located northwest of the Clinical Sciences tower, also made of concrete and about half the height of the Clinical Sciences tower and the Hospital. A 1000-car parking structure for the Health Sciences complex is scheduled for construction during 1976, north of the Clinical Sciences tower.

Students

Stony Brook's 1975-76 enrollment was about 16,000 (10,500 undergraduates and 5,500 graduate students, including about 2000 part-time graduate students enrolled in continuing education programs). About 70% of Stony Brook's students come from Nassau and Suffolk counties, 89% are from the New York metropolitan area, and 97% are from New York State. International students from 60 countries represent about 4% of the total student body.

The State University of New York at Stony Brook does not discriminate on the basis of race, sex, religion, national origin, age, physical disability or marital status—in admission, employment and treatment of students and employees.

Faculty

The vast majority of Stony Brook's 1400 faculty members hold doctoral degrees and 90% or more are engaged in currently active

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

C. N. Yang, Nobel Prize-winning physicist, serves as Albert Einstein Professor and Director of the Institute for Theoretical Physics. Pulitzer Prize-winning poet Louis Simpson is a member of the English Department faculty. The rank of Distinguished Professor, an honor conferred by the State University Trustees, is held by Stony Brook's systematic philosopher Justus Buchler, eclectic social scholar Lewis Coser, and geneticist Bentley Glass. The recently established State University Distinguished Teaching Professor designation, awarded in recognition of outstanding teaching ability, is held by Stony Brook Biologist Elof A. Carlson who in 1972 became one of only 12 faculty members nationwide receiving the prestigious E. Harris Harbison Award for Gifted Teaching. The distinguished British astronomer and scientist, Sir Fred Hoyle, was among well known visiting professors at Stony Brook in 1975.

Research

Stony Brook currently draws about \$12.5 million annually in non-state grants and funds to support campus research programs. The bulk of these monies, over 80%, is received from the federal government or its agencies, the remainder comes from corporations and foundations. Lunar rocks, cancer, urban problems, holography, research on the social history of English nobility, the psychology of political attitudes and behavior, and the role of symmetry in the arts and sciences are a few examples of the approximately 400 subjects currently under examination on campus.

All campus projects which involve human subjects, whether they be conducted as part of a research program or in conjunction with course activities (including graduate research) must receive prior review and approval by the campus-wide Committee on Research Involving Human Subjects (CORIHS). If such prior approval has not been obtained for degree related work, delays may occur in the award of a graduate degree. Questions regarding human subjects should be addressed to the Executive Secretary of CORIHS in the Office of Research Administration which is part of the Graduate School.

Academic Publications

Academic publications emanating from the University include: *American Comparative Literature Association Newsletters*, *American Naturalist*, *Journal of Biological Psychiatry*, *Journal of Biomedical Materials Research*, *The Physics Teacher*, *Quarterly Review of Biology*, *Stony Brook Anthropologist*, the *Stony Brook Engineer*, and the *Quarterly Report of the Program on Technology and Society*.

Community Ties

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

With over 5000 people on the overall campus payroll, Stony Brook is one of Long Island's largest single employers. The University generates over \$100 million annually in direct economic impact in the Long Island region, with a rippling effect of perhaps an additional \$100 million or more.

In many ways, the University works with surrounding communities to provide services and to help solve area problems. The Computing Center assists numerous colleges, research centers and governmental agencies. Student teachers serve in local schools and numerous educational projects involve close University-school cooperation. The Point of Woods School at the University helps disruptive elementary schoolchildren to be productive students. In health fields, Stony Brook students learn and work in Long Island hospitals and other health-related facilities. The Marine Sciences Research Center studies and makes recommendations regarding regional erosion and pollution problems, and the W. Averell Harriman College for Urban and Policy Sciences works with local governments to help solve problems in fields such as sanitation, waste disposal, zoning and transportation. The Economic Research Bureau conducts research, training and service activities in fields such as educational planning, property ownership, shipping, taxation and poverty. A thousand or more Stony Brook students annually participate in community volunteer programs in tutoring, recreation, health care and other areas. Ecology students recently, for example, developed plans for a community nature study preserve near the Stony Brook campus. The Association for Community-University Cooperation works to develop positive relationships between the University and the community through an annual series of "town-gown" programs and events.

Special Centers and Institutes

The *Center for Contemporary Arts and Letters* develops campus art holdings and sponsors visits by practitioners and critics of the arts; the *Center for Curriculum Development* generates new kinds of courses for elementary and secondary education; the *Economic Research Bureau* brings together the University and public and private agencies in regional research efforts of mutual interest; the *Engineering Concepts Curriculum Project* is a program designed to develop technological literacy in non-science-oriented high school students nationwide; the *Institute for Advanced Studies of World Religions* with its 40,000 volume library seeks to facilitate the study and development of world religions and philosophy with emphasis on Buddhism, Islam and Hinduism; the *Institute for Theoretical Physics* has a faculty of a dozen scholars researching all areas of theoretical physics; the *Institute for Urban Sciences Research* organizes and carries out research per-

taining to policy problems and issues; the *Institute of American Studies* funds a summer graduate program for outstanding high school social studies teachers; the *Instructional Resources Center*, in cooperation with faculty members and departments, helps develop more effective teaching methods through the use of media and other technical aids; the *International Art of Jazz* is committed to the promotion, preservation and presentation of jazz music; the *Marine Sciences Research Center* administers statewide research projects, offers research cruises, and performs studies in oceans, bays, harbors, lakes and a University-owned tidal salt marsh near campus; the *Museum Computer Network*, now headquartered on campus, works to help many of the nation's top museums and other institutions make their collections and related information more accessible by computerizing museum files and archives; the *Research Foundation* administers all gifts, grants and contract funds supporting sponsored research, training and related programs carried out by, or supervised by, University faculty; the *Science and Mathematics Teaching Center* assists Long Island math and science teachers in curriculum planning and the development of special resource materials; and the *Stony Brook Foundation* seeks and encourages non-state support for the development and enrichment of programs at Stony Brook and administers the majority of the University's scholarships, loans and endowment accounts in conjunction with the Financial Aid Office. The newest institutes on campus are the *Long Island Research Institute*, for mental health and behavioral sciences research. The newest special center is Stony Brook's branch of *Empire State College*, the State University of New York's non-traditional learning arm for degree study without formal class attendance.

Campus Activities

A wide variety of lectures, seminars, concerts, exhibits, theatrical performances, and movies are scheduled regularly during the academic year. Some recent well-known speakers at Stony Brook have included writers William Burroughs, Isaac Asimov, Robert Caro and Alain Robbe-Grillet, political and social commentator Dick Gregory, consumer advocate Ralph Nader, and Gene Roddenberry of "Star Trek" fame.

Art galleries in the new Fine Arts Center's phase one building, in the Library and at the Stony Brook Union offer continuing exhibitions of works by artists on and off campus. An average of five films are shown weekly on campus, including vintage and current productions; usually admission is free for students. The campus enjoys an average of one classical music concert per day including recitals, and faculty and visiting artist performances.

The University's Theatre Arts Department and several entirely student-run theatre groups have sponsored recent campus productions including "Small Craft Warnings" by Tennessee Williams, Mozart's comic opera "Cosi Fan Tutte," "Ah! Wilderness" by Eugene O'Neill, an outstanding campus student retranslation performance of Brecht's

“Threepenny Opera,” Samuel Beckett’s “Waiting for Godot,” and Kurt Vonnegut’s “Welcome to the Monkey House.”

Popular concerts recently on campus have included performances by Harry and Tom Chapin, Marshall Tucker, Charlie Daniels, Hot Tuna, New Riders of the Purple Sage, Elvin Jones, the Jefferson Starship, and Commander Cody and His Lost Planet Airmen.

Polity, the undergraduate student organization and its related groups, particularly the Student Activities Board, sponsor many campus activities. Polity presently funds more than 80 student interest clubs and organizations which in many cases complement students’ academic work; organizations include the Aztec Society for students interested in Central and South American History, and French and Italian clubs. Other student activity clubs cover a broad range of interests. They include groups such as the Biological Sciences Society, the Chess Club, Inter-varsity Christian Fellowship, the Pre-Law Society and the Stony Brook Karate Club. Groups of 25 students or more interested in forming such organizations may apply for *Polity* funding.

The campus student newspaper *Statesman*, is published three times weekly during the academic year with a circulation of 10,000 on campus and in the local community, has won numerous collegiate journalism awards, and its writers receive favorable attention from potential newspaper employers and journalism schools through the practical experience which the publication offers. Other student publications include *Black World*, a newspaper published bi-weekly, focusing primarily on news of interest to the black community on campus; *Fortnight*, a feature magazine also published bi-weekly; *Soundings*, the literary magazine, and *Specula*, the campus yearbook.

Campus ministries serve student religious concerns through the new Interfaith Center offering regularly scheduled Jewish, Catholic, Lutheran and Episcopalian services which are open to all. Religious counseling services for students of these and other denominations also are provided through the Interfaith Center.

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

Graduate students have access to all campus recreational facilities and are welcome to organize their own intramural leagues, as they have done from time to time in football and basketball. These leagues are distinct from undergraduate leagues and are informally organized, usually by graduate student volunteers and often on a departmental basis.

Numerous organizations on campus welcome graduate student participation. These include professional organizations such as ASME, IEEE, Materials Science Club, Phi Beta Kappa, Tau Beta Pi, etc.; and religious groups such as B’nai Hillel Counselorship, Lutheran Students Group, Newman Community, and Intervarsity Christian Fellowship.

Admission Requirements

Scholastic Requirements

Applicants may be admitted to the Graduate School to pursue the M.A., M.M., M.S. or Ph.D. degree. To be considered for admission, all students must complete and submit an official graduate application, three letters of reference, scores from the Graduate Record Examination Aptitude Test, and submit two copies of all previous transcripts. To be admitted to the Graduate School, an applicant must have the preparation and ability which, in the judgment of the department and the Graduate School, are sufficient to enable him or her to progress satisfactorily in a degree program. Admission decisions are based primarily on past records and on letters of recommendation. A baccalaureate degree is required, which will ordinarily be in the chosen field of graduate study, and an average grade of B in course work in the major and related areas. In exceptional cases in which these requirements are not met, or if the undergraduate preparation is inadequate, an applicant, if considered to have a reasonable probability of making satisfactory progress in graduate studies, may be admitted provisionally. The department may set conditions which the admitted student must satisfy during the early period of graduate work. Departmental recommendation and Graduate School approval are required for provisional admission. Detailed admission requirements are listed in each department's section of this *Bulletin*. Admission application blanks and additional information may be obtained by writing to the appropriate department, or to: Office of the Graduate School, State University of New York at Stony Brook, Stony Brook, New York 11794. *No application fee is required.*

Students interested in applying to the Center for Continuing Education's Master of Arts in Liberal Studies Program should consult the information described on page 112.

Foreign Students

All students who are foreign nationals or have taken their higher education in a non-English-speaking country must demonstrate proficiency in English. This can be done by presenting acceptable scores on the Test of English as a Foreign Language (TOEFL). Admission to the Graduate School is contingent upon satisfactory fulfillment of this requirement. A student must have a minimum score of 450 for admission. Exceptions to this requirement are rare, and only with the approval of the Dean of the Graduate School. A 550 minimum score is needed for most forms of support.

Non-U.S. applicants must provide the University with verification that the necessary funds are available to finance their education at Stony Brook. The University will provide forms for this purpose.

Government regulations require that every foreign student attend the institution issuing the I-20 used for entry to the U.S. Transfers are possible but only if the student can show that he has been enrolled at the original institution.

Student Status

Part-Time Students—Admission of part-time students into advanced degree programs depends, in addition to applicant's qualification, on the availability of departmental faculty and facilities. In consequence of the uneven growth of graduate programs, some departments are able to accept part-time students; others are not yet in a position to do so. The determination of how many part-time students may be admitted in proportion to full-time students is left to the departments, in consultation with the Dean of the Graduate School, since they are best able to determine how many graduate students they can prepare properly without compromising the standards of graduate education. Part-time students are classified as either 91 code (less than 24 graduate credits) or 92 code (more than 24 graduate credits, regardless of where earned) and may register for no more than 11 credit hours per semester. Students in programs in which the highest degree offered is the masters may not be classified as 92 code.

Full-time Students—Students regularly admitted to the Graduate School will register for 12 or more credit hours per semester. Responsibility for certifying the full-time status of graduate students rests with the Office of Records and Studies. A graduate traineeship is considered part of the academic program; therefore a graduate student on a regular appointment will be a full-time student and will register for 12 credit hours. Registration for 12 or more credit hours includes credit for supervised teaching and research. Full-time graduate students are classified as either 91 code (less than 24 graduate credits) or 92 code (more than 24 graduate credits, regardless of where earned). Students in programs in which the highest degree offered is the masters may not be classified as 92 code.

International Students—International students may not be part-time if they are here on a student visa. The Immigration and Naturalization Service prohibits any student on a student visa from another country from taking less than a full-time load.

Graduate Record Examination

The result of the Aptitude Test of the Graduate Record Examination is a criterion of admission to the Graduate School. Several departments also require the Advanced Area Tests. Students who have taken the GRE should request the Educational Testing Service to forward their

scores directly to the departments or schools to which they are applying.

Admission of Undergraduates to Graduate Courses

Undergraduates of exceptional ability, upon the request of the graduate program director of a department and of the instructor to the Dean of the Graduate School, may be admitted to graduate courses and be permitted to earn graduate credit. The acceptance of such credit by graduate schools other than Stony Brook is the responsibility of the student.

Financial and Residential Information

Registration is not complete until a student has paid all fees and charges which are due and payable by the first day of classes unless properly deferred. All fees and charges are subject to change without further notice.

Charge or Fee	First Semester	Second Semester	Year
<i>Tuition</i>			
Full-time graduate student (N.Y. State Resident)	\$700.00	\$700.00	\$1,400.00
(Out-of-State Resident)	900.00	900.00	1,800.00
Part-time graduate student (11 credits or less) (N.Y. State Resident per semester credit hour)	\$ 58.50	\$ 58.50	
(Out-of-State Resident per semester credit hour)	\$ 75.00	\$ 75.00	
Professional Schools (Medicine, Dental (Medicine) (N.Y. State Resident)			\$2,200.00
(Out-of-State Resident)			\$3,200.00
<i>College Fee</i>			
Full-time graduate student	\$ 12.50	\$ 12.50	\$ 25.00
Part-time graduate student per credit	\$.85 cr.	\$.85 per cr.	
<i>Housing</i>			
Advance Room Deposit **			\$ 75.00
Double Occupancy, per person..	\$375.00	\$375.00	\$ 750.00

** Applied to first semester housing charges.

Board	Fee to be Announced		
Activity Fee ^c (full-time students, except professional)	\$ 10.00	\$ 10.00	
Cooking Fee (Residents not on Board Plan)	\$ 25.00	\$ 25.00	\$ 50.00
Lost Identification Card	\$ 3.00		
Late Registration Fee ^a	\$ 20.00		
Transcript Fee ^b	\$ 2.00 each		
Returned Check Charge	\$ 5.00		
Late Payment Fee	\$ 20.00		

The above fees are subject to change without notice.

Payment

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

Students making payment on or after the first day of classes, during the late registration period, or pre-registered students making payment after pre-billing due date, shall be required to pay a late registration fee of \$20.00. This fee may not be waived, and is non-deferrable. The late registration period ends at the close of the second week of classes.

Deferments

Students receiving awards provided by the State of New York, managed by the University, or payable to the University, may utilize deferment equal to the amount of the award. Documented proof of the award and the amount must be presented at time of payment to apply the deferment to the account.

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

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

When paying bills students should present a notarized Power of Attorney card and award certification to the Bursar's Office to be eligible for an award credit. Students who have not received a Regents

^a Paid by students registering after the close of the official registration.

^b The first one is free.

^c CED students pay a \$7 fee per semester.

award notice may obtain a deferment upon presentation to the Financial Aid Office of the stub from the Regents Scholarship and/or Tuition Assistance Award Notice from the previous year, and the certified return receipt from the Regents Scholarship Examination Center indicating submission of the current year's application.

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

3. Veteran's Education Benefits: Students who are eligible for veterans benefits should obtain an application from the Veterans' Office. Incoming students who are veterans are advised to contact the Veterans' Office concerning veterans benefits as soon as possible.

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

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

4. Private, Public, or Industrial Scholarships, Grants, Internships and Loans (Including Foreign Student Government Scholarships and Vocational Rehabilitation Grants): All students who can present notification of awards payable to the University or jointly payable to the University and the student in the above categories are eligible for an award credit equal to the amount of the award. In cases where the award is payable to the student or to the University and the student, the student will be required to submit a notarized power of attorney form to the Bursar's Office in order to receive an award credit.

5. University Employment: Graduate students employed as Teaching Assistants, Graduate Assistants, or Research Assistants may defer charges up to 1/2 of their semester salary. Only tuition, room and board charges may be deferred. All deferments expire six (6) weeks after the first day of classes and must be supported by a notarized power of attorney and deferment form.

No deferment will be made for New York State Higher Education Loans.

Transcripts

Students who wish to have transcripts of their academic records at Stony Brook forwarded to another institution or agency, or to them-

selves for their own use, must submit their requests in writing at least two weeks before the transcripts are needed except at the end-of-semester peak period when additional time should be allowed. If making the request by mail, address a letter to the Bursar's Office, S.U.N.Y. at Stony Brook, Stony Brook, New York 11794, and include the following: (1) your full name, (2) I.D. (Social Security) number, (3) complete current address, (4) dates of attendance at Stony Brook, (5) exact name, office, institution and complete address, including zip code to which the transcript is to be sent, and (6) enclose the required fee of \$2.00 for each transcript. Make checks payable to S.U.N.Y. at Stony Brook.

If making the request in person, obtain a Transcript Request Form from the Office of Records/Registrar in the Administration Building and follow the instructions on the form.

Students are entitled to receive one free transcript and should so indicate if the request is to include the free one. All financial obligations to the University must be satisfied before a transcript can be released. A request for a transcript must be made by the student himself/herself, and must be made in writing. Students who have both an Undergraduate and a Graduate transcript and wish only one of them sent should so specify in their request. Partial transcripts of either the Undergraduate or Graduate academic records are not issued.

Housing

A limited number of both single and double occupancy rooms are available for unmarried graduate students in University residence halls. One of the six residential quadrangles is designed to house graduate students in addition to the International College which integrates graduate, undergraduate, foreign, and American students. Admission does not imply nor guarantee housing.

Housing is available for married students on the same basis as for single students; that is, a married couple may rent a standard double room on a corridor with each one paying the standard room charge of \$650 for the academic year.

Houses, apartments, and rooms are available within driving distance of the Stony Brook campus. However, since there is very limited public transportation, students who live off-campus must have access to private transportation and be prepared to commute up to 20 miles each way. Off-campus housing is generally expensive and beyond walking distance.

The University Housing Service, located in the Administration Building, provides a listing service for students who are interested in renting off-campus facilities in the Suffolk County area.

Housing Charges

The rent for each person sharing a double occupancy room is \$650 per academic year, payable on a semester basis. A \$75 advance room

deposit is required; this amount is applied to the first semester's payment. The advance room deposit is refundable by application in writing before July 1.

Refund Schedule

All requests for refund of Tuition, Room, Cooking fee, and Activity fee, must be made in writing to the Office of Student Accounts, Room 254, Administration Building. College fee, late registration fee and lost ID card fee are nonrefundable. The first day of class session shall be considered the first day of the semester, quarter, or other term and Saturday of the week in which this first class session occurs shall be deemed the end of the first week for refund purposes. (Due to the fact that campus offices are not open for business on Saturday, cancellations and withdrawals must be effected during the Monday through Friday office working hours.)

Schedule of Tuition Liability

A student who withdraws from the University shall be liable for payment of tuition in accordance with the following schedule:

<i>Liability During</i>	<i>Semester</i>	<i>Six-Week Term (Summer Session)</i>
First week	0	0
Second week	30%	70%
Third week	50%	100%
Fourth week	70%	
Fifth week	100%	

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

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

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

Exception

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

Room and Cooking Fee

Once a student has registered and occupied a room, no refund will be granted for room payment made for that *quarter* and no refund for the *semester* cooking fee. Refund requests for room must be accompanied by verification of the move-out date by the University Housing Office.

Student Activity Fee

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

Meal Plan

Meal Plan refund must be made in writing to the Faculty Student Association, Stony Brook Union.

Advance Housing Deposit

Request for refund will be granted if application is made in writing before July 1.

Financial Assistance

Financial assistance is available to graduate students at the State University of New York at Stony Brook through a program of assistantships, fellowships, scholarships, and traineeships. *The awards described below are available only to full-time matriculated students* through the Graduate School, Office of Financial Aid, or from the appropriate government or state agency. An applicant seeking financial assistance is strongly advised to make sure that all application material, including letters of recommendation and transcripts, has been received by the University no later than February 1. In addition, students seeking financial aid must submit GAPS FAS forms. If a student receives a stipend from the University and also from an outside source, the University contribution will be adjusted so that the total of these stipends will not exceed a set limit (\$4800-5000) for the academic year.

Graduate School Traineeships

Graduate traineeships are awarded on a competitive basis, including such criteria as academic achievement, financial need, and potential for professional growth and societal contribution, by the Graduate School on recommendation of the department for one year, but may be renewed up to but not more than four years. Traineeships carry stipends of \$3000 and tuition exemption for each academic year.

Graduate Council Fellowships

A limited number of Graduate Council Fellowships is available to incoming students. These fellowships carry a stipend of \$4000 per

academic year and do not require any services. They are awarded as a result of Graduate School-wide competition and funds permitting may be renewed for two additional academic years by those students who maintain superior academic standing.

President's Award for Excellence in Teaching

The Stony Brook Foundation, a not-for-profit educational corporation affiliated with the University, presents the President's awards for excellence in teaching of \$500 each. These awards are made in recognition of excellence in teaching by graduate students. Each candidate for the award must be recommended by his or her department. The recipients of these awards are selected by a committee chaired by the Dean of the Graduate School or his designee and consisting of members of the University faculty and of the Stony Brook Foundation.

National Science Foundation Graduate Fellowships

Fellowships are available in various fields and offer the same stipends and dependency allowances as graduate traineeships, but are awarded directly by the National Science Foundation. Recipients of this award are exempt from payment of tuition. Candidates must be citizens or nationals of the United States. Closing date for applications is established by NSF, usually late November or early December. For further information, write: the Fellowship Office, National Academy of Sciences, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

Regents Tuition Assistance Awards

Full-time graduate students who are legal residents of the state of New York and are accepted for admission to the Graduate School are required to apply for Regents Tuition Assistance Awards whether or not they receive tuition waivers. The award carries stipends of \$100 to \$600 per year depending upon financial need. Applications may be obtained from each department office.

Brookhaven National Laboratory Junior Research Associate

Full time graduate students who have completed all course requirements and are ready to begin dissertation research in the areas of the biological and medical sciences are eligible to apply for a Brookhaven National Laboratory Research Associate. The awards carry a stipend of \$4000 for the academic year with a tuition exemption.

Graduate Student Dissertation Grants in Aid

Full time graduate students who have completed course requirements and whose dissertation research is in progress or is about to begin are eligible for a dissertation grant in aid. The amount of the award is \$300 to defray the cost of those expenditures which allow for the accumulation of data and contribute directly to the writing of the dissertation.

Loans and Work Study Programs

Both the state of New York and the federal government offer low cost loan programs to help graduate students finance their education. In addition, there are federally funded Work Study Programs which help students earn money through campus employment. Such aid is based on students' financial need which is established by filing financial disclosure forms with the Financial Aid Office. For entering graduate students the GAPS FAS forms are used to determine financial status; continuing students may pick up forms from the Financial Aid Office.

Under the federal National Direct Student Loan program graduate students may borrow up to \$2500 per year (depending on availability of funds) with repayment beginning 9 months after the student leaves school, at 3% interest.

The New York State Guaranteed Student Loan Program is administered by the State Guaranteed Loan Association through the Financial Aid Office and a bank. It is available to New York residents only. Out-of-state students may apply through their home State Guaranteed Loan Association. The maximum amounts available through this program are \$2000 for an M.A. candidate and \$2500 for a Ph.D. candidate. There is a ½% loan fee charged at disbursement and repayment begins 9 months after the student leaves school.

In order to qualify for funds allocated on a financial need basis, students must have their financial disclosure forms on file with the Financial Aid Office or the Graduate School by March 15th.

Academic Regulations and Procedures

All programs, regulations and schedules of dates are offered subject to change or withdrawal depending on the availability of funds and the approval of programs by appropriate State authorities.

Registration

All candidates for a graduate degree, whether in residence or *in absentia*, must complete registration each semester. This ruling includes those who are using the library, laboratories, or computer facilities; who are consulting with the faculty while working on their dissertations; and who are preparing for or taking qualifying or oral examinations at the masters or doctoral level. Students who hold graduate traineeships, research assistantships, or predoctoral fellowships must be registered as full-time students. Departments or individual faculty members do not have the authority to waive these rules.

Registration after the close of the announced final registration period in the academic calendar requires the payment of a service charge of \$20. Registration is not permitted after the end of the second week of classes. A student is not considered registered until the appropriate forms have been filed with the Registrar and arrangements regarding tuition fees have been made with the Bursar's Office.

Changes in Registration

During the first four weeks of classes (as noted in the Academic Calendar) graduate students may add or drop courses by completing the request form available from the Registrar provided the proposed change does not alter the student's status as defined in "Student Status". Courses dropped during the first two weeks are deleted from the student's semester registration record. *Courses dropped during the third and fourth weeks remain on the student's record and withdrawal grades (WP or WF) are recorded.* After the fourth week of classes no course may be added or dropped. Should it become impossible for a student to complete a course for a reason such as illness or accident, he or she may petition the Dean of the Graduate School for a waiver of the drop deadline. Such petitions must be approved by both the chairman and the graduate program director of the department.

Registration for Maintaining Matriculation

Students must register for at least a one-credit course in thesis or dissertation research *each semester or session* for which they are maintaining matriculation and must do so at the regular times designated for graduate registration by the Registrar. Students failing to do so either at advance or final registration may register during the first two

weeks at the beginning of the current semester and will be subject to payment of the \$20 late registration fee. After the first two-week period, no student will be permitted to register. Students do not maintain matriculation during the Summer Session unless they plan to graduate in August.

To be eligible to receive a degree, a student must maintain matriculation for *each* semester prior to and including the semester in which the degree is awarded. Students on approved leaves of absences do not register for those semesters for which a leave has been granted; however, they must register for the semester in which the degree is awarded.

Students who complete all degree requirements *after* the deadline for any degree date but *before* the first day of classes of the next term or session are eligible for graduation without additional registration. Students who complete all degree requirements during the Summer Session may graduate in December provided they were registered in the preceding spring semester and *all* requirements were completed before classes began in the fall semester. Students who wish an August degree and do not complete all requirements before Summer Session begins must register for one of the two Summer Terms to be eligible for the August degree.

Graduate Study Away from Campus

Normally, it is expected that a graduate student's course of study and dissertation research will be conducted at Stony Brook under the direct guidance of the faculty of the department or program in which the degree is sought and with the facilities available here or close by, as for example, at Brookhaven, Cold Spring Harbor, the hospitals and institutions on the Island, or the libraries of New York City. However, there may be circumstances in which the student's work would be facilitated by being done away from campus at another institution or research facility. In such cases, the department may petition the Dean of the Graduate School for permission for the student to carry on work away from campus. The petition must contain the following information:

1. The reasons for the request.
2. The conditions under which the student's work away from campus is to be performed, supervised, and evaluated.
3. The student must be registered as a graduate student at Stony Brook and must pay the necessary fees. If the student is supported by a stipend or grant from state funds or from University-monitored federal and private sources, he or she must be registered as a full-time student. If the student is employed elsewhere, in a position not under the University's jurisdiction, matriculation may be maintained by registering for at least one credit of research each semester providing all degree requirements have been fulfilled except for the writing of the thesis or dissertation.
4. A statement by the chairman of the department attesting that

permission for the student to do work away from campus will not diminish the department's capability to fulfill its commitments.

5. A statement from the institution where the student's work is to be performed in which acceptance of responsibility for its supervision is made. In the case of archival research or field work, a statement of authorization for the student to use such resources must be submitted.

6. The petition must have the approval of the graduate program committee and the chairman of the department concerned.

Exchange Credits

When the special educational needs of a doctoral student at one SUNY institution or the graduate center of CUNY can be served best by taking a course for credit at another unit of the SUNY system, or the graduate center of CUNY, he or she should obtain a statement from the department chairman recommending admission of the student to take the desired course at the visited institution. The recommendation should state that the student has the prerequisites for the course and that, if the course is successfully completed, credit for it will be accepted toward the degree. The statement from the department chairman should be approved by the Dean of the Graduate School of the student's institution. It should then be sent to the Dean of the Graduate School of the visited institution who will clear it with the instructor of the course and the chairman of the department concerned. When approval is obtained, the student will be admitted as a special student for purposes of taking the course requested. The student will pay appropriate tuition and fees at the visited institution. If the student has a waiver of tuition at his or her home institution, that waiver will be recognized by the visited institution. At the completion of the course the visited institution will, on request, send a transcript to the student's home institution. This exchange is restricted to courses not available at the home institution.

Transferred Graduate Credits From Other Universities

A candidate for the masters degree may petition to have transferred a maximum of six graduate credits from another institution toward his or her degree. The student should petition in writing to the appropriate departmental committee. The petition must include a copy of the official transcript. The departmental committee has the responsibility of deciding on the applicability of those credits to their specific program. Approved petitions must be forwarded to the Office of Records for inclusion on the student's permanent record. A candidate for the doctoral degree may transfer those graduate credits which are allowed by the appropriate department committee. Policies concerning the transfer of credit into the Center for Continuing Education can be found on page 112.

Grading System

The following grading system will be used for graduate students in both graduate and undergraduate courses: A (4.00) Superior, B (3.00) Good,

C (2.00) Minimum Passing, F (0.00) Failing. Pass/No Credit is not an approved grading system for graduate students.

In addition, the following marks may be awarded at the end of the semester: I (Incomplete). This is an interim grade. It may be given at the discretion of the instructor but only upon evidence that good cause, such as serious, protracted illness, prevented the student's completion of course requirements. The grade of "I" must be resolved by the following dates: March 15 for courses of the preceding fall semester; October 31 for courses of the preceding spring semester. However, the instructor may require that the work be completed at any time prior to the end of the Incomplete extension period. In granting a grade of "I" the instructor signifies a willingness to receive student work and prepare grades in accordance with these deadlines. If final grades are not reported to the Registrar by the specified dates, the grade of "I" will automatically be changed to "F". Extension to the end of the succeeding term may be requested by written faculty petition to the registrar; any subsequent exception must be appealed by the student with a written letter of support or denial by the faculty member addressed to the Graduate Council.

Each student's permanent academic record must reflect a final grade or a withdrawal grade for each course in which he or she was enrolled. If a final grade has not been reported by the scheduled deadlines or appropriately extended, the grade of F will be recorded.

S (Satisfactory). Indicates passing work in those courses, so designated by the department and approved by the Graduate Council, where the normal mode of evaluation is impracticable.

U (Unsatisfactory). Indicates unsatisfactory work in those courses, so designated by the department and approved by the Graduate Council, where the normal mode of evaluation is impracticable.

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.

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

Auditing

Auditing is permitted by special arrangement between student and instructor. No record is kept of courses audited.

Academic Standing

A student may be dismissed if his or her overall average falls below B (3.0) at any time after the completion of the first two semesters of graduate work. Additional minimum grade requirements may be imposed by individual departments. Graduate students may be dismissed upon proof of violation of professional standards and academic honesty.

Withdrawal from the University

Official Voluntary Withdrawal. A student finding it necessary to withdraw from the University must request permission to withdraw from the department chairman. If the department chairman favors such withdrawal, the student must obtain a withdrawal card from the Registrar. This card has to be approved by the offices indicated on the card and by the Dean of the Graduate School. The effective date of withdrawal is the date upon which the completed withdrawal card is returned to the Registrar. The process of withdrawing from the University is a formal procedure and the student has the responsibility for initiating it if, of necessity, he or she must leave graduate study. Students may withdraw from the University up to the last day of classes.

Unauthorized Withdrawal. A student who leaves the University without obtaining an official withdrawal may forfeit the privilege of honorable dismissal and his or her prospects of readmission to the Graduate School. He or she will be reported as having failed all courses.

Involuntary Withdrawal. A student who is called into the Armed Forces during the term should present his orders for induction at the Graduate School along with a formal withdrawal card for appropriate action.

Leave of Absence. Leave of absence may be obtained for a specified time not to exceed two years. Military leave of absence will be granted for the duration of obligated service to students in good standing. Students should request a leave of absence in writing and submit the request to the graduate program director of their individual department. If the graduate program director and the chairman of the department approve the request for leave, they recommend approval to the Dean of the Graduate School. If Graduate School approval is granted, the student should then follow the procedure for filing a withdrawal card outlined in the "Official Voluntary Withdrawal" section above.

Degree Requirements

Admission to the Graduate School does not automatically qualify a student as a candidate for the Ph.D. degree. Formal recommendation of advancement to candidacy for the Ph.D. degree must be made to the Graduate School by the department after a review of the student's performance in courses, independent study, and departmental examinations. A candidate for the Ph.D. degree engages in research leading to a dissertation. For the masters degree a less formal procedure is followed, and a department may substitute a comprehensive examination for the research and thesis.

The granting of the masters degree is based upon the completion of 30 graduate credits, residence, examination, supervised teaching, thesis, special departmental requirements, and the recommendation of the student's department. The granting of the doctoral degree is based upon residence, examination, supervised teaching, dissertation, special departmental requirements, and the recommendation of the student's department. Ordinarily, however, certain courses should be taken in preparation for comprehensive examinations and research. The student will follow an approved program of courses, seminars, and individual study, determined to meet his or her needs and to satisfy departmental requirements.

The minimum degree requirements listed below are those of the Graduate School, unless otherwise specified by the department.

The Master of Arts and Master of Science Degrees

1. Language proficiency: Though the Graduate School itself does not require proficiency in a foreign language for the masters degree, departments have the responsibility for their foreign language requirement and the evaluation of any stated proficiency. Students must comply with their departmental requirements.

2. Practicum in teaching under supervision is required.

3. A minimum of 30 graduate credit hours.

4. The requirement for thesis and comprehensive examination varies from department to department. Some departments require a thesis; others require a comprehensive examination; while some only require a master's paper. For specific requirements refer to each departmental section of this bulletin. If a thesis is required, it must be prepared in accordance with the guidelines presented in the booklet entitled "Instructions for the Preparation of Masters Theses and Doctoral Dissertations" available from the Graduate School. The State University of New York at Stony Brook does not allow multiple authorship for a thesis.

5. The submission of a signed degree card to the Graduate School in accordance with published deadlines.

6. Departmental recommendation: When all departmental requirements are completed, the chairman may recommend to the Dean of the Graduate School that the masters degree be granted.

7. Time limit: All requirements for the masters degree must be completed within three years of the student's first registration as a graduate student. In rare instances, or for part-time students, the Dean of the Graduate School will entertain a petition for extension of time bearing the endorsement of the chairman of the department. In such instances the student may be required to repeat certain examinations or present evidence that he or she is still prepared for the thesis or the final examination.

The Master of Arts (Liberal Studies) Degree

This is a terminal, non-research degree offered by the Center for Continuing Education (CED) primarily for persons interested in studying on a part-time basis. Details of the program and degree requirements may be found on page 112. Additional information is available from the CED Office located in the Humanities Building.

The Ph.D. Degree

1. Minimum residence: At least two consecutive semesters of full-time graduate study beyond the baccalaureate. The purpose of the residence requirement is to insure that the graduate student participates in the professional life of the department beyond class attendance. Owing to the difference in the means by which this requirement can be satisfactorily met, departmental residence requirements may vary from the Graduate School norm and are described in the individual department requirements for the degree; the Graduate School regulation pertains unless otherwise specified.

2. Language proficiency: Though the Graduate School itself does not require proficiency in a foreign language for the Ph.D. degree, departments have the responsibility for their foreign language requirement and the evaluation of any stated proficiency. Students must comply with their departmental requirements. The proficiency examination must normally be passed before permission is given to take the Preliminary Examination.

3. Preliminary Examination: The purpose of the Preliminary Examination is to ascertain the breadth and depth of the student's preparation and to appraise readiness to undertake a significant original investigation. At the discretion of the department the Preliminary Examination may be oral or written or both and may consist of a series of examinations. The examining committee is appointed by the Dean of the Graduate School on recommendation of the department chairman and may include one or more members from outside the department. Results of the Preliminary Examination will be communicated to the student as soon as possible and to the Graduate School within one

week of the completion of the exam. A repetition of the Preliminary Examination, upon failure, may be scheduled at the discretion of the department. A second repeat must be approved by the Dean of the Graduate School.

4. Advancement to candidacy: The student may be advanced to candidacy when he has completed all Graduate School and departmental requirements for the degree other than the dissertation. Advancement to candidacy is granted by the Dean of the Graduate School upon recommendation of the department.

5. Practicum in teaching under supervision is required.

6. Research and dissertation: A dissertation is required for the Ph.D. degree. It must convey in a clear and convincing manner the results of an original and significant scholarly investigation. Depending upon the character of the student's research, the department chairman will appoint an appropriate supervisor or supervisory committee, in consultation with whom the student will conduct an investigation and write a dissertation. The dissertation must be prepared in accordance with the guidelines presented in the booklet entitled "Instructions for the Preparation of Masters Theses and Doctoral Dissertations" available from the Graduate School. The State University of New York at Stony Brook does not allow multiple authorship for a dissertation.

The dissertation must be approved by a Dissertation Examining Committee of at least four members of the faculty, appointed by the Dean of the Graduate School. This committee may include the dissertation supervisor(s) and must include at least one person from outside the department. At the discretion of the department, approval of the dissertation may or may not involve a formal oral defense. If a formal defense is required, it will be conducted by the Dissertation Committee and will not be chaired by the supervisor of the dissertation. The formal defense is open to all faculty members.

In the absence of a formal defense, the student will present the results of dissertation research at an informal dissertation colloquium convened for that purpose by the department and open to interested faculty and graduate students.

Evaluation (approval or disapproval) of the dissertation will be indicated by the Dissertation Examining Committee on a form to be submitted to the Graduate School.

7. The submission of a signed degree card to the Graduate School in accordance with published deadlines.

8. Time limit: All requirements for the Ph.D. degree must be completed within four years after advancement to candidacy. In rare instances, the Dean of the Graduate School will entertain a petition to extend this time limit, provided it bears the endorsement of the chairmen of the department. The Dean or the department may require evidence that the student is still properly prepared for the completion of work. In particular, the student may be required to pass the Preliminary Examination again in order to be permitted to continue work.

Special Ph.D. Degree Program

The development and growth of knowledge is such that particular subject matter included within traditional fields is constantly changing. Thus it is not unusual for a given area of study to claim the attention and talents of scholars and researchers from different disciplines. In recognition of this fact provision is made to support the desire of any student who may wish to work in such an area. A student who desires to undertake an area of study which bridges two or more departments not regularly associated may do so through the Special Ph.D. Degree Program. This program is not open to incoming graduate students. Interested students should consult with the advisors relevant to their special programs and develop plans of study, i.e., a series of courses, research, examinations, and procedures to be followed for the degree together with the assent of a proposed examining committee. The programs must be directed toward academic specialties which do not duplicate or otherwise parallel existing programs or proposed Stony Brook graduate programs. The student and his dissertation advisors submit the plan of study and the composition of the proposed examining committee to the Special Degree Program Committee, a standing committee of the Graduate School chaired by the Dean. The Special Degree Program Committee, if it approves the plan of study, then formally appoints an examining committee of appropriate faculty. The student is also expected to fulfill the general requirements for the Ph.D. degree, as stated in the previous section, and is responsible for the requirements in the plan of study in lieu of specific departmental requirements.

Award of Degree

When all requirements have been completed, the department chairman will so certify to the Dean of the Graduate School and recommend that the degree be awarded. Degrees are awarded three times a year: May, August, and December. Formal investiture, however, will only be at the spring commencement. To be eligible for a degree a student must have completed all University requirements, submitted the appropriate manuscripts, obtained all University clearances, and have maintained matriculation according to the regulations outlined under "Registration for Maintaining Matriculation" on page 39.

Waiver of Regulations

Specified requirements may be waived by the Dean of the Graduate School in individual instances. A petition for such a waiver must be endorsed by the chairman of the department and the graduate program director who shall append their reasons for believing that the requested waiver would not result in a breach of the spirit of the regulations.

The University reserves the right to alter these regulations without notice.

English
French
Germanic Languages and Literatures
Hispanic Languages and Literature (Spanish)
Music
Philosophy

The Arts and Humanities

DEPARTMENT OF ENGLISH

The Graduate Programs

The English Department offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Part-time attendance is encouraged at the master's level, and a number of graduate courses are offered in the late afternoon hours. A double summer session which is expanding on the graduate level provides still further flexibility.

Admission to the M.A. Programs

Applicants for entrance to the Master of Arts programs at mid-year should submit all their materials by October 31; applicants for entrance in September should submit theirs by March 1. Applicants who cannot meet these deadlines should seek the guidance of the Director.

The following are ordinarily required for admission:

- A. A bachelors degree from a recognized institution.
- B. An average of at least B in the last two years of undergraduate work;
- C. An official transcript of undergraduate record;
- D. Letters of recommendation from three previous instructors;
- E. The applicant's score on the Graduate Record Examination Aptitude Test, required by the Graduate School of applicants in all departments.

Any deficiencies in these requirements shall not automatically bar admission, but it is understood that inadequacies in undergraduate preparation will normally require the student to take additional work, the amount to be determined by the Graduate Program Committee,

and not to be used to fulfill any specific M.A. degree requirements.

In all cases, admission is by action of the Graduate Admissions Committee of the Department under guidelines established by the Graduate School. Applicants are admitted on the basis of their total records, and there are no predetermined quantitative criteria which by themselves insure a positive or a negative decision.

The M.A. Programs

In broad outline, a master's degree requires ten three-credit courses. Of these one must be a course in Shakespeare and another a course in Chaucer or Milton, although such courses previously taken on the undergraduate level may be accepted as fulfilling the requirement upon special application to the Director of M.A. Programs. In addition, a master's candidate must complete two graduate courses in the literature of the periods before 1800 and one graduate course in American literature.

Each master's program is organized around a "cluster" or central group of inter-related courses determined by the student's major interest. For example, many of those pursuing the degree are either engaged in, or preparing themselves for, careers as teachers on the elementary, secondary, or community college levels; they will therefore frequently choose the "teaching cluster," which comprises the following three courses: *Problems in Teaching Writing and Composition*, *Problems in Teaching Literature*, and *Contexts of Literary Study*.

Although this program as outlined above is directed toward teaching, changing vocational conditions today require innovative approaches in addition to the more basic course work. To that end other "clusters" or programs are offered; for example, a cluster in the drama will include courses in that area; likewise, other groupings may bring together such areas of study as literature and social attitudes or literature and its relation to other disciplines. Furthermore, courses for the teacher have regularly included, although not as requirements, such options as *Problems in Teaching Open Admission Students* and *Problems in Teaching Remedial Composition*. Further information may be obtained from the Director of M.A. Programs.

Transfer Credit and Standards of Performance

Mindful that many applicants may have interrupted an earlier graduate career, the department permits the transfer of six hours of credit in suitable graduate work done elsewhere. The student must, however, make special application after admission. In all course work done at Stony Brook an average grade of B is the minimum required, but no more than two C's will be permitted.

Admission to the Ph.D. Program

For applicants to the Ph.D. program, who may be admitted if they

have done no previous graduate work, the following are required:

- A. A bachelors degree from a recognized institution;
- B. An average of at least B in the last two years of undergraduate work;
- C. An official transcript of undergraduate record, and of any graduate work that may have been done;
- D. Letters of recommendation from three previous instructors;
- E. The applicant's score on the Graduate Records Examination Aptitude Test, required by the Graduate School of applicants in all departments;
- F. A sample of recent scholarly or critical writing;
- G. Proficiency in a foreign language equivalent to two years of college work.

As in the case of those admitted to the Master's programs, any deficiencies on admission will have to be made up promptly and must not be used to satisfy any specific requirements for the degree itself.

The Ph.D. Programs

During his first year the incoming Ph.D. student will take two semesters of Pro-Seminars (Backgrounds for the Study of English Literature). These seminars are designed to provide the student with the classical, cultural, and critical backgrounds which he will need in all later study. During that same year the student will also take three M.A. (500-level) courses in addition to a Teaching practicum linked to a teaching assignment. The English Department regards training in teaching as a necessary and valuable part of work toward the Ph.D. degree. The incoming student should therefore ordinarily expect to begin practical classroom experience under supervision in the second semester of his residence. These Practica in teaching meet regularly with faculty members under the general supervision of the Director of Writing Programs.

At the end of the first year the student's record will undergo a departmental review. At this stage the student may decide to leave the program, to proceed to the next stage, or to interrupt his studies in order to take the master's degree.

In the latter case the student must take another Teaching Practicum and three more master's courses. He then will have an important credential for possible employment or for the later resumption of graduate work.

The student continuing without interruption will, however, be preparing for the Qualifying Examination to be taken at the end of his third semester. The Qualifying Examination will be in seven periods of English and American literature, and the student must pass it in order to be admitted to candidacy.

Once admitted to candidacy, the student must take a minimum of seven doctoral (600-level) seminars covering at least two areas of

English and American literature and language. (It should be very carefully noted that no transfer credit is accepted at the seminar level.)

Foreign Language Requirements for the Ph.D.

The student must complete one of two options:

Option I: The student must, on examination, demonstrate ability to translate writings of moderate difficulty in two foreign languages appropriate to the area of study and hence ability to make use of relevant literary and scholarly writings in those languages. The choice of foreign languages will be decided by the student and his advisor.

Option II: The student must, on examination, demonstrate (1) ability to read, understand and speak well one living foreign language, or ability to read and understand well one classical language appropriate to the area of study, and (2) knowledge of the major literature of that language in the original language, and hence ability to make full use of the literature of another language. This option can be satisfied by passing a half-hour oral examination conducted in the language over the major literary figures or works of the language. The student's advisor should consult the Director of Graduate Studies about setting up such examinations. *The passing of the reading and/or comprehension examination at the M.A. level shall not be sufficient evidence that the student has met Option II.*

No student will be permitted to take oral examinations without first satisfying the departmental language requirement; the student choosing Option I must satisfy one language requirement prior to taking the Ph.D. Qualifying Exam, and the second before taking the orals examination. The student is directed to read the departmental memo explaining ways of preparing for these examinations.

Additional Requirements

To be awarded the Ph.D., every student must have passed, (1) one course in Shakespeare, (2) one course in either Chaucer or Milton, and (3) one course in the history and structure of the English language. These requirements may be met by courses taken while the student was an undergraduate. In any event, these three requirements, as well as the language requirement, will have to be satisfied in the same year as the oral examination *at the latest.*

Residency Requirement for the Ph.D.

Every full-time student is normally expected to make a three-year commitment to study toward the doctorate. Every student will be considered in full-time residence during any semester in which he: (1) is taking at least one 500-level course or 600-level seminar or is, in the opinion of the Graduate Program Committee, properly preparing for the Doctoral Examination; (2) is holding no position other than that required

under the teaching program below; (3) is registered for EGL 690 Thesis Research, or 699 Directed Reading for Doctoral Candidates for 3, 6, 9, or 12 credit hours, depending on the number of other courses the student is taking and the teaching assignment, the total of all these credits and teaching hours to be no more than 12.

The Oral Examination

Following the completion of course work, there will be a single oral examination of approximately three hours in length, normally taken in the spring of the third year or the fall of the fourth year of full-time study which will cover a substantial portion of English literature, including the field of the proposed dissertation. The student will be responsible for primary as well as major secondary works. Materials outside English and American literature will be included where relevant.

Each candidate will submit a description and, if necessary, a justification of the areas to be covered, which must be approved by his advisor and then by the Graduate Program Committee. The areas are:

1. Old English
2. Middle English
3. Tudor
4. Seventeenth Century (i.e., 1603-1660)
5. Restoration and 18th Century
6. Romantic
7. Victorian
8. Modern British
9. Early American
10. Modern American

The Graduate Program Committee has stipulated that the normal paradigm of the doctoral oral examination shall be three chronological periods. Genres and special areas will be admitted only by petition and are to be regarded as highly exceptional. (See the departmental guidelines.)

The examining board is appointed by the Dean of the Graduate School on recommendation of the Director of Graduate Studies and will be selected by the candidate's advisor and the Graduate Program Committee, and will be composed of five members: the advisor, one specialist representing each area, and a fifth member recommended by the director of graduate studies.

Dissertation

As soon as possible after the student has passed the Doctoral Examination, he must prepare a written statement setting out the scope and method of the dissertation and submit it to his advisor who will then forward the statement to the Graduate Program Committee of the department for its approval. After the statement has been approved,

the dissertation director will meet with the Graduate Program Committee to discuss the selection of the other three readers of the dissertation. The Graduate School requires that one of the readers be from outside the department. The four readers of the dissertation must recommend acceptance of the dissertation before it can be approved by the Graduate Program Committee of the department. (See *departmental guidelines*.)

Dissertation Colloquium

The student will present the results of dissertation research at an informal colloquium convened for that purpose by the Department of English and open to interested faculty and graduate students.

Matters Pertaining to Both Degrees

A. *Extensions of time limits*: Extensions of time limits are granted at the discretion of the Graduate Program Committee of the department and the Dean of the Graduate School and normally for one year at a time.

B. *Incompletes*: The Graduate Program Committee has established as sufficient grounds for the granting of Incompletes either medical reasons on the part of the student himself or emergencies arising within the student's family.

C. *English Graduate Colloquium*: The colloquium is designed to foster a scholarly community by bringing the faculty and graduate students together informally to discuss literature and related matters. All graduate students are members of the colloquium. Students will elect the officers from among themselves to plan and direct the meetings of the colloquium. Students and members of the faculty will be invited to present papers, or lectures, or to participate in panel discussions.

Foreign Languages and Graduate Study

Although the Ph.D. program includes a foreign language requirement, the M.A. programs do not. The English Department feels, however, that graduate students at all levels should maintain and improve their foreign language skills as a means of better equipping themselves in their own chosen fields. Opportunities for further study exist at Stony Brook in its departments of foreign languages and comparative literature.

Courses

Graduate courses in the 500 series are open to all graduate students. Courses in the 600 series are normally open only to students admitted to study for the Ph.D. degree although M.A. students with adequate preparation and background can sometimes be admitted with the permission of the instructor. All graduate courses normally carry three credits.

Each course in the 500 or 600 series to be offered in a given semester will be described by the instructor in some detail in a special departmental announcement prepared and distributed toward the end of the semester prior to that in which it is to be offered.

None of the courses numbered 690-699 can be taken to satisfy the requirement of seven seminars as stated in "Requirements for the Ph.D. Degree" above.

Advisement

There are a number of problems which the preceding explanations make no attempt to cover; for example, there are students whose careers may fall into two widely separated phases, whose previous records may show only a minor rather than a major interest in English literature, whose academic preparation now seems remote, or whose recent experiences have kindled new interests. For such reasons the functioning of an advisement system under the Directors is of the greatest importance. This advisement system itself functions in an informal atmosphere. Further questions should be directed to the Graduate Office of the Department.

Faculty

Altizer, Thomas J. J., *Professor and Chairman of Religious Studies Program*, Ph.D., 1955, University of Chicago: Religion and literature; myth and imagination.

Awoonor, Kofi, *Associate Professor*, Ph.D., 1972, State University of New York, Stony Brook: African literature.

Baker, Miriam, *Assistant Professor*, Ph.D., 1970, State University of New York, Stony Brook: American literature.

Bashford, Bruce, *Assistant Professor, Director of Undergraduate Studies in English*, Ph.D., 1970, Northwestern University: Literary criticism; rhetoric and the teaching of composition.

Bennett, Betty T., *Adjunct Associate Professor¹ and Assistant to the Dean of the Graduate School*, Ph.D., 1970, New York University: English, American, and Continental Romanticism; the Gothic.

Bennett, Joseph T., *Associate Professor, Director of Graduate Studies in English*, Ph.D., 1968, New York University: Victorian literature; twentieth-century British literature; literary criticism.

Dolan, Paul, *Associate Professor*, Ph.D., 1966, New York University: Modern British and American literature; Yeats; literature and politics.

Erdman, David V., *Professor*, Ph.D., 1936, Princeton University: Romantic literature; Blake; textual and critical editing.

Fiess, Edward, *Associate Professor, Director of Master of Arts Programs in English*, Ph.D., 1951, Yale University: American literature; twentieth-century literature; biography and autobiography.

Fortuna, Diane, *Assistant Professor*, Ph.D., 1967, The Johns Hopkins

¹ Joint appointment, Department of Comparative Literature

- University: Twentieth-century British and American literature; nineteenth-century American literature.
- Fry, Donald, *Professor¹ and Acting Provost for the Humanities and the Fine Arts*, Ph.D., 1966, University of California, Berkeley: Old English; Middle English; Chaucer.
- Goldberg, Homer, *Professor*, Ph.D., 1960, University of Chicago: The Restoration and the eighteenth-century; the novel; literary criticism.
- Gross, Harvey S., *Professor¹*, Ph.D., 1955, University of Michigan: Prosody and poetic theory; modern intellectual history.
- Houle, Peter, *Assistant Professor*, Ph.D., 1972, University of Massachusetts: The Renaissance; medieval studies.
- Huffman, Clifford C., *Associate Professor*, Ph.D., 1969, Columbia University: The Renaissance; Shakespeare.
- Kott, Jan, *Professor¹*, Ph.D., 1947, Lodz University, Poland: Shakespeare; the drama; literary criticism.
- Kranidas, Thomas, *Professor*, Ph.D., 1962, University of Washington: Prose and poetry of the seventeenth century; Milton; rhetoric and revolution.
- Levin, Richard, *Professor*, Ph.D., 1957, University of Chicago: The Drama of the Renaissance; literary criticism.
- Levine, Richard A., *Professor and Chairman*, Ph.D., 1961, Indiana University: Victorian literature; the novel; literature and society.
- Lipton, Aaron, *Associate Professor*, Ed.D., 1966, New York University: The teaching of reading, composition, and literature; the psychology of literature.
- Ludwig, Jack, *Professor*, Ph.D., 1953, University of California, Los Angeles: The literature of the twentieth century; Joyce; Yeats.
- Maresca, Thomas E., *Associate Professor*, Ph.D., 1963, The Johns Hopkins University: Restoration and eighteenth-century literature; the epic; satire.
- Miller, Ruth, *Professor¹ and Assistant Academic Vice President*, Ph.D., 1965, New York University: Early American literature; poetry; Emily Dickinson; Black American literature.
- Nelson, Gerald B., *Associate Professor*, Ph.D., 1967, Columbia University: Twentieth-century British and American literature; poetry.
- Newlin, Paul A., *Assistant Professor*, Ph.D., 1967, University of California, Los Angeles: Nineteenth-century American literature; Black American literature.
- Pequigney, Joseph, *Associate Professor*, Ph.D., 1959, Harvard University: The seventeenth century; Shakespeare.
- Rand, Richard Aldrich, *Assistant Professor*, Ph.D., 1974, City University of New York: The Romantic period; literary criticism; non-fiction prose.
- Rogers, Thomas, *Associate Professor, Director of Writing Programs*, Ph.D., 1955, University of Pennsylvania: The Restoration and the eighteenth century; rhetoric; the teaching of composition and literature.

¹ Joint appointment, Department of Comparative Literature

- Scheps, Walter, *Associate Professor*, Ph.D., 1966, University of Oregon: Old English and Middle English; the history of the English language.
- Schwartz, Marion, *Assistant Professor*, Ph.D., 1975, Princeton University: The Romantic period; eighteenth-century poetry.
- Sears, Sallie, *Associate Professor*, Ph.D., 1963, Brandeis University: The novel; Henry James; literary criticism; women's studies.
- Shaw, Peter, *Associate Professor*, Ph.D., 1965, Columbia University: American literature; twentieth-century literature.
- Sheehan, David, *Assistant Professor*, Ph.D., 1974, University of Wisconsin, Madison: The Restoration and the eighteenth century.
- Simpson, Louis, *Professor*, Ph.D., 1959, Columbia University: Nineteenth and twentieth-century British and American literature; poetry; literary criticism.
- Spector, Stephen, *Assistant Professor*, Ph.D., 1973, Yale University: Old English and Middle English; the history of the English language.
- Stampfer, Judah L., *Professor*, Ph.D., 1959, Harvard University: The Renaissance and the seventeenth century; Shakespeare; literature and psychology.
- Thompson, John, *Professor*, Ph.D., 1957, Columbia University: The literature of the twentieth century; prosody; literary criticism.
- Wallis, Norman R., *Assistant Professor, Assistant Director of Writing Programs*, Ph.D., 1974, University of Chicago: The Restoration and the eighteenth century; satire; rhetoric and the teaching of composition.
- Weisinger, Herbert, *Professor¹ and Dean of the Graduate School*, Ph.D., 1941, University of Michigan: The Renaissance; Shakespeare; mythology and ritual.
- Wilson, Alice S., *Associate Professor*, Ph.D., 1947, Cornell University: The English and continental literature of the Renaissance; classical backgrounds of English literature; mythology.
- Zimbaro, Rose, *Associate Professor*, Ph.D., 1960, Yale University: The Restoration and the eighteenth century; the Renaissance; the modern drama.

DEPARTMENT OF FRENCH AND ITALIAN

Admission to Graduate Study

Candidates for admission to the M.A. program in French must hold the Bachelor's degree or its equivalent from a recognized academic institution. The dossier must include:

A. Three letters of recommendation from persons qualified to assess the student's preparation.

B. The results of the Graduate Record Examination (verbal and quantitative aptitude as well as the advanced test in French).

¹ Joint appointment, Department of History

C. A transcript of grades.

It is also recommended that students submit one or two sample papers. These papers are required of applicants transferring from graduate programs in other universities.

While it is expected that applicants demonstrate superior preparation in French language and literature, they need not have majored in French as undergraduates. Foreign students must furnish as much information as possible about their training. The department does not subscribe to fixed degree equivalencies for institutions abroad, and prefers to judge each application individually. Transfer credit (up to 6 credits) is awarded where circumstances warrant.

Requirements for the M.A. Degree

To qualify for the M.A. degree, students will normally complete 30 graduate credit hours (ten courses), including at least 18 credits (six courses) in the department of French, at Stony Brook. French 507 (Advanced Stylistics) and 508 (*Explication de Texte*) are required; French 501 (Civilization) is highly recommended.

A student who has completed his course requirements with a satisfactory (B) average and has earned at least a B (not B-) in French 507, will become a candidate for the M.A. Examination.

The department urges all students to acquire at least a functional oral, written, and reading knowledge of a second foreign language.

Students who wish to satisfy the New York State certification requirements for secondary school teachers of French will consult Professor Tursi and arrange their schedules with these requirements in mind.

The general reading list and details of the M.A. Examination, which comprises a written and an oral part, can be obtained from the department. Both will be sent to the candidate upon admission into the program, together with a description of the courses to be offered in the semester following his admission.

The M.A. Program in French

The department offers two basic options: one to meet the needs of graduate students interested in a pre-Ph.D. program; another for those wishing to obtain a practical, terminal M.A. In addition, a thorough and extensively supervised program for teaching assistants is available; it has been considered unusually helpful by all who have participated in it. Our carefully developed advising system enables us to tailor individual programs to suit the needs and interests of individual students.

The M.A. program emphasizes linguistics proficiency as well as training in literature and its cultural context. Courses are taught in French; written and oral assignments are in French. Students must obtain the grade of B or better in advanced stylistics before being admitted to the M.A. Examination. (Those with insufficient background will be directed towards remedial work and/or undergraduate courses: neither count for degree credit.)

The program is conceived so that students may acquire a general knowledge of French literature, culture, and history, as well as the tools necessary to deal independently with a literary text. Upon entering the program, they are given a general reading list and, well before taking the M.A. Examination, they will select an area of concentration with the help of their advisors. Normally this will involve a specific topic or theme in two periods of literature to be chosen for study in greater depth.

Our graduate courses are open to qualified students in other fields and in the CED program. Conversely, our students are encouraged to take courses in related areas. With the permission of their advisor and the director of graduate studies, students may obtain 6 credits outside the department.

Faculty

- Allentuch, Harriet, *Associate Professor*, Ph.D., 1962, Columbia University: Seventeenth-century French literature.
- Bieber, Konrad, *Professor*, Ph.D., 1953, Yale University: Contemporary French literature; eighteenth-century French thought; history of ideas.
- Blum, Carol, *Associate Professor*, Ph.D., 1966, Columbia University: Eighteenth-century French literature.
- Brown, Frederick, *Professor*, Ph.D., 1960, Yale University: Nineteenth and twentieth century literature in relation to social history and the history of ideas.
- Goldman, Jeanine M., *Lecturer*, Ph.D., 1973, Fordham University: French language and literature, phonetics.
- Haac, Oscar A., *Professor*, Ph.D., 1948, Yale University: Eighteenth and Nineteenth century French and Comparative Literature.
- Laidlaw, G. Norman, *Professor*, Ph.D., 1950, Columbia University: Eighteenth and twentieth century French literature; literature and science.
- Lane, Michele, *Lecturer*, M.A., 1968, Hunter College: Medieval literature and stylistics, French language, film studies.
- Mills, Leonard R., *Associate Professor*, Ph.D., 1963, Columbia University: Medieval literature, paleography.
- Petrey, Sandy, *Associate Professor*, Ph.D., 1966, Yale University: Nineteenth-century literature; contemporary criticism.
- Riggs, Elizabeth P., *Assistant Professor*, Ph.D., 1971, Columbia University: Medieval French language and literature; contemporary French novel and theater; French films.
- Rizzuto, Anthony, *Associate Professor*, Ph.D., 1966, Columbia University: Nineteenth and twentieth-century literature.
- Tursi, Joseph A., *Professor*, Ph.D., 1965, New York University: Eighteenth-century Italian literature; methodology and language.
- Whitney, Mark S., *Professor*, Ph.D., 1962, University of Pennsylvania: Sixteenth-century French literature.

Zimmerman, Eléonore M., *Professor, Ph.D.*, 1956, Yale University: Seventeenth century French drama, nineteenth century literature, especially lyricism, twentieth century drama.

DEPARTMENT OF GERMANIC LANGUAGES AND LITERATURE

Admission to the M.A. Program

For admission to graduate study in Germanic languages and literatures the following are required:

- A. A bachelors degree from a recognized institution.
- B. An average of at least a B in undergraduate German literature courses.
- C. An official transcript of undergraduate record.
- D. Letters of recommendation from three previous instructors.
- E. Results of the Graduate Record Examination Aptitude Test.
- F. Proficiency in a second foreign language equivalent to two years of college work. Preference will be given to French, Spanish, Italian, or Russian but each case will be treated on its individual merits.

Any deficiencies in these requirements will not automatically bar admission but will normally mean that the student after being admitted may have to do additional work to bring his or her level of preparation up to the required standard.

If the applicant's credentials and background seem to indicate deficiencies in the German language, he or she may be required at the outset of the first semester of study to take a written and oral examination testing command of the language. If judged insufficiently prepared, the student may be required to enroll in GER 209 and perhaps GER 210 in addition to the other course requirements listed below.

Other relevant graduate courses of the minimum requirements listed below if they are approved in advance by the department.

Requirements for the M.A. Degree

A. Formal course requirements:	Credit Hours
1. GER 502 Language Practicum	3
GER 556 Bibliography and Methodology	3
GER 539 Contrastive Structures	
or	
GER 557 History of the German Language	3
2. Seven additional offerings at the graduate level from courses within the department or, upon prior approval by the department, from those of other departments within the Graduate School.	
	21
	30

B. Performance: Average of B or better for all courses listed under A.

C. Language examination: Passing an examination testing the candidate's knowledge of at least one other language, ancient or modern, approved by the department.

D. M.A. paper: Submission of a scholarly essay on a topic and of a standard acceptable to the department.

Admission to the Ph.D. Program

Applicants who have either earned the Master of Arts degree or completed equivalent work at other graduate schools prior to admission to Stony Brook must submit the following:

A. Official transcripts of undergraduate and graduate work.

B. Letter of recommendation from at least two instructors familiar with the applicant's graduate work.

C. Results of the Graduate Record Examination Aptitude Test.

D. A sample of recent critical or scholarly writing; for example, the candidate's masters thesis or a seminar paper.

Applicants who have earned the M.A. degree at Stony Brook will be admitted to the Ph.D. program only upon recommendation of the department.

Advancement to Candidacy for the Ph.D. Degree in Germanic Languages and Literatures

A. Residence requirement: Minimum of two consecutive semesters of full-time study.

B. Foreign language requirements: A student who has not fulfilled the language requirement during the masters program must pass an examination in at least one other ancient or modern language approved by the department.

C. Comprehensive Examination: Before the end of the fourth semester of full-time residence after receiving the M.A., a student will be required to take and pass the departmental Comprehensive Examination testing knowledge and critical understanding of German literature and language.

D. Dissertation subject: Presentation of a proposal for a doctoral dissertation which is supported by that member of the department who has agreed to sponsor the dissertation.

E. Course requirements: In addition to those listed under the masters degree, students must take the following courses:

1. In preparation for the independent research involved in the dissertation, students must take at least two advanced tutorials:

	Credit Hours
GER 601 Special Author	3
GER 602 Special Period	3

2. Six additional offerings at the graduate level from courses within the department or, with prior approval by the department, from those of other departments within the Graduate School. (Students should note that the Comprehensive Examination can be expected to cover material drawn from not only the four courses listed under the M.A. requirements but also GER 558 Middle High German and GER 563 Old High German.)

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Persons wishing to stress Germanic philology will be encouraged to do so by substituting appropriate courses from within the department's offerings as well as those from other departments, such as FRN 511, EGL 509, EGL 510, EGL 515, or EGL 601.

Granting of the Ph.D. Degree

After the student's dissertation has been accepted, it must be successfully defended in an oral examination.

Matters Pertaining to Both M.A. and Ph.D. Degrees

A. Graduate instruction in the Department of Germanic Languages will be given as far as possible by tutorial and seminars. At the beginning of their graduate studies at Stony Brook, students will be assigned tutors. Tutors will be members of the department of professorial rank who will advise students in the planning of their programs according to their special interests and needs against the background of their undergraduate and graduate preparation before entering the Stony Brook program. In both the M.A. and Ph.D. degree programs, normal course work has been reduced to a minimum so that the maximum amount of time may be released for independent study under the tutorial and seminar program for research seminars.

B. Extensions of time limitations: Extension of time (beyond three years for the M.A. degree and four years for the Ph.D. degree) are granted at the discretion of the department and the Dean of the Graduate School and normally for one year at a time.

C. Incompletes: If a student wishes to request an Incomplete, he or she must get the course instructor's approval, as well as that of the director of graduate studies.

D. Part-time study for either degree may be permitted at the discretion of the department.

Courses

Graduate Seminar and Tutorial Offerings

Candidates should understand that these seminars are given general titles. The specific topics to be offered in proseminars and seminars of the 500- and 600-series in a given semester will be described in

announcements prepared and distributed before preregistration for the semester in which they are to be offered. A candidate may take, so far as the requirements allow, the same seminar more than once if the alteration of subjects within that seminar benefits the individual's graduate program. Candidates for graduate degrees are urged to consult with the professors to whom they are assigned in order to work out the most favorable sequences of seminars.

Faculty

- Berr, Samuel, *Associate Professor*, Ph.D., 1968, New York University; Historical linguistics, Old Saxon, Yiddish language and literature.
- Brown, Russell E., *Associate Professor*, Ph.D., 1963, Harvard University: Modern German literature, Expressionist poetry, Trakl, Brecht, Jahn.
- Elling, Barbara E., *Associate Professor*, Ph.D., 1971, New York University: Romanticism, literature and sociology, methods of language teaching.
- Karst, Roman, *Professor and Graduate Studies Director*, LL.M., 1936, Jagiellonian University, Cracow, Poland: Goethe, modern novel, Kafka, T. Mann.
- O'Neil, Daniel C., *Assistant Professor*, Ph.D., 1966, Cornell University: Ernst Barlach, literature and visual arts, problems of translation.
- Ruplin, Ferdinand A., *Associate Professor*, Ph.D., 1965, University of Minnesota: Applied linguistics, Middle High German, computer-assisted instruction.
- Russell, John R., *Associate Professor and Chairman*, Ph.D., 1966, Princeton University: Rokoko, Novelle, computer-assisted instruction.
- Schröter, Klaus, *Professor*, Ph.D., 1961, University of Hamburg, W. Germany: Goethe, literary theory, prose of the Weimar Republic, dialectical-materialistic esthetics.
- Sjöberg, Leif, *Professor*, Ph.D., 1968, Uppsala University, Sweden: Scandinavian literature, Ibsen, Strindberg, Lagerkvist, Ekelöf, Old Norse.

DEPARTMENT OF HISPANIC LANGUAGES AND LITERATURE

The M.A. and Ph.D. programs described below have very few prescribed or required courses in order to permit the individual student maximal flexibility *vis a vis* his or her major interest. Broad subject coverage as well as departmental and interdepartmental disciplinary specialization are recommended. Interdisciplinary Ph.D. minors are encouraged, particularly after the first year of course work. Preparation other than University teaching is also considered according to individual motivations. Programs of study for both M.A. and Ph.D. candidates are planned in consultation with the student and approved

by a committee of advisors presided by the Chairman and the Director of Graduate Studies.

Requirements for Admission

M.A. Students

- A. B.A. degree with preparation equivalent to that of a standard undergraduate Spanish major. Students with a major in other disciplines will be admitted subject to their fulfilling deficiencies.
- B. Three letters of recommendation.
- C. Official transcripts of all college work.
- D. Results of the Graduate Record Examination Aptitude Test.

M.A. with Specialization in Hispanic Bilingual-Bicultural Studies

- A. B.A. degree.
- B. Three letters of recommendation.
- C. Official transcripts of all college work.
- D. Proficiency in both English and Spanish.
- E. Results of the Graduate Record Examination Aptitude Test.

Ph.D. Students

- A. B.A. or M.A. degree (or equivalent).
- B. Superior preparation in Spanish language and literature.
- C. Three letters of recommendation from Spanish professors.
- D. Official transcripts of all college work. It is also recommended that a senior thesis paper, an M.A. thesis, or one or more research papers written during previous studies, accompany the application.
- E. Results of the Graduate Record Examination Aptitude Test.

All applicants are automatically considered for a traineeship on a competitive basis.

Students who are admitted to the Ph.D. program are considered provisional, until they pass the Qualifying Examination. They are formally admitted to Ph.D. candidacy upon passing the Comprehensive Examination.

Degree Requirements for the M.A. Programs

M.A. in Spanish

For secondary and junior college teachers who do not necessarily intend to do post M.A. studies, 30 credits in graduate course work in Spanish, of which six may deal with problems of the teaching of language and literature at secondary and junior college levels, six with studies in Spanish linguistics or problems in bilingual education, plus examination. Reading knowledge of a second language is required. For students who wish an intermediate degree but whose main concern is continuing toward the Ph.D., a minimum of 27 credits in Peninsular and Spanish-American literature, and 3 credits in Spanish linguistics, plus examination. Reading knowledge of French is required.

M.A. with Specialization in Hispanic Bilingual-Bicultural Studies

This program is specially designed for graduate students, teachers and other professionals who wish to concentrate on the linguistics and cultural dimensions of Hispanic bilinguals. The program welcomes applications for part-time as well as full-time study. Course work is conducted in Spanish, English or both.

Degree requirements are 30 graduate credit hours, distributed as follows:

A. 18 credits in Hispanic Bilingual-Bicultural courses: 581, 582, 583, 584, 585 (or 586), and 587;

B. 12 credits in other Spanish graduate courses. Six of these credits may be selected from related courses offered by other departments in consultation with the Program Coordinator and Director of Graduate Studies.

There are no M.A. examinations in this program. Spanish and English are the only required languages. However, SPN 587, Independent Project, that must be taken during the last semester of courses, will be individually designed to serve as an adequate and thorough completion of the learning experience of the student.

Degree Requirements for the Ph.D. Program

Although research and its relationship to teaching are stressed, provision is made for students oriented to areas other than college teaching. The student's individual academic needs will have priority over any specifically prescribed program. Each candidate's program will be planned during his or her first semester on campus by a committee of advisors presided over by the Chairman and the Director of Graduate Studies.

Programs will reflect previous experience, maturity, and the candidate's proposed area of specialization.

All Ph.D. candidates will be involved in two levels of teaching experience: One at the lower division level (SPN 691, Practicum in Lower Division Teaching) as Teaching Assistants, and one at the intermediate level (SPN 693, Practicum in the Teaching of Advanced Spanish and Literature). The first practicum should be taken the first semester of studies, and the second, during the third. Both are intended to combine theoretical studies with practical discussion of problems related to classroom situations.

A. Ph.D. students holding a B.A. or equivalent: A minimum of three years devoted to course work (72 credits) as well as to the preparation of the Qualifying and Comprehensive Examinations. Continuation year by year is contingent upon satisfactory performance.

B. Ph.D. students holding an M.A. or equivalent: Generally, a minimum of 42 graduate credits is advisable. These may include courses in allied subjects when such work is of demonstrable importance to the field of the projected dissertation (preferably in another language, comparative studies, Luso-Brazilian studies or linguistics).

Approximately half of the total graduate credits should be taken in the field of concentration, either Spanish or Spanish-American literature.

C. For transfer students who have already worked a year or more in another University toward the Ph.D. in Spanish, and above the M.A. level, the minimum requirement is 24 credit hours.

Language Requirements

All Ph.D. students must prove reading knowledge in French and in a second language of their choice related to the field of the dissertation or allied fields. In addition, students specializing in Medieval, Pre-Renaissance Literature or Philology, should show competence in Latin. Other languages are accepted if they are justified and approved by the committee of advisors. The student is strongly advised to complete at least one of the language requirements by the end of the first year of graduate study. He or she must have completed both language requirements prior to the Comprehensive Examination.

Specific Courses Required

Three courses are required:

- SPN 528 Seminar in Cervantes
- SPN 549 Seminar in Spanish-American Modernism
- SPN 609 Literary Theory

Field of the Dissertation

During the last year of courses, the student is advised to work closely with a faculty member in the proposed field of the dissertation. This is very important, since the Comprehensive Examination places great emphasis on this area. At this time, the candidate should also have chosen at least one other specialized reader and counselor for his dissertation.

Procedures to Satisfy the Language Requirements

Any of the following procedures is considered satisfactory:

- A. Reading examination administered by the Department of Hispanic Languages and Literature.
- B. The Princeton Graduate School Foreign Language Test (GSFLT).
- C. Successful completion of a graduate reading course in that language.
- D. Completion of a regular graduate course in the foreign language with a grade of B or better.

Examinations

M.A. Program:

The student who has completed all formal course work and has proved reading proficiency in French, can sign up for the M.A. examination one month prior to the established date (usually the first week in November and again the first week of April).

It is a six hour written examination consisting of three hours of questions on Spanish literature and three on Spanish-American literature, based on a relatively short reading list. Other areas such as language teaching, linguistics, bilingual studies, are considered fulfilled by passing the respective courses. In case of failure, the student may repeat this examination once.

There are no examinations in the concentration in Hispanic Bilingual-Bicultural Studies. Instead, an individual Project is required (SPN 587).

Ph.D. Program:

Toward the end of the first year of study (usually the second week of November or the second week of April), a brief *Qualifying Examination* based on a list of six works of literature and criticism will be administered to gauge the candidate's potential and determine the nature of his or her further studies. This Qualifying Examination serves as an indicator of the advisability of continuing toward doctoral work. It consists of a written part (usually two hours), and a half-hour oral. This examination, due to its nature and purpose, may normally not be repeated.

Toward the end of the last semester of courses or the semester immediately following it, the *Comprehensive Examination* must be taken. All Incomplete grades, if any, and both language requirements must be fulfilled prior to this examination.

It will consist of 12 hours of written questions and one hour of oral. These 12 hours will be equally divided in three parts which are as follows:

- 1) Questions directly related to the specific field of the dissertation (which, consequently, should be decided in advance as explained above);
- 2) Questions on Spanish or Spanish-American literature, whichever is the general area indicated by the field of the dissertation;
- 3) Questions on the other fields, including Spanish linguistics, not covered in points 1 and 2 above.

A student who has taken two courses in Spanish linguistics in our Department, with at least a B grade in each course, is not required to take the linguistics section of this examination.

The Oral section is generally scheduled one week after the third part of the Written examination.

The second and third parts of the written examination are based on a reading list. The first part, which refers to the field of the dissertation, is based on the pertinent material decided in advance with the director of the dissertation. The Comprehensive Examination must be taken in its entirety. In case of failure, the student may repeat one of the three written parts, plus the oral. A failure in two or more written parts normally means failure in the examination as a whole.

Dissertation

The dissertation will consist of the written results of extended independent study under the supervision of a member of the staff. A specialized reader and counselor is also appointed. The result may take the form of a critical or scholarly study. It is required for the Ph.D. degree *only*. Early in his or her studies the Ph.D. student should begin to think in terms of a dissertation topic, choose the advisor, and write up a brief prospectus to be submitted to the director of graduate studies. The prospectus will be studied by an *ad hoc* committee appointed by the director, and if approved, the student may begin preliminary bibliographical work. After the dissertation is completed, it is judged by a committee consisting of its director, the second reader, plus one Spanish professor and two faculty members from outside the Department who specialized in related areas. Generally, if the dissertation is approved by this committee, the Ph.D. in Spanish is granted. However, the committee may decide to hold an interview with the candidate before reaching a decision.

As an academic commencement and a service to the academic life of the Department, he or she is then finally asked to give a public lecture on the subject of the dissertation.

Faculty

- De La Campa, Roman, *Assistant Professor*, Ph.D., 1975, University of Minnesota: Bilingual, bicultural studies, linguistics, Latin American theatre, Caribbean Literature.
- Fainberg, Louise Vasvari, *Assistant Professor*, Ph.D., 1969, University of California, Berkeley: Medieval Spanish literature, Romance philology, applied linguistics.
- Francis, Alan, *Assistant Professor*, Ph.D., 1975, Harvard University: Renaissance and Golden Age literature.
- Giordano, Jaime, *Associate Professor*, 1961, Universidad de Chile: University Professor, University of Concepción, Chile; Modern and contemporary Spanish American literature.
- Greenfield, Gabriela, *Lecturer*, M.A., New York University.
- Lastra, Pedro, *Professor*, 1967, Universidad de Chile; University Professor, Universidad de Chile. Modern and contemporary Spanish American literature.
- Lida, Clara, *Associate Professor*,¹ Ph.D., 1969, Princeton University: Peninsular and Latin American history, cultural and intellectual history of Spain and Latin America.
- Little, William, *Assistant Professor*, Ph.D., 1972, Washington University, St. Louis: 19th and 20th century Hispanic literature, comparative literature.
- Llorens, Vicente, *Professor*, Ph.D., 1926, Universidad de Madrid, Spain: Spanish literature.

¹ Joint appointment, Department of Psychology

McKenna, James B., *Associate Professor and Chairman*, Ph.D., 1965, Harvard University: 20th century Spanish culture and literature.
Zavala, Iris M., *Professor*, Ph.D., 1962, Universidad de Salamanca, Spain: 17th to 20th century Peninsular, Caribbean literature.

DEPARTMENT OF MUSIC

Degree Programs

The Department of Music offers graduate programs leading to the Master of Arts degree in musicology and in composition, and the Master of Music degree in performance. All important areas of study are represented, but special emphasis is placed upon the music of the 20th century.

Admission to the M.A. Program

The following are required for admission to the M.A. program in musicology and in composition:

- A. A baccalaureate degree from a recognized institution.
- B. An official transcript of undergraduate record.
- C. A minimum grade average of B in undergraduate music courses.
- D. Submission of examples of undergraduate research papers (for musicology students) or musical compositions (for composition students).

E. Scores of the Graduate Record Examination Aptitude Test (GRE).

Applicants are invited to submit any other evidence of their abilities in support of the applications for admission, such as recordings of musical performances or the score on the Graduate Record Examination Area Test in music.

All students entering the M.A. program will be examined in the following areas during the week before the beginning of classes:

1. Ear training.
2. Basic keyboard skills.
3. The harmonization of a chorale in four voices.
4. The composition of a passage in free two-part counterpoint in either 16th century or 18th century style, according to the student's choice.
5. The analysis of representative examples of 18th and 19th century music.
6. The history of music (*musicology students only*).
7. The composition of one of the following (*composition students only*):
 - a. A motet in four or more voices in 16th century style.
 - b. A fugue in four voices in 18th century style.
 - c. A sonata or chamber work movement in the homophonic style of the 18th century.

A student who is found deficient in any of the areas of harmony, counterpoint, ear training, or keyboard must continue to retake pertinent examinations as they are given, until the deficiency is removed.

A student may not take the comprehensive examinations for the degree until he or she has passed examinations in those four areas. A student who is found deficient in analysis will be required to take a course in analysis during the first year. A composition student who does not write an adequate example of a fugue, motet, or sonata will be required to take the examination again, or to take and pass the relevant course.

Requirements for the M.A. Degree in Musicology

A. *Courses*: Thirty graduate credit hours (exclusive of those in MUS 591 Practicum in Teaching) chosen in consultation with the student's advisor. The program must include:

1. MUS 503 Music in the 20th Century
2. At least two Special Topics Courses numbered 543-555
3. At least two semester courses or one year outside the area of musicology

If a course in a department other than Music is taken toward the degree, approval by the Graduate Studies Committee must be obtained.

B. *Foreign languages*: A reading knowledge of French and German. Examinations must be taken by the end of the second semester of study.

C. *Comprehensive examinations*: Written and oral examinations in the history of music and in the analysis of preassigned compositions.

D. *Research paper*: A substantial essay, normally one which the student has written as part of the course work. The paper should be submitted no later than the first week of the semester in which the student expects to receive the degree.

Requirements for the M.A. Degree in Composition

A. *Courses*: Thirty graduate credit hours (exclusive of those in MUS 591 Practicum in Teaching) chosen in consultation with the student's advisor. The program must include:

1. MUS 523 Advanced Composition or MUS 615 Electronic Music Composition every semester of residence
2. MUS 515 The Fundamentals of Electronic Music
3. MUS 516 Electronic Music Workshop
4. At least two semester courses or one year course outside the area of composition and theory

If a course in a department other than Music is taken toward the degree, approval by the Graduate Studies Committee must be obtained.

B. *Foreign language*: A reading knowledge of French, German, or Italian. The examination must be taken by the end of the second semester of study.

C. *Comprehensive examinations*: Written and oral examinations on important musical works of all periods and in the analysis of pre-assigned compositions.

D. *Compositions*: Students must satisfy the department that they have written compositions of sufficient quality and variety during the period of study after admission to the Graduate School. Fair copies of all such works must be submitted to the Graduate Studies Committee as they are completed. The LAST DAY FOR GRADUATE STUDENTS TO SUBMIT THESES AND DISSERTATIONS, as specified in the Academic Calendar, will be the final deadline for all works to be submitted.

Admission to the M.Mus. Program

The following are required for admission to the M.Mus. Program in performance:

- A. A baccalaureate degree from a recognized institution.
- B. An official transcript of undergraduate record.
- C. An audition in the major field of performance. Students residing at a distance may gain provisional acceptance by means of recordings of their work. Applicants should contact their prospective major teachers regarding suitable repertory for auditions.
- D. Letters of recommendation from the principal teacher and at least one other person familiar with the student's work.
- E. Scores of the Graduate Record Examination Aptitude Test (GRE).

Requirements for the M.Mus. Degree

A. *Courses*: Thirty graduate credit hours (exclusive of those in MUS 591 Practicum in Teaching) chosen in consultation with the student's advisor, of which up to fifteen may be in individual study of the major instrument or voice. None of the remaining fifteen degree credits may be in individual study of another instrument or voice. The program must include at least two semester courses or one year course outside the following group of studio courses:

- MUS 561 Orchestral Conducting
- MUS 563 Choral Conducting
- MUS 565 University Orchestra (Advanced)
- MUS 570 20th Century Conducted Ensemble
- MUS 571 Advanced Instruction in Instrument or Voice
- MUS 573 Chamber Music
- MUS 575 Master Class in Solo Repertory for Instrument or Voice
- MUS 583 Works for Piano and One Other Instrument or Voice

MUS 565 University Orchestra (Advanced) is required of all students who play orchestral instruments during each semester of residence. If a course in a department other than Music is taken toward the degree, approval by the Graduate Studies Committee must be obtained.

B. *Jury examinations*: These will be offered each semester.

1. The student must take one jury examination during each academic year.

2. The student must take and pass the jury examination offered in the penultimate semester of his or her program.

C. A public recital.

Faculty

- Addison, Adele, *Performing Artist in Residence*, B.Mus., 1946, Westminster Choir College; New England Conservatory of Music: Voice; vocal pedagogy.
- Anderson, Ronald, *Performing Artist in Residence*, M.S., 1958, Juilliard School of Music; Ed.D., 1969, Columbia University: Trumpet; Renaissance and Baroque brass performance practice; 20th century brass performance.
- Arel, Bülent, *Professor and Director of the Electronic Music Studio*, Diploma, 1947, State Conservatory of Ankara, Turkey: Composition; electronic music.
- Baron, Samuel, *Professor*, B.S., 1948, Juilliard School of Music; pupil of George Barrere and Arthur Lora: Flute; chamber music; Baroque performance practice; 20th century wind performance.
- Bonvalot, E. Antony, *Associate Professor*, Ph.D., 1966, Harvard University: Bibliography; English Renaissance music.
- Brehm, Alvin, *Performing Artist in Residence*, Diploma, 1943, Juilliard Graduate School; M.A., 1950, Columbia University: String bass; chamber music; 20th century performance.
- Canin, Martin, *Performing Artist in Residence*, M.S., 1956, Juilliard School of Music: Piano; piano pedagogy.
- Cohen, Isidore, *Performing Artist in Residence*, B.S., 1950, Juilliard School of Music; pupil of Ivan Galamian: Violin, chamber music.
- Des Roches, Raymond, *Performing Artist in Residence*, M. Mus., 1961, Manhattan School of Music: Percussion; 20th century percussion ensemble.
- de Zeeuw, Anne Marie, *Lecturer*, M.Mus., 1971, University of Texas, Austin: Theory.
- Eddy, Timothy, *Performing Artist in Residence and Co-ordinator of Chamber Music*, M.Mus., 1970, Manhattan School of Music: Cello; chamber music; 20th century string performance.
- ^aFuller, Sarah, *Associate Professor*, Ph.D., 1969, University of California, Berkeley: Medieval and Renaissance music.
- Glazer, David, *Performing Artist in Residence*, B.Ed., 1935, University of Wisconsin, Milwaukee: Clarinet; chamber music.
- Graham, John, *Performing Artist in Residence*, B.A., 1960, University of California, Berkeley: Viola; chamber music.
- Greenhouse, Bernard, *Professor*, Diploma, 1939, Juilliard Graduate School: Cello; cello pedagogy; chamber music.
- Ingraham, Paul, *Performing Artist in Residence*, B.S., 1953, Ithaca College: Horn; chamber music.
- Kaiser, Amy, *Assistant Professor and Director of the University Chorus*, M.A., 1969, Columbia University: Choral conducting.
- Kalish, Gilbert, *Performing Artist in Residence*, B.A., 1956, Columbia University: Piano; 20th century piano performance.

^a On leave academic year 1976-77

- Karasick, Simon, *Director of the University Band*, B.Mus., 1933, Eastman School of Music: Trombone; wind ensemble.
- Kramer, Richard, *Associate Professor*, Ph.D., 1974, Princeton University: 18th century theory; Beethoven.
- Kreiselman, Jack, *Performing Artist in Residence*, Manhattan School of Music; pupil of Simeon Bellison and Simon Kovar: Clarinet; 20th century wind performance.
- Lawton, David, *Associate Professor and Director of the University Orchestra*, Ph.D., 1973, University of California, Berkeley: Orchestral and opera conducting; 19th century studies.
- Layton, Billy Jim, *Professor and Director of Graduate Studies*, Ph.D., 1960, Harvard University: Composition; analysis.
- ^aLessard, John, *Professor*, Diploma, 1940, Ecole Normale; Diploma, 1941, Longy School of Music: Composition.
- Lewin, David, *Professor*, M.F.A., 1958, Princeton University: Composition; tonal and post-tonal theory; analysis; computer applications to music.
- Nemiroff, Isaac, *Professor*, Cincinnati Conservatory of Music; pupil of Stefan Volpe: Composition.
- Roseman, Ronald, *Performing Artist in Residence*, B.A., 1955, Queens College: Oboe; chamber music; 20th century wind performance.
- ^bRosen, Charles, *Professor*, Ph.D., 1951, Princeton University: Interdisciplinary studies in music, literature, art and philosophy; piano.
- Semegen, Daria, *Instructor*, M.Mus., 1971, Yale University: Composition; electronic music.
- Starr, Lawrence, *Assistant Professor*, Ph.D., 1973, University of California, Berkeley: 20th century music; analysis.
- Treger, Charles, *Performing Artist in Residence*, pupil of Hugo Kortschak and William Kroll: Violin; chamber music.
- Treitler, Leo, *Professor and Chairman*, Ph.D., 1966, Princeton University: Medieval and early Renaissance music; 20th century music; history of music theory; cultural historiography.
- Weisberg, Arthur, *Performing Artist in Residence and Conductor of the Chamber Orchestra*, Juilliard School of Music; pupil of Simon Kovar: Bassoon; Orchestral Conducting; 20th century conducted ensemble.
- Winkler, Peter, *Assistant Professor*; M.F.A., 1967, Princeton University: Composition; theory and history of popular music.
- Wolf, R. Peter, *Instructor*, M.Phil., 1969, Yale University; pupil of Gustav Leonhardt and Ralph Kirkpatrick: 18th century French opera (esp. Rameau); harpsichord and Baroque keyboard music; Baroque performance practice.

^a On leave academic year 1976-77

^b On leave spring 1977

DEPARTMENT OF PHILOSOPHY

The Department of Philosophy offers programs leading to the Master of Arts in Philosophical Perspectives, and to the Doctor of Philosophy. The two programs are extremely different in content and purpose.

The Masters Program

The Master of Arts in Philosophical Perspectives (MA/PP) concentrates on the development of an *appreciation* of the contribution of philosophical perspective to the self-understanding of men and women in a changing world. The principal focus of the program is on contemporary problems.

The program is designed with principally two kinds of students in mind: (a) those currently enrolled in Stony Brook's MA/LS program (i.e., CED); and (b) those who received their baccalaureate degree some years ago, and who are desirous of returning to school to broaden or continue their education in this area.

Admission to the M.A. Program

For admission to the M.A. program in philosophical perspectives, the following are required:

- A. A bachelors degree from a recognized institution.
- B. An average of at least B in the last two years of undergraduate work or six credits of graduate work with a B average in the MA/LS program or another recognized graduate program.
- C. An official transcript of undergraduate record and of any work completed in the MA/LS program or other graduate program.
- D. Letters of recommendation from two previous or current instructors.
- E. An admission essay of roughly 500 words expressing your interests and expectations of the program as it relates to your current state of life.
- F. Results of the Graduate Record Examination Aptitude Test.

Deficiencies in these requirements shall not automatically bar admission to the program, although a candidate may be required in such cases to enroll in philosophy courses in the MA/LS program prior to consideration of his/her application.

Requirements for the M.A. Degree

A. *Formal course requirements:* A student preparing for the degree of Master of Arts in Philosophical Perspectives is required to take a total of ten courses amounting to 30 graduate credit hours. These courses will include seven courses on contemporary problems (e.g. communication, death, feminism), two courses in the history of philosophical perspectives (PHI 524-25), and one course in the detailed analysis of a philosophical text (PHI 527 or 528 or 587).

Additionally, the student is required to take two courses (PHI 588

and 589) in directed research leading to the M.A. paper or the M.A. practicum.

B. 1. *The M.A. Paper*: The paper is a research paper in which the student exhibits his/her ability to locate, comprehend and present in a communicatively sensitive form the fruits of mature philosophical research as that bears upon one or another contemporary problem. The paper will usually be written under the direction of the instructor in one of the seven perspective courses and will eventually be presented to that instructor and one other faculty member upon completion. Students who have not completed the paper by the end of the third semester must enroll for at least one credit of work during the semester in which they intend to complete the paper.

2. *The M.A. Practicum*: For those students who are teaching in high school and who can obtain permission to introduce a philosophy course into the curriculum, the supervised preparation and teaching of this course will substitute for the M.A. paper. The student will be required to present course plans, bibliographies and other evidence of his/her academic readiness prior to the teaching of the course. During the course, the construction and grading of exams and papers will be supervised and several classes will be visited. Overall evaluation will take place at the conclusion of the course. The Philosophy Department has some resources to locate programs or schools where the student might teach such a course.

C. *Performance*: An average grade of B is the minimum, but no more than six credits of C's will be permitted to count for credit toward the degree. Any student who accumulates 12 credits of C grades will be dropped from the program.

D. *Credit for work done elsewhere*: A maximum of six hours of post-baccalaureate credit in philosophy from other institutions may be transferred towards the M.A. in Philosophical Perspectives. The transference of credit will not be automatic, but will depend upon the suitability of the courses to the goals of the program and upon the grades received in the courses. All credits in philosophy earned in Stony Brook's MA/LS program are transferable, subject only to the performance and distribution regulations mentioned above. Credits transferred from other institutions will not be accepted toward the PHI 524, 525 courses.

General Aims of the Doctoral Program

1. To cultivate the principal contemporary styles of philosophical reasoning;
2. To engage in philosophical discourse about aspects of contemporary human experience that involve communication with other disciplines;
3. To bring philosophers using different styles into ongoing dialogue on such contemporary interface issues;

4. To make explicit the methodology and rational values involved in the different contemporary styles of philosophical reasoning.

Requirements for Admission into the Doctoral Program

Students will be admitted to the doctoral program who have a bachelors degree with a major in philosophy, provided their undergraduate work has introduced the student to the history of philosophy and given some acquaintance with a variety of contemporary philosophical styles. In the case that these requirements are not fulfilled, the department may require that some specific remedial work be done. In applying for admission, a student must also submit a philosophical essay he/she has written.

Requirements of the Doctoral Program

The doctoral program is designed so that a doctoral student will ordinarily be able to complete the Ph.D. in four years of full-time work after admission to the doctoral program. No minimum length of time, however, is prescribed. Requirements are as follows:

A. Four doctoral courses or seminars in the history and the traditional core areas of philosophy. Doctoral students must take PHI 500 History of Philosophy and Philosophical Texts which will be offered every year. In addition, they will take their choice of three out of six graduate courses or seminars offered in a two-year cycle, where at least one course will have to be taken from each of the following groups:

Group A: PHI 501 Philosophy of Science and Logic; PHI 502 Metaphysics and Systematic Philosophy; PHI 503 Epistemology; Philosophy of Mind, Perception and Experience.

Group B: PHI 504 Philosophy of Value, Culture and Society; PHI 505 Aesthetics and Rhetoric; PHI 506 Oriental Philosophy.

B. Participation in two Ongoing Style Seminars is required. Style Seminars are given in the spring term and are preceded by Proseminars in the fall term. Proseminars are recommended for students taking the respective Style seminars.

Proseminars are advanced introductions to contemporary philosophical styles. Proseminars assume a general background in philosophy and serve to acquaint the beginning graduate student with the methods, presuppositions, and operational style of the philosophies involved. Proseminars balance readings of important texts with projects, papers, and discussions designed to prepare the student for the advanced Ongoing Style Seminars.

Ongoing Style Seminars are highly advanced courses in one or another of the main contemporary philosophical styles. These seminars have as prerequisites some advance preparation on the part of the students involved. The seminar, chaired by an accomplished philosopher of the style involved, is to be an ongoing display of the philo-

sophical method in question through the discussion of a problem of the seminar's choice.

C. Participation in two Ongoing Interface Seminars where communication is established between philosophy and some other discipline. The content of interdisciplinary seminars will vary from term to term. Interface seminars are to be chaired by staff members acquainted with fields of study outside philosophy. Interface seminars will draw upon visiting and interdepartmental participants as well.

Over and above these requirements, the student will be guided by the director of graduate studies in planning and executing an appropriate program of philosophical studies.

Combined Ph.D. in Philosophy and M.A. or M.S. in Some Other Discipline

Courses in departments other than philosophy may be accepted as part of a doctoral program in philosophy or even required by such if the director of graduate studies so decides in a particular case. Students who wish to pursue extensive work in another department may be able to meet the requirements of that department for an M.A. or M.S. degree while earning a Ph.D. in philosophy.

Ph.D. Candidacy

To be promoted to Ph.D. candidacy, a student must, in addition to the above requirements, fulfill the following conditions:

- A. Pass an exam in the main figures, areas, or developments in history of philosophy;
- B. Submit a philosophical essay in a major philosophical style;
- C. Submit a philosophical essay in an interface area;
- D. To have fulfilled the symbolic logic requirement, which is to have reached a degree of proficiency equivalent to having taken one semester of symbolic logic;
- E. To have fulfilled the foreign language requirement, which is to have demonstrated reading competence in the language before the end of the student's first year and to have used the language for a piece of philosophical research in the succeeding year;
- F. To have passed the candidacy Preliminary Exam (see below);
- G. To have been recommended by the graduate faculty to begin work on a dissertation.

The Preliminary Exam will ordinarily be oral. The material for the exam will be drawn up by the student with the help of the faculty advisor, and is subject to the approval of the director of graduate studies and the Graduate Committee of the department. This will be contained in an extended outline of about 4000 words of the area of the student's special competency (usually, the domain in which he or she intends to write the dissertation) and an attached bibliography.

Principal Structures on the Doctoral Level

There will be *Ongoing Style Seminars*, each exploiting a major contemporary method of philosophical reasoning. These styles comprise principally semiotic (or analytic) philosophy, phenomenology or existentialism, and systematic philosophy. These seminars will meet once each year in a tracked sequence. Participants will be both members of the faculty and students.

The Ongoing Style Seminars will discuss (1) contemporary philosophical problems, both narrowly professional and those involving interdisciplinary issues, the topics to be determined by the chairman of the seminar together with the members of the seminar; (2) the methodology, style, and rational values of their own way of philosophical reasoning. The faculty will participate either by engaging in philosophical discourse according to the style appropriate to the seminar, or by raising critical metaphilosophical questions. The aim of the Ongoing Style Seminars is to display the way a philosophical style or sensibility works.

There will also be an unspecified number of *Ongoing Interface (Interdisciplinary) Seminars* where other disciplines are brought into communication with philosophy. These seminars will be chaired by cross-disciplinary appointments or visiting professors or members of the department versed in some discipline other than philosophy. Participants will be both members of the faculty and of the student body.

The Ongoing Seminars will aid in the continuing education of the junior faculty. They will, moreover, be resource seminars for undergraduate teachers who more and more are being asked to say what philosophy is today and to express critical views on current problems often involving an interdisciplinary interface.

In addition to the above structures there is sample flexibility allowed for independent and directed studies. These take a number of forms including a recommended seminar in the teaching of philosophy, PHI 622 Supervised Teaching. This seminar is offered on alternate years. There are also opportunities for individual reading and research projects under faculty direction.

Faculty

Ackley, Sheldon, *Lecturer and Assistant to the President*, Ph.D., 1948, Boston University: Philosophy of law.

Allison, David, *Assistant Professor*, Ph.D., 1974, Pennsylvania State University: Phenomenology, structuralism.

Buchler, Justus, *Distinguished Professor*, Ph.D., 1938, Columbia University: Systematic philosophy.

Dallery, Carleton, *Assistant Professor*, Ph.D., 1968, Yale University: Phenomenology, ancient philosophy, philosophy and medicine.

deNicolas, Antonio, *Associate Professor*, Ph.D., 1971, Fordham University: Indian philosophy.

Dilworth, David, *Associate Professor*, Ph.D., 1963, Fordham University; 1970, Columbia University: East-West comparative philosophy.

- Gelber, Sidney, *Professor and Academic Vice President*, Ph.D., 1954, Columbia University: Political philosophy.
- Heelan, Patrick, *Professor and Vice President for Liberal Studies*, Ph.D., 1952, St. Louis University; 1964, University of Louvain, Belgium: Philosophy of science.
- Hill, Patrick J., *Associate Professor*, Ph.D., 1969, Boston University: Communication, community, education.
- Howard, Dick, *Associate Professor*, Ph.D., 1970, University of Texas: Political and social philosophy, Marxism.
- Ihde, Don, *Professor and Chairman*, Ph.D., 1964, Boston University: Phenomenology.
- Miller, Clyde Lee, *Assistant Professor and Undergraduate Program Director*, Ph.D., 1974, Yale University: History of philosophy.
- Ray, Robert, *Lecturer*, 1976, University of California: Philosophy of language, logic.
- Ringelheim, Joan, *Assistant Professor and Director, Masters Program in Philosophical Perspectives*, Ph.D., 1968, Boston University: Philosophy of history, philosophy of social science.
- Silverman, Hugh J., *Assistant Professor*, Ph.D., 1973, Stanford University: History of ideas, continental philosophy, structuralism.
- Slote, Michael, *Associate Professor*, Ph.D., 1965, Harvard University: Epistemology, ethics, metaphysics.
- Spector, Marshall, *Associate Professor*, Ph.D., 1963, Johns Hopkins University: Philosophy of science, modern philosophy.
- Sternfeld, Robert, *Professor*, Ph.D., 1948, University of Chicago: Logical theory, epistemology.
- Tejera, Victorino, *Professor*, Ph.D., 1956, Columbia University: Aesthetics, classical philosophy.
- Watson, Walter, *Associate Professor and Director, Ph.D. Program*, Ph.D., 1958, University of Chicago: History of philosophy.
- Welton, Donn, *Assistant Professor*, Ph.D., 1973, Southern Illinois University: Phenomenology and social philosophy.
- Williams, Peter, *Assistant Professor*, Ph.D., 1973, Harvard University: Philosophy of law, ethics.
- Wood, Susan B., *Assistant Professor*, Ph.D., 1976, State University of New York, Buffalo: Logic.
- Zemach, Eddy, *Associate Professor*, Ph.D., 1965, Yale University: Aesthetics, metaphysics.
- Zyskind, Harold, *Professor*, Ph.D., 1964, University of Chicago: Philosophic rhetoric, history of philosophy.

Political Science
Psychology
Sociology

The Behavioral Sciences

DEPARTMENT OF POLITICAL SCIENCE

Masters Program in Public Affairs

Objectives: The M.A. program in Public Affairs emphasizes the analytic skills and substantive knowledge necessary for the analysis of public and governmental affairs, and for the handling of staff and managerial responsibilities in the public sector. Both full-time and part-time programs are offered.

Admission Requirements

1. A baccalaureate degree or its equivalent.
2. A minimum grade point average of 3.0 in undergraduate major; in exceptional cases, students who cannot meet the G.P.A. requirement may be admitted on a provisional basis.
3. Two letters of recommendation and results of the Graduate Record Examination Aptitude Test.

Degree Requirements

The Department will recommend the granting of the M.A. degree upon successful completion of 30 credits of formal graduate courses. These consist of the 24 credits of the core curriculum, and 6 credits of special projects. The special projects may include participation in field research or an internship assignment. A 3.0 average must be earned in the 24 credits of core courses.

Part time students: Part time students must successfully complete POL 510 and 511 before they become eligible for admission to any other course. They cannot enroll in POL 580 until they have completed the entire sequence of core courses.

Ph.D. Degree Program in Political Science

Objectives: The Ph.D. degree program in political science is designed to prepare well-qualified students for careers in research and teaching. The program emphasizes (1) broad theoretical scope encompassing a wide spectrum of political science areas rather than intensive speciali-

zation in any one field; (2) systematic and conscious effort to integrate the macro (political systems, institutions, processes) and micro (uniformities and universalities of individual political behavior) aspects of political study; (3) methodological rigor; and (4) intensive training and experience in both teaching and research. Successful candidates must attain both a systematic command of major substantive areas in political science, and an unusually high level of technical skill in either micro or macro analysis. A major portion of each student's training will involve active participation in one or more major research projects.

Admissions Requirements

Applicants for admission to the Ph.D. program in political science must meet the following requirements (in addition to those set forth on pages 44-47 of this *Bulletin*):

1. Submission of G.R.E. Scholastic Aptitude Test Scores (Verbal and Quantitative) from the Graduate Record Examination Board.
2. Prior training to include at least two of the following:
 - a) Basic work in political science.
 - b) Basic work in economics or mathematical sociology.
 - c) Basic work in mathematics and statistics.
 - d) Basic work in biology or psychology.
3. In those cases where the departmental admissions committee deems it desirable, personal interviews with departmental representatives.

Degree Requirements

Candidates must meet the general requirements for the Ph.D. degree set by the Graduate School. Departmental requirements are as follows:

A. *Courses and Hours*: The Graduate School requires four full-time semesters in residence, at least two of them consecutive. The department makes no additional formal requirement, since progress toward the degree depends upon the attainment of requisite levels of competence rather than accumulation of credits. It does, however, normally expect satisfactory completion of the following courses by all candidates:

POL 550-551 Foundations of Political Science
POL 601-602 Teaching Practica
POL 610-611 Research Practica
POL 620-621 Advanced Research Colloquium

B. *Familiarity with the basic literature and substantive knowledge of political science*: Requisite level of attainment is demonstrated by passing a Preliminary Examination (normally at the end of the first year) and a Comprehensive Examination (normally at the end of the second year) with a grade of at least B in each.

C. *Research Skills*: All candidates must demonstrate a high level of proficiency in either micro or macro analysis and in additional skills

(language, etc.) appropriate to the individual candidate's program, as specified by his committee.

D. *Competence in Teaching and Research Operations*: Satisfactory completion of POL 550, 551, 552 and 553. Graduate Assistants engaged in research will enroll in POL 610 or 611; those engaged as teaching assistants will enroll in 601 or 602, as advised by the Director of Graduate Study.

E. *Examinations*: In addition to the tests and examinations in his courses, the Ph.D. candidate must pass with a grade of at least B three other examinations at appropriate points in his career:

1) Preliminary Examination: An oral examination covering the basic literature and substantive knowledge in political science. Normally taken at the end of the first year.

2) Comprehensive Examination: A written and oral examination covering the candidate's chosen area of emphasis: either macro political behavior (attacking problems involving political systems, institutions, and processes with such tools as mathematical modeling and econometrics) or micro political behavior (analyzing individual political behavior with the skills employed in experimental psychology, psychophysics, psychophysiology, and survey research).

3) Dissertation Defense: Dissertation Colloquium organized and administered by the candidate's doctoral committee, open to all interested faculty members and graduate students (of any department or institution), who may also participate in the discussion if they wish.

The Department will also administer *equivalency examinations* in cases where a candidate believes he is sufficiently skilled in the areas described above to justify his proceeding without further formal training, but this will be done only in exceptional cases. It will normally require intensive formal training to attain the level of competence expected of candidates in those areas.

F. *Doctoral Dissertation*: A student is formally admitted to candidacy after he has completed all the above requirements save, of course, the dissertation defense, and has submitted an acceptable dissertation proposal which shows how the student will bring to bear work that he has previously done and/or work yet to be done, in order to meet the department's stringent dissertation requirement.

The dissertation is a substantial and significant piece or collection of original work that conclusively demonstrates the student's ability to contribute new knowledge to the scientific literature on politics. In form, the dissertation is either a single monograph, two or more full-length articles, or the equivalent. In the case of dissertations comprising two or more articles, the topic may vary from one to another. The quality of the dissertation must be demonstrated by (1) approval of the candidate's Dissertation Examining Committee, after an informal Dissertation Colloquium, and (2) acceptance of the monograph or the articles for publication by publishers or in journals deemed appropriate

by the Dissertation Examining Committee, or alternatively, if the Dissertation Examining Committee so recommends, attestation of publishable quality by *two* appropriately qualified scholars outside the department invited by the Committee to review the dissertation. Acceptance of the Dissertation after the Colloquium constitutes the last formal requirement before award of the degree.

G. *Satisfactory Progress*: Upon his initial registration each student, in consultation with the Director of Graduate Study or an Advisor or Doctoral Committee chosen by him, formulates a Plan of Study. His progress in completing that Plan of Study (which may, of course, be changed at appropriate times with appropriate consultation) is reviewed annually. Students who fail to maintain satisfactory progress may be denied permission to continue.

a) Two consecutive semester with a grade-point average of less than 3.0 is considered *prima facie* evidence of unsatisfactory progress.

b) Failure of the preliminary examination or the comprehensive examination is normally considered sufficient reason to terminate the student's program, although in certain exceptional cases the Examining Committee may recommend that the Department is not obligated to accept that recommendation. A grade of B is required to pass the Examinations. A student who obtains a grade of C may be permitted to retake the examination the next time it is offered, but only with the express recommendation of the Examining Committee and never more than once.

Faculty

Ames, Alex, *Adjunct Associate Professor*, M.A., 1965, State University of New York, Albany: Public Administration and Finance.

Cross, David, *Adjunct Associate Professor*, Ph.D., 1965, University of Michigan: Mathematical psychology; psychophysics.

El-Ayouty, Yassin, *Adjunct Professor*, Ph.D., 1966, New York University: International Politics.

Grofman, Bernard, *Assistant Professor*, Ph.D., 1972, University of Chicago: Mathematical models, the theory of committees and elections; democratic theory: sequential decision making; political persuasion and attitude change.

Koppelman, Lee, *Adjunct Professor*, D.P.A., 1967, New York University: Integration of earth science with comprehensive regional planning; Administrative mechanisms for coastal zone management.

Kunz, Arthur, *Adjunct Associate Professor*, M.A., 1957, Virginia Polytechnic Institute and State University: Statistical Research in Data Base files.

Landis, Mark, *Assistant Professor*, Ph.D., 1973, Columbia University: Political psychology; American political parties and elections; Congress; the Presidency.

Lodge, Milton, *Associate Professor*, Ph.D., 1967, University of Michigan: Political psychology and methodology; survey and experimental research.

- Monroe, Kristen, *Assistant Professor*, Ph.D., 1974, University of Chicago: Political Economy.
- Muller, Edward, *Associate Professor*, Ph.D., 1971, University of Iowa: Political behavior, quantitative methods.
- Myers, Frank, *Associate Professor*, Ph.D., 1965, Columbia University: Comparative Politics (Western Europe), Political Theory, Comparative Public Policy.
- Pool, Jonathan, *Assistant Professor*, Ph.D., 1971, University of Chicago: Language policy; language conflict; language and ethnicity; effects of communication on conflict; computer-based experimentation and instruction; attitude measurement.
- Scarrow, Howard, *Professor*, Ph.D., 1954, Duke University: Comparative politics.
- Schneider, Mark, *Assistant Professor*, Ph.D., 1974, University of North Carolina: Public policy; Urban politics.
- Tanenhaus, Joseph, *Professor*, Ph.D., 1953, Cornell University: Public Law; Judicial Process.
- Travis, Martin, *Professor*, Ph.D., 1948, University of Chicago: International Law.
- Tursky, Bernard, *Professor*,¹ 1954, Lowell Institute, Massachusetts Institute of Technology: Political psychology, psychophysiology.
- Whitmore, Charles, *Assistant Professor*, M.Phil., 1973, Yale University: Political psychology, public policy.
- Williams, Jay, *Professor and Chairman*, Ph.D., 1955, University of Chicago: Political theory.

DEPARTMENT OF PSYCHOLOGY

Admission to Graduate Study

- A. A baccalaureate degree in psychology.
- B. An average of 3.0 in all undergraduate course work.
- C. Letters of recommendation from three instructors or academic advisors.
- D. Results from the Graduate Record Examination.
- E. Acceptance by the Department of Psychology and the Graduate School. Students who do not meet these requirements may also apply if they feel that special circumstances should be considered.

Requirements for the Ph.D. Degree

The award of the Ph.D. degree in psychology is intended to signify both a scholarly mastery of the field of psychology and the ability to conduct independent research. In addition to the Graduate School's degree requirements, students must satisfy the following requirements:

- A. *Residence*: Minimum residence required is two years, including

¹ Joint appointment, Department of Psychology

at least two consecutive semesters of full-time study. (Resident students must register for full-time study until advanced to candidacy.) Full time study is 12 graduate credits per semester, which may include credits for supervised teaching and research.

B. *Preliminary Examination*: This examination ordinarily must be completed by the end of the fifth semester of graduate study and consists of two parts. The General Examination includes completion of certain required courses (below) and a review and/or research paper. The Specialty Examination is designed individually for each student depending upon the area of specialization.

C. Successful completion of an approved program of study with a grade of B in each required course. Two semesters of quantitative methods, and three core courses selected from at least two areas outside the area of specialization, are required. The core courses offered include: Behavior Deviation (Clinical); Children's Learning, Cognitive Development, Socialization, and Biochemical Bases of Development (Developmental); Classical Theories and Animal Learning, Cognition and Memory, Sensation and Perception, and Measurement and Scaling (Experimental); Neuropsychology, and Comparative Behavior (Psychobiology); and Contemporary Issues in Social and Community Psychology (Social). Following admission students with graduate training elsewhere can petition to waive course requirements on the basis of their previous work.

D. Supervised teaching and research experience from admission through their fourth year.

E. Two semesters of substantial direct instruction in classroom or laboratory. During these semesters, graduate students must receive teacher evaluations by their students.

F. *Advancement to candidacy*: Upon successful completion of the Preliminary Examination and requirements of the area of specialization, the student is recommended for advancement to candidacy for the Ph.D.

First year evaluation: The progress of each first year graduate student is reviewed at the end of the academic year by the entire faculty. The purpose of this review is to allow the student to withdraw without an unusually heavy investment of time when, in the opinion of the department, the student would not pass the Preliminary Examination at the Ph.D. level or produce a suitable dissertation. Any student whose performance is below the standard of the Ph.D. established by the Department of Psychology may be asked to withdraw. Under certain circumstances a student may be permitted to obtain a terminal Master of Arts degree after passing the Preliminary Examination at the M.A. level, satisfactorily completing the required courses, and completing 30 graduate semester hours of study culminating in an M.A. thesis.

M.A. Degree for Doctoral Program students: The department will recommend granting the M.A. degree to students who have com-

pleted all second year requirements of the department and of their program area, and completed a research paper (which need not be presented in the form of a thesis), upon the recommendation of the student's program area.

Graduate Programs in Psychology

The graduate programs in psychology attempt to provide the student with training in general psychology and in the areas of specialization by emphasizing the laboratory apprenticeship and the seminar-tutorial method. Students are encouraged to become involved in ongoing research immediately upon entering graduate school and to engage in independent research when sufficient skills and knowledge are acquired. The department provides seminars and laboratory experience in the student's area of specialization as soon as possible. Students may specialize in any of the following areas of study:

Clinical Psychology

The clinical training program prepares the student to function as both a behavioral scientist and as a practicing professional psychologist by providing the necessary theoretical background and specific techniques. The program stresses the application of operant, cognitive, and social principles in the study of behavior disorders, and emphasizes a behavioral approach to therapy. A separate brochure describing this program is available upon request.

Psychobiology (Comparative-Physiological Psychology)

The program is oriented towards research in areas of comparative animal behavior and the anatomical, physiological, and chemical basis of human and animal behavior. An interdisciplinary program in psychobiology is offered jointly with the Biological Sciences Department and focuses on behavioral psychology, ethology, and animal social behavior, with emphasis on both field and laboratory methods.

Developmental Psychology

The program in developmental psychology provides students with research training in cognitive development, personality formation, behavioral analysis, infant growth, and maturation and comparative development. The role of clinical, experimental, and social psychological theories and factors in human development provides major focus of the area.

*Experimental Psychology**

The experimental psychology program offers training in a broad range of experimental areas including sensation and perception, psycho-

* This program will consider applications for part-time study ordinarily requiring registration for six graduate credit hours until advancement to candidacy. Only students pursuing full-time study are eligible for financial assistance.

physics and measurement theory, operant and classical conditioning, and cognition and memory.

*Social Psychology**

The program is exploring innovative directions for social psychology in addition to providing training in traditional theories and methods. The newer areas include historical and critical studies of society and of the social sciences (with focus on economic, class, race, and sex factors), and community and environmental psychology.

Transfers between areas of specialization require approval of a formal application.

Faculty

Birns, Beverly, *Adjunct Professor*¹, Ph.D., 1963, Columbia University: Child development, neonates, special class differences, cognitive development, Piagetian theory, psychology of social differences, psychology of women.

Bramel, Dana, *Professor*, Ph.D., 1960, Stanford University: Interpersonal perception, racism, social class, psychoanalytic theory, political implications of social psychology.

Calhoun, James F., *Associate Professor and Director of Psychological Center*, Ph.D., 1969, University of Illinois: Personalized systems of instruction, examination of mental health needs and services, study of person situation interactions.

Copemann, Chester D., *Assistant Professor*, Ph.D., 1973, State University of New York, Stony Brook: Addictive behavior.

Coulter, Xenia, *Assistant Professor*, Ph.D., 1974, Princeton University: Animal learning and memory, Pavlovian conditioning, motivation, developmental psychobiology, development of learning and memory.

Cross, David, *Associate Professor*, Ph.D., 1965, University of Michigan: Psychophysics, scaling and measurement, mathematical models.

Davison, Gerald C., *Professor*, Ph.D., 1965, Stanford University: Psychophysiological analysis of relationships between anxiety and sexual arousal, and rational-emotive therapy, legal issues.

D'Zurilla, Thomas J., *Associate Professor*, Ph.D., 1964, University of Illinois: Problem-solving training, self control, marital therapy.

Emmerich, David, *Associate Professor and Director of Resources*, Ph.D., 1967, University of Indiana: Sensory processing (especially psychoacoustics), perception, psychophysics, and decision theory.

Friend, Ronald J., *Associate Professor*, Ph.D., 1969, University of

* This program will consider applications for part-time study ordinarily requiring registration for six graduate credit hours until advancement to candidacy. Only students pursuing full-time study are eligible for financial assistance.

¹ Joint appointment, Department of Education

- Toronto, Canada: Social and political uses of social psychology, racism, social change, social comparison processes and attribution theory.
- Gagnon, John, *Adjunct Professor*², Ph.D., 1969, University of Chicago: Behavior, marriage and the family, social change.
- Gazzangia, Michael, *Professor*, Ph.D., 1964, California Institute of Technology: Neurological bases of behavior.
- Geer, James H., *Professor and Chairman*, Ph.D., 1963, University of Pittsburgh: Study of sexual behavior with particular emphasis on cognitive factors and their effects upon physiological measures of sexual arousal.
- Goldfried, Marvin R., *Professor*, Ph.D., 1961, State University of New York, Buffalo: Behavioral assessment and cognitive behavior therapy.
- Green, Richard, *Adjunct Professor*³, M.D., 1961, Johns Hopkins University, School of Medicine: Human sexuality and gender identity.
- Johnson, Marcia K., *Associate Professor*, Ph.D., 1971, University of California, Berkeley: Human learning and memory.
- Jones-Emmerich, Helen, *Assistant Professor*, Ph.D., 1972, University of Illinois: Development of memory, particularly visual memory, motivational factors in children's learning.
- Kalish, Harry I., *Professor*, Ph.D., 1952, University of Iowa: Applied learning, biofeedback, animal learning.
- Kaye, Herbert, *Associate Professor and Director of Undergraduate Studies*, Ph.D., 1964, Brown University: Infant sensory and learning processes, learning disabilities, assessment of perceptive and cognitive functioning.
- Krasner, Leonard, *Professor*, Ph.D., 1950, Columbia University: Behavior modification, environmental design.
- Levine, Fredric, *Associate Professor*, Ph.D., 1965, Northwestern University: Behavior modification, motivation, schizophrenia.
- Levine, Marvin, *Professor*, Ph.D., 1959, University of Wisconsin: Human learning with emphasis on cognitive functions doing problem solving.
- Lidsky, Theodore, *Assistant Professor*, Ph.D., 1974, University of Rochester: Basal ganglionic influences in oropharyngeal movements.
- Liebert, Robert, *Professor*, Ph.D., 1966, Stanford University: Observational learning; current experimental and survey studies focus on the instructional and socializing effects of entertainment television.
- LoPiccolo, Joseph, *Adjunct Associate Professor*³, Ph.D., 1969, Yale University: Sexual dysfunction.
- MacDonald, Marian, *Assistant Professor*, Ph.D., 1974, University of Illinois: Behavior assessment, behavior modification with the aging.
- McClure, Gary, *Adjunct Assistant Professor*⁵, Ph.D., 1970, University

² Joint appointment, Department of Sociology

³ Joint appointment, Department of Psychiatry

⁵ Director of Central Islip State Hospital

- of Vermont: Behavior modification, environmental design, institutional design.
- Menzel, Emil, *Professor*, Ph.D., 1958, Vanderbilt University: Primate behavior, social behavior, conversation.
- Morrison, H. William, *Associate Professor and Director of Graduate Studies*, Ph.D., 1962, University of Michigan: Psychological scaling, judgmental and decision processes, perception of abstract relations, instructional techniques.
- Neale, John, *Associate Professor*, Ph.D., 1969, Vanderbilt University: Study of children vulnerable to psychopathology, attention and schizophrenia.
- O'Leary, K. Daniel, *Professor*, Ph.D., 1967, University of Illinois: Marital discord, hyperactivity in children.
- O'Leary, Susan, *Visiting Assistant Professor*, Ph.D., 1972, State University of New York, Stony Brook: Child and family problems, hyperactivity in children.
- Palmer, Francis H., *Professor*, Ph.D., 1950, University of Pittsburgh: Intervention studies, their follow-up and evaluation, cognition and language, particularly the relation between syntactic and semantic development in language comprehension.
- Pomeranz, David M., *Associate Professor*, Ph.D., 1963, University of Rochester: Environmental psychology, behavior setting theory, behavior modification.
- Rachlin, Howard C., *Professor*, Ph.D., 1965, Harvard University: Punishment, avoidance, choice, self-control.
- Rosen, Sharon L., *Assistant Professor*, Ph.D., 1973, University of Michigan: Community psychology, social change, advocacy, halfway houses and alternative institutions, group and community processes, research in field settings.
- Ross, Alan O., *Professor and Director of Clinical Training*, Ph.D., 1953, Yale University: Psychological disorders of children, learning disabilities, reading difficulties.
- Rubenstein, Eli, *Adjunct Professor*³, Ph.D., 1951, Catholic University: Behavioral science with special emphasis on behavioral and social aspects of mental health in illness, role of mass media in influencing behavior, factors influencing sexual behavior.
- Schvaneveldt, Roger, *Associate Professor*, Ph.D., 1967, University of Wisconsin: Human information processing, cognition.
- Singer, Jerome E., *Adjunct Professor*², Ph.D., 1961, University of Minnesota: Social psychology and psychology.
- Springer, Sally, *Assistant Professor*, Ph.D., 1971, Stanford University: Cognitive psychology, sensory processes, psycholinguistics.
- Stamm, John, *Professor*, Ph.D., 1950, University of Southern California: Experimental Neuro-psychology, electro-cortical recordings in children with learning disabilities, higher cortical functions in monkeys and humans.

³ Joint appointment, Department of Psychiatry

² Joint appointment, Department of Sociology

- Sternglanz, Sarah H., *Assistant Professor*, Ph.D., 1963, Stanford University: Human ethology, innate aspects of human social interactions particularly those between infants and adults, sex roles, social learning theory approach to the development of sex differences, particularly those most closely related to academic and career success.
- Stuart, Richard, *Adjunct Assistant Professor*⁶, D.S.W., 1965, Columbia University: Marriage and family treatment, self management, macro social patterns of drug use.
- Tursky, Bernard, *Adjunct Professor*⁴, Lowell Institute, Massachusetts Institute of Technology: Psycho-physiology, biofeedback, psychophysics, laboratory approaches to the study of pain, political behavior.
- Tweedy, James R., *Assistant Professor*, Ph.D., 1968, Stanford University: Cognitive processes, especially word recognition, semantic memory, and psychology of language, quantitative approaches to learning and memory, visual information processing.
- Valins, Stuart, *Professor*, Ph.D., 1964, Columbia University: Cognitive processes, group dynamics, environmental psychology, behavior modification.
- Wanat, Stanley, *Assistant Professor*, Ph.D., 1971, University of Texas: Psychology of reading.
- Weintraub, Sheldon, *Adjunct Assistant Professor*, Ph.D., 1968, University of Minnesota: Study of children vulnerable to psychopathology.
- Whitehurst, Grover J., *Associate Professor*, Ph.D., 1970, University of Illinois: Basic learning processes (e.g., observational learning, operant learning); in the acquisition of complex skills (e.g., language, concepts, operations).
- Wyers, Everett J., *Professor*, Ph.D., 1955, University of California, Berkeley: Comparative and physiological psychology, neuro-biology of instinctive and learned behavior, memory consolidation, ammelid learning.

DEPARTMENT OF SOCIOLOGY

M.A. Degree Program in Applied Sociology

The program is designed to provide a graduate-level introduction to sociological analysis for a select group of persons who (a) teach or intend to teach social studies in secondary schools or (b) hold positions in or wish to work in occupations requiring training in applied social research, including program and policy evaluation. This program is meant to help students develop an understanding of the analytical perspectives of sociology and a familiarity with its methodological approaches, including survey techniques, evaluation designs

⁶ Weight Watchers International

⁴ Joint appointment, Department of Political Science

and observation techniques. The curriculum is adaptable to the ongoing experiences and career-goals of individual students, including the problems of teaching high school sociology and of incorporating sociological perspectives into other social studies courses. The program is thus a logical extension of the department's current offerings in the Continuing Education Department (CED) and draws in part on those courses.

Requirements for admission to this program will normally include:

- A. A baccalaureate program.
- B. Six hours of undergraduate sociology.
- C. A "B" (3.0) average or above is desirable.
- D. Graduate Record Examinations are required.
- E. Personal Interview.

Minimum residence is two semesters of full-time study. The degree will be awarded upon successful completion of thirty graduate credits in sociology, approved by the Director of the Masters Program in Sociology. The courses would normally including the following:

Fall semester: SOC. 514; SOC. 546; and SOC. 694.

Spring semester: SOC. 695; and two graduate courses in sociology selected by the student in consultation with the Director of the program.

Summer session: SOC. 598; a six-credit seminar on sociological analysis, involving participation in either a collective research project on a topic chosen during the Spring and/or an individual research project adapted to the individual's particular interest.

Requirements for the degree may be completed in twelve months of full-time late afternoon and evening study including summer session. Students who are interested in joining the MAD Program on a part-time basis are usually admitted.

Variations in the program may be arranged with the permission of the Director.

Admission to the Doctoral Programs in Sociology

Requirements for admission will normally include:

- A. A baccalaureate degree or its equivalent, as attested to by transcripts of previous academic work.
- B. Satisfactory results on Graduate Record Examinations.
- C. Satisfactory recommendations from former instructors.
- D. Acceptance by the Department of Sociology and by the Graduate School.

Applicants with a masters degree or other advanced work from other institutions must submit all the material cited above and their masters thesis or its equivalent. Credit is not ordinarily given toward the Ph.D. for graduate work done elsewhere. Exceptions are occasionally made for students who enter the program with demonstrability of high levels of expertise in subjects required for the Ph.D.

Requirements for the Ph.D. Degree

A. *Residence:* Minimum residence is generally one year of full-time study. Students are occasionally admitted to the Ph.D. program on a part-time basis, but these arrangements usually require that the students appear on campus during certain periods of the normal working day. Full-time study entails 12 or more graduate credit hours per semester. Since a graduate traineeship is considered part of the academic program, credit hours will be given for supervised teaching. Credit hours may also be given for individual research work outside formal courses but under the supervision of a faculty member.

B. *Courses:* All full-time students are required to take at least eight courses during their first year. These must include two-two course sequences, one in sociological theory (SOC 505 and 506) and one in statistics and research methods (SOC 501 and 502). Ordinarily, two of the eight courses will consist of independent readings or, for those holding graduate traineeships, teaching experience under the supervision of a faculty member.

C. *Area Specialty Examinations:* During the first and second years of graduate study, every student is expected to take and pass four examinations chosen from a list of eight substantive areas deemed central to the discipline. The choice, and to a large extent the timing, of these examinations lies with the student. Those whose performance of these four examinations is not deemed satisfactory are not permitted to continue work on the Ph.D. Under certain circumstances those whose work is unsatisfactory at this stage may be permitted to take a terminal M.A.

D. *Research report:* Every student must submit a research report that demonstrates ability to analyze empirical data and to present findings clearly and systematically. Upon successful completion of all the above requirements along with completion of a minimum of 30 hours of graduate credit, the department will recommend to the Dean of the Graduate School that the student be awarded the M.A. degree as a sign of progress toward the Ph.D. Recipients of the terminal M.A. will not be granted permission to continue.

E. *Teaching requirement:* Graduate training includes supervised teaching experience. After completing C above, students are required to teach an undergraduate course that falls within the general area of their specialization and to repeat that (or a similar) course if their teaching is satisfactory.

F. *Requirements outside of the department:* The student must choose one of three possible options: (1) to demonstrate proficiency in a modern foreign language by passing a suitable examination, or (2) to demonstrate proficiency in mathematics by passing a suitable examination, or (3) to pass with at least a "B" average a program of three graduate courses in other departments determined in consultation with the student's advisor and approved by the Graduate Committee.

G. *Preliminary examination*: This takes the form of an oral examination in the student's specialty to be given only after all the above requirements have been met. It is designed to appraise the student's depth of knowledge in the broad area from within which he or she has selected a dissertation topic and will include a consideration of the dissertation proposal. The content of this area is to be defined individually for each student. It consists of a generally recognized, broad subfield and must deal with related materials from other subfields.

H. *Advancement to candidacy*: The department's recommendation that a student be advanced to candidacy for the Ph.D. is based on passing the Preliminary Examination.

I. *Doctoral dissertation*: It must be an independent piece of research and scholarship representing an original contribution, the results of which are worthy of publication. Upon oral defense and acceptance of the dissertation, the department will recommend to the Dean of the Graduate School that the student be awarded the Ph.D. degree.

The progress of every student will be evaluated by the department at the end of the first full year of graduate study. Those whose performance and ability are clearly below the standard for Ph.D. established by the department will be asked to withdraw before they have made a costly investment of time. If more than four years should elapse between a student's advancement to candidacy and the submission of the finished dissertation, the student's Ph.D. candidacy may lapse and he or she can be required to take a second set of examinations.

After the first year, a progressively larger proportion of a student's time will be spent as a participant in research activities, under the supervision of faculty members. Ordinarily, a student with adequate preparation and involved in full-time study should be able to earn a Ph.D. within four years from the time he or she begins graduate work.

Students who arrived with an M.A. degree in sociology or with three semesters of work in the discipline will be expected to complete some of the requirements above more quickly than indicated.

Faculty

Allison, Paul, *Lecturer*, M.S., 1973, University of Wisconsin: Sociology of science, research methods, statistics.

Cole, Stephen, *Professor*, Ph.D., 1967, Columbia University: Sociology of science, medicine, and the professions.

Collver, O. Andrew, *Associate Professor*, Ph.D., 1964, University of California, Berkeley: Demography, ecology, organizations.

Coser, Lewis A., *Distinguished Professor*, Ph.D., 1954, Columbia University: Theory, sociology of knowledge and intellectuals, conflict and violence.

Coser, Rose Laub, *Professor*, Ph.D., 1957, Columbia University: Medical, family, organizations, socialization.

- Davis, Wallace, *Assistant Professor*, Ph.D., 1974, Princeton University: Theory, sociology of knowledge.
- Dill, Forrest, *Assistant Professor*, Ph.D., 1972, University of California, Berkeley: Law, organizations, criminology, deviance.
- Feldman, Kenneth A., *Associate Professor*, Ph.D., 1965, University of Michigan: Social psychology, higher education.
- Gagnon, John H., *Professor*,¹ Ph.D., 1969, University of Chicago: Sexual behavior, marriage and the family, social change.
- Goode, Erich, *Associate Professor*, Ph.D., 1966, Columbia University: Deviance, criminology.
- Goodman, Norman, *Professor and Chairman*, Ph.D., 1963, New York University: Social psychology, marriage and the family, socialization.
- Gronbjerg, Kirsten, *Assistant Professor*, Ph.D., 1974, University of Chicago: Poverty and welfare, demography, stratification.
- Henry, Paget, *Assistant Professor*, Ph.D., 1976, Cornell University: Theory, political sociology, social change, stratification.
- Hodge, Robert W., *Professor*, Ph.D., 1967, University of Chicago: Stratification, social change.
- Kelman, Howard, *Adjunct Professor*, Ph.D., 1959, New York University: Mental health, rehabilitative medicine and health care.
- Lang, Gladys, *Professor*, Ph.D., 1954, University of Chicago: Mass communications, collective behavior.
- Lang, Kurt, *Professor*, Ph.D., 1953, University of Chicago: Mass communications, collective behavior, military sociology.
- Logan, John, *Assistant Professor*, Ph.D., 1974, University of California, Berkeley: Political sociology, industrial sociology, urban sociology.
- Perrow, Charles B., *Professor*, Ph.D., 1960, University of California, Berkeley: Organizations, social change, industrial sociology.
- Polsky, Ned, *Associate Professor*, B.A., 1948, University of Wisconsin: Deviance, criminology, sociology of art.
- *Rosenberg, Terry J., *Assistant Professor*, Ph.D., 1972, University of Chicago: Demography, race and ethnic relations.
- Rule, James B., *Associate Professor*, Ph.D., 1969, Harvard University: Theory, political sociology, social control.
- Schild, Erling, *Adjunct Professor*, Ph.D., 1965, Hebrew University: Social psychology, mathematical models, games simulation.
- Schwartz, Michael, *Associate Professor*, Ph.D., 1970, Harvard University: Political sociology, methodology, mathematical models, historical methods.
- Selvin, Hanan C., *Professor*, Ph.D., 1956, Columbia University: Methods, statistics, higher education, family.
- *Singer, Jerome E., *Professor*,¹ Ph.D., 1961, University of Minnesota: Social psychology, stress behavior.
- Suttles, Gerald, *Professor*, Ph.D., 1966, University of Illinois: Metropolitan communities, field methods.

¹ Joint appointment, Department of Psychology

* On leave academic year 1976-77

Tanur, Judith, *Assistant Professor*, Ph.D., 1972, State University of New York, Stony Brook: Statistics, methods, social psychology.

Tyree, Andrea, *Associate Professor*, Ph.D., 1968, University of Chicago: Demography, stratification, methods.

Weinstein, Eugene, *Professor*, Ph.D., 1954, Northwestern University: Experimental social psychology, family, methods.

*Weitman, Sasha, *Associate Professor*, Ph.D., 1967, Washington University: Theory, historical sociology, sociology of literature.

Zeitz, Gerald, *Assistant Professor*, Ph.D., 1976, University of Wisconsin: Theory, organizations.

* On leave academic year 1976-77

Biochemistry
Cellular and Comparative Biology
Ecology and Evolution

The Biological Sciences

DIVISION OF BIOLOGICAL SCIENCES

The Division of Biological Sciences consists of three academic departments: Biochemistry, Cellular and Comparative Biology, and Ecology and Evolution. The faculty of these three departments, together with individual members of the Departments of Chemistry, Earth and Space Sciences, and Psychology, the Marine Sciences Research Center, and the School of Basic Health Sciences of the Health Sciences Center, collaborate in operating several different graduate programs in various areas of the biological sciences. Some faculty members participate in more than one of these programs. Through these interdepartmental interactions it is possible to meet the needs of students with diverse intellectual and professional interests without the constraints imposed by traditional departmental boundaries.

The five graduate programs under the auspices of the Division of Biological Sciences are: Cellular and Developmental Biology, Ecology and Evolution, Molecular Biology, Neurobiology and Behavior, and Biology for High School Teachers. The first four of these programs are designed for students seeking the Ph.D. degree while the last leads to the M.A. degree. Each of the programs is directed by a Program Chairperson and an Executive Committee, and each establishes its own entrance standards and degree requirements. Each program also separately evaluates candidates for admission. The paragraphs below describe the five programs in detail, and interested students should address inquiries directly to the appropriate Program Chairperson.

Information on related areas of graduate study in the School of Basic Health Sciences and in the Marine Environmental Studies Program is available elsewhere in this *Bulletin*.

CELLULAR AND DEVELOPMENTAL BIOLOGY (BCD)

The Program in Cellular and Developmental Biology provides training and research opportunities in the physiological and genetic basis of growth, differentiation and morphogenesis of biological systems. Staff members in the Program are engaged in research in the developmental biology of microorganisms, lower and higher plants, insects and invertebrates. The viewpoint is essentially experimental with emphasis

upon regulation of developmental processes at the cellular and organismic levels. A close relationship with staff members in the Molecular Biology and Ecology and Evolution Programs is maintained.

The Division of Biological Sciences is well equipped for work in developmental biology. The modern laboratory facilities include culture rooms, apparatus for continuous and synchronized cell culture, equipment for biochemical and isotopic analyses and electron microscopy facilities. Besides course work and seminars, students in the Program have an early opportunity to work in the laboratories of several different staff members to broaden their experience and to help them decide which area of developmental biology they wish to pursue further.

Admission Requirements

The Program requires the following in addition to the minimum Graduate School admission requirements:

A. Baccalaureate degree in biology or related area, including the following preparation: four semesters of chemistry, including organic chemistry with laboratory; two semesters of college mathematics, including one semester of calculus; and two semesters of physics. Students may be admitted to the Program without some of the above undergraduate courses but will be required to make up these deficiencies during the first year.

B. A Report of Graduate Record Examination Scores.

Ph.D. Requirements

Course Requirements

1. Cell Biology at the graduate level (BCD 656).
2. Developmental Biology at the graduate level (BCD 526).
3. Molecular Genetics (BIO 313); or Microbial Genetics (HBM 503).
4. Biochemistry (BIO 361).
5. One semester of Physical Chemistry or Physical Biochemistry (CHE 153, BMO 502).
6. Student seminar for at least 4 semesters (BCD 531, 532). One acceptable seminar is to be given each semester until advancement to candidacy, and attendance at all student and faculty seminars is required.
7. Two semesters of research (BCD 599) in staff laboratories. The student must work in at least two different laboratories during the two semesters. The duration and the particular laboratories involved will be decided by the Advisory Committee in consultation with the student.
8. Three elective graduate courses to be approved by the student's Advisory Committee.

Residence Requirement

The University requires at least two consecutive semesters of full time

graduate study. The demands of the Program make necessary a longer period of residence.

Teaching Requirement

It is expected that all graduate students completing a doctoral program will have functioned as teaching assistants during at least two semesters of their graduate careers.

Comprehensive Examination

At the beginning of the fourth semester, the student will take a two-day written Comprehensive Examination covering the areas of cell and developmental biology.

Thesis Proposal Examination

After successful completion of the Comprehensive Examination, the student selects a thesis advisor and writes a proposal for thesis research. After approval by the thesis advisor, the proposal is orally defended before a Thesis Proposal Committee.

Advancement to Candidacy

After successful completion of all required and elective courses, the Comprehensive Examination, and the Thesis Proposal Examination, the student will be recommended to the Graduate School for advancement to candidacy.

Ph.D. Dissertation

The research for the Ph.D. dissertation is conducted under the supervision of the Thesis Proposal Committee. A Dissertation Examination Committee is appointed by the Dean of the Graduate School when the thesis nears completion. The Dissertation Examining Committee reads the finished dissertation and gives the candidate an oral examination on the dissertation research and related areas.

M.A. Degree Requirement

The Program normally does not accept a student whose goal is a Master's degree. In exceptional instances, a student already in the Program may be awarded an M.A. degree upon completing an approved course of study, including a minimum of 30 graduate credit hours; passing a comprehensive examination; and presenting and defending a research thesis.

Faculty

Arnheim, Norman, *Associate Professor*², Ph.D., 1965, University of California, Berkeley: Evolution of regulatory mechanisms.

Battley, Edwin H., *Associate Professor*³, Ph.D., 1956, Stanford University: Physiology of growth of microorganisms.

² Department of Biochemistry

³ Department of Cellular and Comparative Biology

- Baylor, Martha, *Lecturer*³, Ph.D., 1941, University of Illinois: Morphogenesis of viruses.
- Delihias, Nicholas, *Associate Professor*⁴, Ph.D., 1961, Yale University: RNA and ribosome structure and function.
- Dewey, Maynard M., *Professor and Chairman*¹, Ph.D., 1958, University of Michigan: Localization of excitable membrane antigens; localization of rhodopsin; structural organization of contractile proteins in invertebrate muscles.
- Dudock, Bernard S., *Associate Professor*², Ph.D., 1966, Pennsylvania State University: Nucleotide sequence of nucleic acids; transfer RNA in development.
- Edmunds, Leland N., *Associate Professor and Divisional Head*³, Ph.D., 1964, Princeton University: Biological clocks and the control of the cell cycle in synchronized cultures of *Euglena*.
- Erk, Frank C., *Professor*³, Ph.D., 1952, Johns Hopkins University: Nutritional factors in insect development.
- Gordon, Joel, *Assistant Professor*¹, Ph.D., 1971, University of Pennsylvania: Control of transcription in cell differentiation.
- Jones, Raymond F., *Professor*³, Ph.D., 1955, University of Durham, England: Physiology and biochemistry of growth and cellular differentiation in algae.
- Katz, Eugene R., *Associate Professor*³ and *Chairperson, Cellular and Developmental Program*, Ph.D., 1969, University of Cambridge, England: Biochemical genetics and development in cellular slime molds.
- Krikorian, Abraham D., *Associate Professor*³, Ph.D., 1965, Cornell University: Biochemical differentiation in cultured cells of angiosperms.
- Lyman, Harvard, *Associate Professor*³, Ph.D., 1960, Brandeis University: Control mechanisms in the biogenesis, development and replication of chloroplasts and other cellular organelles.
- Merriam, Robert W., *Associate Professor*³, Ph.D., 1953, University of Wisconsin: Control of macromolecular synthesis in amphibian oögenesis.
- Palevitz, Barry, *Assistant Professor*³, Ph.D., 1971, University of Wisconsin: Plant cell biology; microfilaments and microtubules in cell morphogenesis and differentiation.
- Poccia, Dominic L., *Assistant Professor*³, Ph.D., 1971, Harvard University: Chromosome function during sea urchin development; centriole function.
- Tunik, Bernard, *Associate Professor*³, Ph.D., 1959, Columbia University: Physiology of muscle cells.
- Walcott, Benjamin, *Assistant Professor*¹, Ph.D., 1968, University of Oregon: Cell motility; structure and function of the eye of *Aplysia*; contractile mechanisms of insect muscle; electron microscopy.

¹ Department of Anatomical Sciences

² Department of Biochemistry

³ Department of Cellular and Comparative Biology

⁴ Department of Microbiology

- Williams, David L., *Assistant Professor*⁵, Ph.D., 1972, University of Illinois: Hormonal control of transcription.
- Williamson, David, *Associate Professor*¹, Ph.D., 1959, University of Nebraska: Biochemical and structural aspects of sex-ratio determining microorganisms in insects and plants; insect cell cultures.
- Wimmer, Eckard A., *Associate Professor*⁴, Ph.D., 1962, University of Göttingen, Germany: Nucleic acid biochemistry in animal viruses.

ECOLOGY AND EVOLUTION (BEE)

The Program in Ecology and Evolution provides training and research opportunities on a broad spectrum of theoretical, laboratory, and field problems involving diverse groups of terrestrial and marine organisms in geographic regions ranging from the tropics to the Arctic. The Program also includes a diversity of approaches to ecological and evolutionary problems, including population dynamics from a behavioral, mathematical and experimental approach, as well as study of field populations. Taxonomic theory and methodology (especially numerical taxonomy), and certain aspects of physiology, genetics (especially population genetics), marine biology, multivariate statistics, and systems analysis are also being studied in relation to ecological and evolutionary problems. The Program also includes staff whose primary activities lies in the area of conservation (both resource management and pollution problems) and who are actively involved in ecologically-based social action in the Long Island area and on a national and international scale.

Research facilities include extensive greenhouse and controlled growth chamber facilities, computer laboratory (terminals, ModComp IV mini-computer, and remote job entry to University's Univac 1110 computer), and electrophoresis laboratory. Flax Pond, a near-by salt-marsh with an associate marine laboratory, and near-by fields, woods, ponds and beaches offer many possibilities for field research.

Admission Requirements

The Program requires the following in addition to the Graduate School admission requirements:

- A. Baccalaureate degree, which should include formal training in genetics, ecology, and at least one course specializing in the biology of a particular group of organisms.
- B. Report of Graduate Record Examination scores.
- C. Acceptance by the Program and by the Graduate School.

¹ Department of Anatomical Sciences

⁴ Department of Microbiology

⁵ Department of Pharmacological Sciences

Ph.D. Requirements

Course Requirements

1. Biometry (BEE 552), preferably taken during the student's first semester.
2. Research Areas in Ecology and Evolution (BEE 556).
3. Colloquium in Ecology and Evolution (BEE 671).
4. Enrollment normally expected in one of a variety of small seminars every semester.
5. A Diagnostic Examination is given to all entering students early in the fall semester to aid in the selection of a curriculum. Candidates for the Ph.D. degree must satisfactorily fulfill those recommendations arising from this examination as well as other recommendations made by the student's Advisory Committee. The Program faculty feel that each student will require advanced training in various ancillary disciplines appropriate to the student's chosen field of research. Requirements for any specific student will be determined by the student's Advisory Committee and might include one or more foreign languages or advanced study in mathematics, statistics, computer science, biochemistry, or other areas.

Teaching Requirement

It is expected that all graduate students completing a doctoral program will have functioned as teaching assistants during at least two semesters of their graduate careers.

Residence Requirement

At least two consecutive semesters of full time graduate study are required. The demands of the Program usually make necessary a longer period of residence.

Preliminary Examination

After completing the course of study arising from the results of the Diagnostic Examination, and after fulfilling other requirements that may be recommended by the Advisory Committee, a student may apply to take a preliminary examination. Normally this examination will be taken no later than the sixth semester after entrance. The Preliminary Examination will be partly written and partly oral.

Advancement to Candidacy

When all the above requirements have been completed, the Program faculty will recommend the student to the Graduate School for advancement to candidacy.

Research and Thesis

A thesis is required for the Ph.D. degree. It must contain the results of original and significant investigation. A thesis proposal must be approved by the Program faculty during an early stage of a student's research.

Final Examination

The completed thesis must be approved by the student's Advisory Committee. A Dissertation Examining Committee is then appointed by Dean of the Graduate School. A formal public oral defense of the thesis is scheduled, at which the student presents his/her findings and is questioned by members of the Examining Committee and by other members of the audience.

M.A. Degree Requirements

The Program normally does not accept a student whose goal is an M.A. degree. In exceptional instances, a student already in the Program may be awarded an M.A. degree upon completion of an approved course of study, including 30 Graduate credit hours; a comprehensive examination; and a research thesis.

Faculty

- Arnheim, Norman, *Associate Professor*², Ph.D., 1965, University of California (Berkeley): Macromolecular evolution; the evolution of regulatory systems.
- Baylor, Edward R., *Professor*^{6,8}, Ph.D., 1949, Princeton University: Surface chemistry; oil spills; ethology.
- Bentley, Barbara L., *Assistant Professor*⁶, Ph.D., 1974, University of Kansas: Plant ecology; plant-animal interactions; tropical ecology.
- Bretsky, Peter W., *Associate Professor*⁷, Ph.D., 1967, Yale University: Evolution of Paleozoic benthic marine communities.
- Carroll, C. Ronald, *Assistant Professor*⁶, Ph.D., 1974, University of Chicago: Insect ecology, social insects, agricultural ecology, interactions of plants and animals, tropical biology.
- Creel, Norman, *Associate Professor*¹, Ph.D., 1967, Eberhard Karls University, Tübingen, Germany: Primate systematics with emphasis on numerical methods; biostereometrics; evolution of human populations; inheritance of polyfactorial traits in human populations.
- Farris, James S., *Associate Professor*⁶, Ph.D., University of Michigan: Theory of phylogenetic inference.
- Flessa, Karl W., *Assistant Professor*⁷, Ph.D., 1972, Brown University: Paleobiogeography and continental drift; quantitative studies of phanerocic diversity fluctuations.
- Futuyma, Douglas J., *Assistant Professor*⁶, Ph.D., 1969, University of Michigan: Coevolution of species, especially of plants and insects; effects of evolution on the structure of ecological communities.
- Hechtel, George J., *Associate Professor*⁶, Ph.D., 1962, Yale University: Systematics and zoogeography of marine Demospongiae.

¹ Department of Anatomical Sciences

² Department of Biochemistry

⁶ Department of Ecology and Evolution

⁷ Department of Earth and Space Sciences

⁸ Marine Sciences Research Center

- Koehn, Richard K., *Associate Professor*⁶, Ph.D., 1967, Arizona State University: Population genetics, enzyme function and adaptation in natural populations.
- Levinton, Jeffrey S., *Associate Professor*⁶, Ph.D., 1971, Yale University: Marine benthic ecology, population genetics of bivalve mollusks, paleoecology.
- Okubo, Akira, *Professor*⁸, Ph.D., 1963, The Johns Hopkins University: Oceanic diffusion; animal dispersal; mathematical ecology.
- Palmer, Allison R., *Professor and Chairman*⁷, Ph.D., 1971, University of Minnesota: Paleobiogeography; Cambrian stratigraphy and trilobite systematics.
- Rohlf, F. James, *Professor and Chairman*⁶, Ph.D., 1962, University of Kansas: Multivariate data analysis techniques applied to problems in taxonomy and ecology; mathematical population genetics.
- Slobodkin, Lawrence B., *Professor*⁶, Ph.D., 1951, Yale University: Evolutionary strategy with reference to species diversity, timing of responses, self image; adaptive mechanisms of Hydra.
- Smolker, Robert E., *Associate Professor*⁶, Ph.D., 1955, University of Chicago: Applied ecology; environmental impact analysis; public interest environmental law.
- Sokal, Robert R., *Professor*⁶, Ph.D., 1952, University of Chicago: Theory of systematics, numerical taxonomy; geographic variation and population phenetics in the aphid genus *Pemphigus*.
- Turner, John R. G., *Associate Professor*⁶, D.Phil., 1967, University of Oxford, England: Evolution and population genetics; the genetics and evolution of mimicry; the genetic control of linkage.
- Walcott, Charles, *Associate Professor*³, Ph.D., 1959, Cornell University: Neurophysiology.
- Walsh, John J., Brookhaven National Laboratories, *Adjunct Associate Professor*^{6,8}, Ph.D., 1969, University of Miami: Upwelling ecosystems; phytoplankton ecology; modeling of continental shelf ecosystems.
- Williams, George C., *Professor*⁶, Ph.D., 1955, University of California (Los Angeles): Evolution of life-history strategies; ecology and population genetics of marine fishes.

M.A. PROGRAM IN BIOLOGY FOR HIGH SCHOOL TEACHERS (BHT)

The Program in Biology for High School Teachers is concerned with the development and maintenance of the highest quality of high school biology teaching. Emphasis is placed on modern developments in the following areas: physiological and biochemical aspects of cell growth and differentiation; marine and environmental biology; the behavior and social patterns of animals; the ways in which micro-

³ Department of Cellular and Comparative Biology

⁶ Department of Ecology and Evolution

⁷ Department of Earth and Space Sciences

⁸ Marine Sciences Research Center

organisms, plants and animals reproduce, develop and function; and the strategies and techniques of biological research.

Admission Requirements

- A. Baccalaureate degree with a science major (Biology or Science Education).
- B. Acceptable general and biology Graduate Record Examination Scores.
- C. Official transcripts of undergraduate grades demonstrating an acceptable grade point average.
- D. Evidence that the applicant is currently teaching biology or general science on a full time basis in grades 7-12 and will be teaching biology or general science the following year. Others may seek admission to the Program through special permission of the Program Chairpersons.
- E. Three letters of recommendation from professional colleagues, including current principal or other administrator. Recent graduates may submit two letters from professional colleagues and one from a former undergraduate instructor.
- F. Evidence of professional growth in at least one of the following forms:
 - 1. Membership in national, state and/or local biology or science teacher organizations.
 - 2. Publications.
 - 3. Fellowships, grants-in-aid or awards in biology.
- G. Acceptance by the Program and by the Graduate School.

M.A. Degree Requirements

Course Requirements

- 1. Successful completion of an approved course of study, including at least 30 graduate credit hours. Courses are to be selected from the offerings of the various graduate programs in the Division of Biological Sciences. No more than six graduate credits may be transferred from programs outside the Division of Biological Sciences, and these must be approved by the Program Chairpersons.
- 2. Research Techniques for High School Teachers (BHT 563). In this one-semester course a candidate, under direction, will experiment with teaching methods which will include demonstrating and analyzing biological processes in a high school laboratory. Emphasis will be placed on simple and innovative technique for handling plants and animals, methods of quantitative observation and analysis, procedures for the analysis of quantitative observations, and library research.

Thesis

Independent laboratory, field or theoretical research project under the supervision of a staff member. A formal meeting with the student's advisor and the Program Chairpersons will be held on the subject

matter of the proposed research to insure that the student is ready to conduct the research and write the thesis. The finished thesis must be accepted by a Reading Committee of at least 3 members of the Program staff. The Reading Committee will consist of the Program Chairpersons and other members selected by the Program Chairpersons after consultation with the candidate and his/her sponsor.

Comprehensive Examination

Upon acceptance of the thesis by the Reading Committee, there will be a Comprehensive Examination which will cover the subject area of the thesis and all areas of biology. The Comprehensive Examination will be given no later than one week before the end of the semester in which the final work in the Master's Program is done.

Recommendation for Awarding of Degree

After satisfactory completion of the above requirements, a recommendation will be made to the Dean of the Graduate School for the awarding of the M.A. degree.

Faculty

Carlson, Albert D., *Associate Professor*³, Ph.D., 1960, State University of Iowa: Physiology of invertebrate nervous systems; insect neuropharmacology; neuronal control of flash patterns by fireflies.

Erk, Frank C., *Professor*³, Ph.D., 1952, Johns Hopkins University: Nutritional factors in insect development.

Hechtel, George J., *Associate Professor*⁶, Ph.D., 1962, Yale University: Sponge systematics and zoogeography.

Jones, Raymond F., *Professor*³, Ph.D., 1955, University of Durham, England: Physiology and biochemistry of growth and cellular differentiation in algae.

Laser, Kenneth D., *Assistant Professor*³ and *Chairperson, Program for High School Teachers*, Ph.D., 1972, Iowa State University: Developmental anatomy and morphology of vascular plants: ultrastructure, microsporogenesis, secretory structures, aquatic botany.

Mallon, Elizabeth J., *Lecturer*³ and *Chairperson, Program for High School Teachers*, Ph.D., 1968, University of Michigan: Biology education; cognitive development and processes; curriculum; research techniques.

MOLECULAR BIOLOGY (BMO)

The Program in Molecular Biology is designed to prepare the student to formulate and attack biological problems at the molecular and cellular levels. The Program accommodates a broad spectrum of interests, including the chemical basis of enzyme action, the physical biochemistry of macromolecules, the structure and function of proteins,

³ Department of Cellular and Comparative Biology

⁶ Department of Ecology and Evolution

the biosynthesis of proteins and nucleic acids, the molecular and cellular bases of gene expression, metabolic control mechanisms, membrane biochemistry, contractile systems, and ultrastructure. A full range of modern facilities is available for research in all these areas. The faculty of this Program include all members of the Department of Biochemistry plus faculty drawn from other departments in the Division of Biological Sciences, from the School of Basic Health Sciences, and from the Department of Chemistry.

Admission Requirements

The Program requires the following in addition to the Graduate School admission requirements:

- A. Baccalaureate degree with the following minimal preparation: mathematics through one year of calculus; chemistry, including organic chemistry and physical chemistry; general physics; and one year of biology.
- B. Letters from three previous instructors and a report of Graduate Record Examination scores.
- C. Acceptance by the Program and by the Graduate School. In special cases, students not meeting all of the requirements listed in A above may be admitted, but such students must immediately remedy these deficiencies.

Ph.D. Requirements

Course Requirements

1. Core courses:
 - (a) Basic courses in biochemistry and in molecular genetics.
 - (b) Protein and Nucleic Acid Biosynthesis (BMO 504), Physical Biochemistry (BMO 502), Enzymology (BMO 513), and Experimental Biochemistry (BMO 509-510). Experimental Biochemistry is a year-long course in which the student spends a half semester in each of four different faculty laboratories actively participating in the ongoing research work of the laboratory.
2. Two elective courses in molecular biology or related fields.
3. Enrollment every semester in three seminar courses: Colloquium in Molecular Biology (BMO 601-602), which is a series of invited lectures by visiting scientists from other institutions; Student Seminar (BMO 603-604), in which each student presents a talk on a topic from the current literature; and Molecular Biology Workshop (BMO 605-606), in which faculty members, postdoctoral fellows and advanced students present informal progress reports on their current research activities.

Residence Requirement

The University requires at least two consecutive semesters of full time graduate study. The demands of the Program make necessary a longer period of residence.

Teaching Experience

All students in the Program, whether or not they are supported by Teaching Assistantships, are required to gain experience in teaching by assisting in laboratory sections, leading discussion sections or helping to formulate and grade examination papers. The teaching experience may be in either undergraduate or graduate courses, and is to extend over a period of at least four semesters.

Qualifying Examination

In the middle of the second year all students take a two-day written Qualifying Examination covering the material of the core courses. This examination tests the student's ability to integrate the basic concepts and information from the core courses and to apply them to current problems in molecular biology.

Proposition Examination

After passing the written Qualifying Examination, each student is required to prepare and defend one proposition. The student proposes an original mechanism or theory which could serve to explain a biological phenomenon in molecular terms, and devise hypothetical experiments designed to test the proposal. The proposition may be in any area of molecular biology, including the probable area of the Ph.D. thesis. The student presents a detailed write-up of the background and logic of the proposition and the experiments proposed to test it, which then forms the basis for an oral Proposition Examination.

Advancement to Candidacy

When the above requirements have been satisfactorily completed, a recommendation for advancement to candidacy for the Ph.D. will be forwarded to the Graduate School.

Ph.D. Dissertation

During the second year the student initiates a thesis research project in the laboratory of a particular member of the Program faculty. After the student has passed the Proposition Examination, a Research Committee is appointed to guide the thesis research, and when the research nears completion, a Dissertation Examining Committee is appointed by the Dean of the Graduate School.

Thesis Defense

The Thesis Defense, which completes the requirements for the Ph.D., consists of a public seminar presentation of the thesis work followed by an oral examination before the Dissertation Examining Committee.

M.A. Degree Requirements

The Program normally does not accept students whose goal is a master's degree. In exceptional instances, a student already in the Program may be awarded an M.A. degree upon completing an approved course of study, including a minimum of 30 graduate credit

hours; passing a comprehensive examination; and submitting and defending a Master's thesis.

Faculty

- Arnheim, Norman, *Associate Professor*², Ph.D., 1965, University of California, Berkeley: Macromolecular evolution; the evolution of regulatory systems.
- Bauer, William R., *Associate Professor*⁴, Ph.D., 1968, California Institute of Technology: Structure, enzymology, and interactions of the nucleic acids.
- Baylor, Martha, *Lecturer*³, Ph.D., 1941, University of Illinois: Further studies on the gene product interactions in the assembly of bacteriophage T4; genetic exchanges during exclusion of T2 by T4.
- Cirillo, Vincent P., *Professor and Acting Chairman*², Ph.D., 1953, University of California, Los Angeles: The structure and function of biological membranes.
- Dudock, Bernard S., *Associate Professor*², Ph.D., 1966, Pennsylvania State University: Structure and function of tRNA; role of tRNA in cell development.
- Edmunds, Leland N., *Associate Professor and Divisional Head*³, Ph.D., 1964, Princeton University: The control of the circadian rhythm of cell division and its relation to the cell cycle in *Euglena*.
- Eisenberg, Moises, *Assistant Professor*⁵, Ph.D., 1972, California Institute of Technology: Membrane biophysics and vision.
- Freundlich, Martin, *Associate Professor*², Ph.D., 1961, University of Minnesota: Mechanism of multivalent repression; role of tRNA in regulation of protein and mRNA synthesis.
- Gesteland, Raymond F., *Adjunct Associate Professor*^{2,9}, Ph.D., 1965, Harvard University: Protein synthesis and its control.
- Grollman, Arthur P., *Professor*^{5,10} and *Chairman*⁵, M.D., 1959, The Johns Hopkins University School of Medicine: Molecular pharmacology.
- Inouye, Masayori, *Professor*² and *Chairperson, Molecular Biology Program*, Ph.D., 1963, Osaka University, Japan: Control of cell division and biochemistry of membrane proteins.
- Katz, Eugene R., *Associate Professor*³, Ph.D., 1969, University of Cambridge, England: Molecular and developmental genetics.
- Keegstra, Kenneth G., *Assistant Professor*⁴, Ph.D., 1971, University of Colorado: Structure and function of carbohydrates of glycoproteins.
- Lauterbur, Paul C., *Professor*¹¹, Ph.D., 1962, University of Pittsburgh: Nuclear magnetic resonance spectroscopy.

² Department of Biochemistry

³ Department of Cellular and Comparative Biology

⁴ Department of Microbiology

⁵ Department of Pharmacological Sciences

⁹ Cold Spring Harbor Laboratory

¹⁰ Department of Medicine

¹¹ Department of Chemistry

- LeFevre, Paul G., *Professor*¹², Ph.D., 1945, University of Pennsylvania: Physiocochemical basis of cell membrane sugar transport.
- Lyman, Harvard, *Associate Professor*³, Ph.D., 1960, Brandeis University: Control mechanism in cellular organelle synthesis and replication; photosynthesis.
- McLaughlin, Stuart G. A., *Associate Professor*¹², Ph.D., 1968, University of British Columbia, Canada: Biophysics of natural and synthetic membranes.
- Moos, Carl, *Associate Professor*², Ph.D., 1957, Columbia University: Molecular mechanisms of muscle contraction; actin-myosin interaction; structural proteins of muscle.
- Nemerson, Yale R., *Professor*¹⁰, M.D., 1960, New York University School of Medicine: Mechanisms of activation and control of blood coagulation.
- Riley, Monica, *Professor*², Ph.D., 1960, University of California, Berkeley: Macromolecular evolution in bacteria; mechanisms of genetic recombination in bacteria.
- Sarma, Raghupathy, *Assistant Professor*², Ph.D., 1963, University of Madras, India: X-ray crystal structure analysis of molecules of biological interest.
- Scandella, Carl J., *Assistant Professor*², Ph.D., 1971, Stanford University: Membrane biochemistry: role of fluidity in membrane function.
- Schmidt, Jakob, *Assistant Professor*², Ph.D., 1970, University of California, Riverside; M.D., 1966, University of Munich, Germany: Biochemistry of synaptic transmission; membrane biochemistry.
- Setlow, Richard B., *Adjunct Professor*^{2,13}, Ph.D., 1947, Yale University: DNA repair; biological effects of ultraviolet and ionizing radiation.
- Shaw, Elliott N., *Adjunct Professor*^{2,13}, Ph.D., 1943, Massachusetts Institute of Technology: Structure-function relationship of enzymes.
- Simon, Sanford R., *Associate Professor*², Ph.D., 1967, Rockefeller University: Structure-function relationships in hemoglobin, Na-K ATPase, and membrane-associated ionophores.
- Simpson, Melvin V., *Professor*², Ph.D., 1949, University of California, Berkeley: Nucleic acids and protein biosynthesis: molecular biology of mitochondria; role of ribosome conformation in protein synthesis; molecular basis of memory and learning.
- Sternglanz, Rolf, *Associate Professor*², Ph.D., 1967, Harvard University: DNA replication in bacterial and eukaryotic systems.
- Studier, F. William, *Adjunct Professor*^{2,13}, Ph.D., 1963, California Institute of Technology: Genetics and physiology of bacteriophage T7; physical chemistry of DNA.
- Williams, David L., *Assistant Professor*⁵, Ph.D., 1972, University of Illi-

² Department of Biochemistry

³ Department of Cellular and Comparative Biology

⁵ Department of Pharmacological Sciences

¹⁰ Department of Medicine

¹² Department of Physiology and Biophysics

¹³ Brookhaven National Laboratories

nois, Urbana: Hormone receptors and hormonal regulation of gene expression.

Wimmer, Eckard A., *Associate Professor*⁴, Ph.D., 1962, University of Göttingen, Germany: Structure and function of cellular and viral ribonucleic acids.

Wishnia, Arnold, *Associate Professor*¹¹, Ph.D., 1957, New York University: Globular proteins; ribosomal subunit association; membrane models.

NEUROBIOLOGY AND BEHAVIOR (BNB)

The Program in Neurobiology and Behavior draws the core of its faculty from within the Division of Biological Sciences, but includes contributing faculty from the Health Sciences Center (Psychiatry, Anatomical Sciences, Physiology and Biophysics) and from the Department of Psychology.

The Program has two main emphases, neurophysiology and ecological ethology, and there is an emphasis on biological data processing by computer. Because the Program is interdisciplinary in nature, and because students enter the Program with differing backgrounds, programs of study are individually tailored to give each student academic breadth as well as scholarly depth in his/her area of specialization.

Facilities are available for studying animal behavior in the field and laboratory, acoustical communication, electrophysiology and neuroanatomy, and for computer simulation, modeling, and analysis.

Admission Requirements

A. Baccalaureate degree, including the following preparation: one semester of calculus, one semester of physics, two semesters of chemistry with laboratory, one semester of psychology, and a strong background in biology.

B. Minimum grade point average of 2.75 (B—) in all undergraduate course work, and 3.00 (B) in science and mathematics courses.

C. Letters from three previous instructors and a report of Graduate Record Examination scores.

D. Acceptance by the Program and by the Graduate School. Students may be admitted to the Program without some of the above undergraduate courses but will be required to make up deficiencies during the first year.

Ph.D. Requirements

Course Requirements

1. Course in statistics, to be selected.

⁴ Department of Microbiology

¹¹ Department of Chemistry

2. Neurophysiological Techniques (BNB 542); and Behavioral Techniques (BNB 533).
3. Additional courses determined early in the first year by a "prescription" examination administered by a faculty committee.

Foreign Language Requirement

Reading knowledge of one foreign language is required. The appropriate language is decided upon in consultation with a faculty advisory committee.

Teaching Requirements

All graduate students are required to participate in teaching at the undergraduate level for at least two semesters. If the student is supported by a Teaching Assistantship, he/she must continuously participate in teaching.

Residence Requirement

At least two consecutive semesters of full time graduate study are required. The demands of the Program usually make necessary a longer period of residence.

Preliminary Examination

After completing the major portion of the course of study, a student may apply for the Preliminary Examination. This Examination will be oral and/or written, and must be taken no later than the sixth semester after entrance.

Advancement to Candidacy

The Program's recommendation to the Graduate School with respect to candidacy for the Ph.D. degree is based upon the satisfactory completion of the above requirements.

Ph.D. Dissertation

A dissertation on original research is required for the Ph.D. The research is executed with the guidance of an Advisory Committee consisting of four to seven faculty members whose interests are appropriate to the dissertation topic. Finally, a Dissertation Examination Committee, appointed by the Dean of the Graduate School, reads the dissertation and gives the candidate an oral examination on the dissertation research and related areas.

M.A. Degree Requirements

The Program normally does not accept students whose goal is a Master's degree. In exceptional instances, a student already in the Program may be awarded an M.A. degree upon completing an approved course of study, including a minimum of 30 graduate credit

hours; passing a comprehensive examination; and presenting and defending a Master's thesis.

Faculty

- Carlson, Albert D., *Associate Professor*³, Ph.D., 1960, University of Iowa: Physiology of invertebrate nervous systems; insect neuropharmacology; neuronal control of flash patterns by fireflies.
- Karten, Harvey J., *Professor*¹⁴, M.D., 1959, Albert Einstein College of Medicine: Avian nervous pathways; comparative neuroanatomy.
- Lent, Charles M., *Associate Professor*³ and *Chairperson, Neurobiology and Behaviour Program*, Ph.D., 1967, University of Delaware: Comparative neurophysiology of invertebrates; neuronal bases of behavior.
- Menzel, Emil, *Professor*¹⁵, Ph.D., 1958, Vanderbilt University: Primatology; ethology.
- Smith, Douglas G., *Assistant Professor*³, Ph.D., 1971, State University of New York, Stony Brook: Communication by vertebrates; mechanisms utilized in maintaining social organization.
- Van der Kloot, William, *Professor and Chairman*¹², Ph.D., 1952, Harvard University: Mechanism of transmitter release at synapses.
- Walcott, Benjamin, *Assistant Professor*¹, Ph.D., 1968, University of Oregon: Invertebrate neurophysiology.
- Walcott, Charles, *Professor and Chairman*³, Ph.D., 1959, Cornell University: Animal behavior and communication; sensory bases of animal orientation.
- Witkovsky, Paul, *Professor*¹, Ph.D., 1962, University of California, Los Angeles: Neurophysiology of vision.
- Wyers, Everett, *Professor*¹⁵, Ph.D., 1955, University of California, Berkeley: Physiological psychology; learning.
- Yazulla, Stephen, *Assistant Professor*³, Ph.D., 1971, University of Delaware: Neurophysiology and neuroanatomy of the vertebrate retina.

¹ Department of Anatomical Sciences

³ Department of Cellular and Comparative Biology

¹² Department of Physiology and Biophysics

¹⁴ Department of Psychiatry

¹⁵ Department of Psychology

Continuing Education

CENTER FOR CONTINUING EDUCATION

The Center for Continuing and Developing Education is the arm of the State University of New York at Stony Brook that reaches beyond the traditional concerns of the academic disciplines to the community at large, to persons who would not otherwise be able to use the University's facilities, services, and knowledge. Through the Center for Continuing and Developing Education, the University makes a contribution to society by providing lifelong educational opportunities to part-time students. At the present time the Center offers a terminal M.A. degree in Liberal Studies. This degree is not a prerequisite for any doctoral program at the University nor will it guarantee admission to any graduate department. The MA/LS program is based on 30 credits of graduate study distributed in such a way as to provide an interdisciplinary learning experience. It requires no thesis or comprehensive examination.

Admission to the MA/LS Program

All persons holding a baccalaureate degree or equivalent, or an advanced degree from an accredited institution of higher learning, are eligible for admission to the Master of Arts in Liberal Studies Program.

Requirements for Matriculation

To be admitted as a matriculated student, an applicant must have obtained a B average during the last two years of his undergraduate studies, or have completed 6 credits of B or better in graduate work at an accredited institution of higher learning. Baccalaureate holders who do not meet these requirements will be admitted as non-matriculated students but may become matriculated in one of the following ways:

A. Complete six credits of graduate courses at Stony Brook with grades of B or better. (These credits may be included among the 30 credits required for the degree.)

B. Take the Graduate Record Examination and secure a combined score of 1200 on the verbal and mathematics sections.

Requirements for the MA/LS Degree

A. Formal course requirements: Students are required to divide their

30 graduate credits among the three general subject areas: Natural Sciences, Social and Behavioral Sciences, Arts and Humanities, as follows:

1. A minimum of nine credits from each of two general areas.
2. A minimum of six credits from the third general area.
3. Six remaining credits chosen from any of the three areas a student desires.

Natural Sciences—includes all CEB or CEN courses, appropriate CEI courses, and graduate courses from the Departments of Biological Sciences, Chemistry, Earth and Space Sciences, Mathematical Sciences, Physics, College of Engineering.

Social and Behavioral Sciences—including all CEE, CEM, CES, CET courses, appropriate CEI courses, and graduate courses from the Departments of Anthropology, Economics, History, Psychology, Sociology.

Humanities and the Arts—includes CEA, CEB, CEH, CEL courses, appropriate CEI courses and graduate courses from the Departments of Art, English, Philosophy, Music and any of the language departments.

Admission to all courses outside the Center's offerings is by permission of the department concerned, and depends on the satisfactory fulfillment of the department's academic requirements and on the availability of space.

B. Time Limit: All requirements for the MA/LS degree must be completed within seven years of admission to the program.

C. Work load: No students may register for more than eight hours or more than two courses per semester except under extraordinary circumstances and with the approval of the CED Academic Standing Committee.

D. Performance: Students in the MA/LS Program are expected to maintain a B average (3.0). Any matriculated student who accumulates two grades of C or below will be automatically dematriculated. Rematriculation will be considered by the Committee on Academic Standing of CED upon the student's petition after completion of 6 credits of grade B or better. A dematriculated student who receives two further grades of C or below—a total of four grades below B during his attendance at Stony Brook—will be ineligible for rematriculation. Such students may continue to take courses on a non-matriculated basis for as long as they like, but will not be readmitted to candidacy for the degree.

Transfer Credits

A maximum of 6 graduate credits taken at accredited institutions granting graduate degrees may be transferred toward the MA/LS degree, but no courses will be considered for transfer until after a student has completed one course as a CED student. Transfer is not automatic. All credit transfers must be approved on a course-by-course

basis in consultation with the appropriate academic departments. These credits must be less than seven years old at the time the student is admitted and must carry grades of A or B. Courses used to fulfill degree requirements at other institutions may not be transferred.

New York State Teaching Certification

A. Provisional certification requires education courses and fulfillment of a full-time practice teaching requirement. While education courses are available to post-baccalaureate students at SUNY at Stony Brook, student teaching *is not*.

B. Permanent certification: It is possible for persons with provisional certification to meet the requirements for permanent certification by fulfilling the requirements for the MA/LS degree. To determine individual requirements, interested persons should call or write to the nearest Regional Teacher Certification Office or directly to the Bureau of Teacher Certification in Albany.

Special Student Status

Students who do not hold a baccalaureate or advanced degree and who wish to take courses in the Center for Continuing Education may petition the CED Academic Standing Committee for admission as a special student. This option is intended only for mature persons who can substitute life experience for college credits. Individual cases are judged on their merits. For information, call or write the CED Office.

Applications

Applications and further information may be obtained by writing or calling:

Center for Continuing Education
Room 198, Humanities Building
State University of New York at Stony Brook
Stony Brook, New York 11794
Telephone: (516) 246-5936

Applications for admission to CED must be received for the fall semester by July 15; for the spring semester by November 15. The MA/LS program does not normally admit students initially for the summer term, but applications received before March 15 of any year, will be considered for admission in the next summer term.

Faculty

With few exceptions, the faculty of the Center for Continuing Education are members of the faculty of the State University of New York at Stony Brook.

Administration

Fusco, Josephine, *Associate for Continuing Education*, B.A., 1951, St. Lawrence University; M.S., 1956, State University College, New Paltz.

Kempner, Doris, *Acting Assistant Dean of Continuing and Developing Education*, B.A., 1943, Mount Holyoke College; M.A.L.S., 1974, State University of New York, Stony Brook.

Kreuter, Mortimer, *Acting Dean of Continuing and Developing Education*, B.A., 1948, Brooklyn College; Ed.D., 1960, Teachers College, Columbia University.

The Environmental and Urban Sciences

MARINE ENVIRONMENTAL SCIENCES PROGRAM

The M.S. Program offered by the Marine Sciences Research Center consists of a rigorous interdisciplinary approach to coastal oceanography and coastal zone management. It is designed to prepare students for positions in research, management, environmental protection, and resource development. The program provides students with a firm basis for more advanced study, but more importantly it is designed to equip students with the background and tools needed for effective careers without additional training. A new Ph.D. program in Coastal Oceanography is in the planning stage.

The program offers part-time training to professionals who wish to improve or broaden their skills, or redirect their careers. Required courses are alternated yearly between the day and evening, and are arranged so that during any given year half of the courses are given in the evening.

Every student is required to successfully complete an approved course of study consisting of 30 graduate credits, including core courses in biological, chemical, geological, and physical oceanography; and courses offered by other departments in the student's basic discipline. Not more than 6 credits may be Research and/or Seminar. An essay of publishable quality representing original work is required. It may be original laboratory or field research, or the application of existing knowledge to develop a management strategy for a significant environmental problem. Before a student is given formal approval to begin his or her research he or she must pass an oral examination which is designed to assess the student's general knowledge of coastal processes and environmental problems of the coastal zone. Each student will be expected to present a half-hour seminar on his or her research work.

Admission Requirements

Requirements for admission to the Masters program normally include: a B.A. or B.S.; course work in mathematics through calculus, statistics, and introductory courses in at least two of the following areas: physics,

chemistry, biology, and earth science, with advanced work in at least one of these areas; a cumulative grade point average of at least 3.00 (B); acceptable scores on the Aptitude Tests of the GRE. There are no language requirements.

Facilities

Laboratories at the Center are well equipped and students may have access, by special arrangement, to facilities elsewhere on the campus, at the nearby Brookhaven National Laboratory, and the Department of Environmental Conservation Laboratory at Flax Pond (local salt marsh). The Center maintains a number of small vessels and operates a new 18 m research vessel, the *R/V ONRUST*, designed specifically for coastal oceanographic research. Computing facilities at the Center and University are excellent. The University Library has extensive holdings in oceanography, environmental sciences, and the basic sciences.

Faculty

- Baylor, Edward R., *Professor*, Ph.D., 1949, Princeton University: Surface chemistry; oil spills; ethology.
- Bowman, Malcolm J., *Assistant Professor*, Ph.D., 1971, University of Saskatchewan, Canada: Descriptive and dynamical oceanography of estuarine and coastal waters; water quality modeling; microstructure and turbulence.
- Carpenter, Edward J., *Associate Professor*, Ph.D., 1969, North Carolina State University: Nitrogen cycling among plankton and ambient seawater; phyto- and zooplankton ecology; effects of toxic chemicals and electric power stations on coastal plankton.
- Carter, Harry H., *Professor*, M.S., 1948, Scripps Institution of Oceanography: Estuarine and coastal dynamics; turbulent diffusion.
- Cooley, Arthur P., *Adjunct Associate Professor*,¹ M.S., 1956, Cornell University: Natural history of Long Island.
- Dayal, Ramesh, *Adjunct Assistant Professor and Assistant Research Oceanographer*, Ph.D., 1975, Dalhousie University, Nova Scotia: Geochemistry of coastal sediments; clay mineral-seawater interactions relating to fields of halmyrolysis and early diagenesis; sediment-water interface interactions.
- Duedall, Iver W., *Assistant Professor*, Ph.D., 1973, Dalhousie University, Nova Scotia Marine environmental chemistry; physical chemistry of seawater; coastal and deep-sea chemical oceanography.
- Ebbesmeyer, C. C., *Adjunct Assistant Professor*,² Ph.D., 1973, University of Washington: Physical oceanography; estuarine circulation and oceanic diffusion.
- Esaias, Wayne E., *Adjunct Assistant Professor and Assistant Research Oceanographer*, Ph.D., 1973, Oregon State University: Phytoplankton ecology and photobiology.

¹ Bellport High School

² Evans-Hamilton, Inc.

- Hardy, Charles D., *Adjunct Assistant Professor and Assistant Research Oceanographer*, M.S., 1962, Cornell University: Water quality; dispersal of contaminants; air-sea interface interactions.
- McHugh, J. L., *Professor*, Ph.D., 1950, University of California, Los Angeles: Fishery management; fishery oceanography; domestic and international affairs; whales and whaling.
- Meade, Robert H., *Adjunct Professor*³, Ph.D., 1960, Stanford University: Coastal and fluvial sedimentation; ground water.
- O'Connors, Harold B., Jr., *Assistant Professor*, Ph.D., 1975, Oregon State University: Coastal plankton ecology; primary production; patterns of plankton distribution; zooplankton feeding behavior.
- Okubo, Akira, *Professor*, Ph.D., 1963, The Johns Hopkins University: Oceanic diffusion; animal dispersal; mathematical ecology.
- Schubel, J. R., *Professor, Director of Marine Sciences Research Center and Chairman, Marine Environmental Sciences Program*, Ph.D., 1968, The Johns Hopkins University: Coastal sedimentation; suspended sediment transport; interactions of organisms and sediment; coastal zone management; marine geophysics.
- Sheldon, Raymond W., *Associate Professor*, Ph.D., 1961, University of Manchester, England: The formation and occurrence of particles in the sea.
- Terry, Orville W., *Adjunct Associate Professor*, Ph.D., 1970, State University of New York at Stony Brook: Aquaculture, especially of seaweed; wetlands management.
- Walsh, J. J., *Adjunct Associate Professor*⁴, Ph.D., 1969, University of Miami: Upwelling ecosystems; phytoplankton ecology; modeling of continental shelf ecosystems.
- Weyl, Peter K., *Professor*, Ph.D., 1953, University of Chicago: Coastal zone planning; physical oceanography.
- Wilson, Robert E., *Assistant Professor*, Ph.D., 1974, The Johns Hopkins University: Estuarine and coastal ocean dynamics.
- Wurster, Charles F., *Associate Professor*, Ph.D., 1957, Stanford University: Effects of chlorinated hydrocarbons on phytoplankton communities.

THE W. AVERELL HARRIMAN COLLEGE FOR URBAN AND POLICY SCIENCES

Graduate Program

The W. Averell Harriman College for Urban and Policy Sciences is an educational and research program with the principal objective to develop competence in problem-solving and institutional knowledge for the systematic analysis and design of alternative solutions to public policy problems. Both the curriculum and an active research program emphasize the application of the mathematical and analytic tools of the

³ U.S. Geological Survey

⁴ Brookhaven National Laboratories

natural and social sciences in transportation, health care, energy policy, housing, environmental quality management and other fields. The program is directed toward meeting the need for qualified professionals in the areas of analyzing, planning, and managing public systems in urban and nonurban settings. A Master of Science is awarded upon successful completion of the two year graduate program.

Graduates of the program enter careers as analysts and planners in various types of line agencies at all levels of government, in university-based or private research organizations, or in private industry.

To prepare students for these roles, the W. Averell Harriman College for Urban and Policy Sciences emphasizes:

- A. An interdisciplinary/integrated approach.
- B. Understanding the processes of implementation.
- C. Interaction with the public sector.

Curriculum

The educational curriculum of the Graduate Program is divided into five components:

1. *Core courses:* This set of courses, taken during the first year, provides the basic framework of the Program. Progress through these courses allows the student to develop a high level of competence in the tools and skills he will require to systematically analyze large-scale, complex public problems and to understand how decisions are made and policy formulated in social, political, and economic institutions. Topics covered in the core include statistics and data analysis, operations research techniques, decision-making, planning theory, urban economics and public finance.

2. *Case studies, workshops, and projects:* An underlying objective of the education program, reflected in this component of the curriculum, is to develop within the student the ability to analyze unstructured, contextual problems and to recognize the social, political, economic and institutional constraints that affect the formulation and implementation of public policy. The student must be able to learn about public issues quickly, to cope with information overload, to communicate what he learns to others, and to work effectively in a group. The student is required to gather and use data and information from a variety of sources, to filter them in meaningful ways, and to learn to present material clearly and concisely. The case studies, workshops, and projects provide the opportunity to develop skills needed by effective analysts and planners.

3. *Electives:* These courses, taught both within the Program and available from other departments within the University, provide the student during his or her second year with the opportunity to develop detailed knowledge in a particular area in which he or she expects to concentrate, or to broaden his or her perspective and sensitivity to the social and behavioral elements of public policy.

A wide variety of courses and seminars related to the urban and

policy sciences is offered through other departments at Stony Brook. Of particular interest to UPS students would be advanced courses in the Department of Economics and courses in advanced quantitative technique in the Department of Applied Mathematics, urban politics and administration in the Department of Political Science, organization theory and social change in the Department of Sociology, and social psychology in the Department of Psychology. All UPS students are encouraged to take a number of elective courses outside of the program.

4. *Internship:* No combination of courses, seminars, projects or workshops can completely bridge the gap between the academic environment and the professional world that the student enters upon graduation. Practical experience can be gained, however, through an arrangement where the student works as a paid staff member on a specific problem for a governmental or community organization. This experience is provided through the requirement that all UPS students satisfactorily complete an intern program during the summer months between the first and second year of study. Arrangements for the internship are made by the UPS faculty. An attempt is made to match as closely as possible student interests and abilities with the specific requirements of the governmental agency or community organization. Documentation of the project is required for evaluation by both the program and the client. Some examples of recent intern projects include the following: an air pollution model developed for the IBM scientific center, a study of alternative schools for the New Jersey Department of Education, a feasibility study of ocean disposal of solid wastes for the New York City Environmental Protection Administration, a survey and evaluation of day-care centers in New York for the Central Staff of the State Assembly, and an examination of milk pricing in New Jersey for the National Child Nutrition Project.

5. *Research:* In addition to working on organized research projects that are defined by the UPS faculty, the second year student may undertake an independent research project that reflects his or her knowledge of a selected area of policy concentration. This project may be of an applied or theoretical nature.

Requirements for the M.S. Degree

The program of study for each student must be approved on an individual basis by the educational director of the Program for Urban and Policy Sciences.

Students must satisfy the following requirements for graduation:

A. Four semesters (usually two years) of full-time study in the program;

B. Successful completion of a total of 48 credits of formal graduate course requirements—24 credits from the core curriculum workshop, case studies, and projects, 6 from advanced quantitative methods; 18 credits of electives and seminars on public policy issues; and

C. Successful completion of a summer internship, including the

preparation and submission of an acceptable summary document.

Students must maintain satisfactory progress throughout their course of study. If a student receives an "incomplete" for work, he or she must complete the requirements before enrollment in the subsequent semester or be restricted to a reduced course load.

Admission

The program for Urban and Policy Sciences is designed for students who are highly motivated and capable of applying what they learn toward the solution of public sector problems. Each student will be asked to forward with his or her application a statement of his or her career objectives and the way he or she expects to realize these objectives through the program. A personal interview with the educational director is encouraged.

In addition, students must satisfy the following admissions requirements:

A. A baccalaureate degree with a minimum grade point average of 3.0. In exceptional cases, students not meeting this requirement may be admitted on a provisional basis;

B. Successful completion of course work in mathematics and/or statistics;

C. Submission of Graduate Record Examination Aptitude scores;

D. Three letters of recommendation: one of which, if possible should be from a professional working in a public agency, community organization, or private organization who is capable of evaluating the applicant's motivation and potential for public sector work and at least one of which should be from a college faculty member, counselor, or administrator;

E. Acceptance by both the W. Averell Harriman College for Urban and Policy Sciences and the Graduate School.

Although not required, examples of an applicant's creative work will be considered. These might include previous or professional project reports or published articles.

Applications for the M.S. program should be made by April 1, although earlier submissions are encouraged. Applications are reviewed between January and April for the following fall semester. Final decisions concerning aid will be made not later than the April 1 deadline for applications.

Application forms may be obtained by writing to:

Educational Director, W. Averell Harriman College for Urban
and Policy Sciences
State University of New York at Stony Brook
Stony Brook, New York 11794

Faculty

Altman, Stanley M., *Associate Professor*, Ph.D., 1967, Polytechnic Institute of Brooklyn: Management information systems, developing

- strategies for improving the operations of public agencies, and developing framework for analyzing and implementing public policy.
- Bodin, Lawrence D., *Associate Professor*, Ph.D., 1967, University of California, Berkeley: Large scale optimization models in energy planning and transportation systems.
- Brody, Adele C.,¹ *Practicing Attorney*, MLL, New York University School of Law: Urban law and public administration in a policy analysis framework.
- Carroll, T. Owen, *Associate Professor*, Ph.D., 1968, Cornell University: Energy systems, education finance, and mental health.
- de Chiara, Joseph,¹ M.D., Columbia University: The improvement of urban design and planning.
- Frucher, M. S.,¹ MPA, Harvard University: Manpower policy, operational skills for government.
- Giglio, Joseph M.,¹ MPA, New York University: Financial management of public sector organizations.
- Koppleman, Lee, *Associate Professor*, Ph.D., 1970, New York University: Regional planning and natural resources management.
- Kydes, Andrew, *Assistant Professor*, Ph.D., 1974, State University of New York, Stony Brook: Analysis and optimization of urban service systems.
- Marcuse, William,¹ Ph.D., 1956, Columbia University: Mathematics and econometric modeling.
- Nathans, Robert, *Professor and Dean, W. Averell Harriman College for Urban and Policy Sciences*, Ph.D., 1954, University of Pennsylvania: Energy modeling and policy analysis.
- Rosenfield, Donald, *Assistant Professor*, Ph.D., 1974, Stanford University: Transportation systems and Markov models.
- Swinton, David, *Assistant Professor*, Ph.D., 1974, Harvard University: The economic analysis of public policy questions and minority economic problems.
- Weiner, Harry, *Associate Professor and Associate Dean, W. Averell Harriman College for Urban and Policy Sciences*, S.M., 1970, Massachusetts Institute of Technology: Re-design of organizational structures to improve programmatic capabilities.
- Wile, John,¹ *Assistant Professor*, Ph.D., Brown University: Urban and economic location theory.

¹ Faculty Associate

Applied Mathematics and Statistics
Computer Science
Electrical Sciences
Materials Science
Mechanical Engineering

The Engineering and Applied Sciences

ENGINEERING SCIENCES

The College of Engineering and Applied Sciences offers graduate study with degree programs leading to the M.S. and Ph.D. The College consists of five academic departments each under the direction of a chairman. Each department reviews student applications and approves the enrollment of the graduate student in the program best suited to his or her background and interests.

Admission to Graduate Study

For admission to graduate study in engineering, the minimum requirements are as follows:

- A. A bachelors degree in engineering, mathematics, physics, chemistry, or a closely related area from an accredited college or university.
- B. A minimum grade average of at least B in all courses in engineering, mathematics, and science.
- C. Results of the Graduate Record Examination Aptitude Test.
- D. Acceptance by the College of Engineering and Applied Sciences and the Graduate School.

Requirements for the M.S. Degree

A. The M.S. degree in the College of Engineering and Applied Sciences requires the satisfactory completion of a minimum of 30 graduate credits. This may be done in several ways, depending on the options that the student selects.

B. All credits must be at the graduate level. The faculties of individual graduate programs may impose additional requirements as listed under departmental headings. In addition, the grades in courses totaling at least 15 credits must be B or better and the average for all courses taken must be B or better.

C. Final recommendation: Upon the fulfillment of the above re-

quirements the faculty of the graduate program will recommend to the Dean of the Graduate School through the Dean of Engineering that the Master of Science degree be conferred, or will stipulate further requirements that the student must fulfill.

D. Time limit: All requirements for the Master of Science degree must be completed within three years of the student's first registration as a full-time graduate student.

Requirements for the Ph.D. Degree

A. Minimum residence: At least two consecutive semesters of full-time study.

B. Qualifying Examination: A student must satisfactorily pass a qualifying examination to ascertain ability for study for the Ph.D. degree.

C. Research advisor: After completion of at least one year of full-time residence and prior to taking the Preliminary Examination, the student must select a research advisor who agrees to serve in that capacity.

D. Preliminary Examination: Upon completion of the course work, a comprehensive oral examination, which may be supplemented by a written examination, will be given to the student.

E. Advancement to candidacy: After successfully completing all requirements for the degree other than the dissertation, the student is eligible to be recommended for advancement to candidacy. This status is conferred by the Dean of the Graduate School upon recommendation from the chairman of the graduate program.

F. Dissertation: The most important requirement of the Ph.D. degree is the completion of a dissertation which must be an original scholarly investigation. The dissertation must represent a significant contribution to the scientific literature and its quality must be compatible with the publication standards of appropriate and reputable scholarly journals.

G. The student must defend the dissertation before an examining committee. On the basis of the recommendation of this committee, the Dean of Engineering will recommend acceptance or rejection of the dissertation to the Dean of the Graduate School. All requirements for the degree will have been satisfied upon the successful defense of the dissertation.

H. Time limit: All requirements for the Ph.D. degree must be completed within four years after advancement to candidacy.

DEPARTMENT OF APPLIED MATHEMATICS AND STATISTICS

For detailed description of admission requirements and degree programs, see page 150.

DEPARTMENT OF COMPUTER SCIENCE

For detailed description of admission requirements and degree programs, see page 153.

DEPARTMENT OF ELECTRICAL SCIENCES

M.S. and Ph.D. Degrees

The Department of Electrical Sciences offers graduate programs leading to the M.S. and Ph.D. degrees. Graduate Programs are tailored to the needs of each student so as to provide a strong analytical background helpful to the study of advanced engineering problems. Ample opportunities exist for students to initiate independent study and to become involved in active research programs, both experimental and theoretical. In addition to its emphasis on modern electrical engineering, the department participates in interdepartmental graduate programs in computer science and in urban and policy science; these are described in adjoining sections of this Bulletin.

The major areas of research and study are Systems Science and Engineering, Digital Systems and Electronics, Solid State and Quantum Electronics, Optical Information Processing, Biomedical Systems Engineering, and the Applied Science Program.

Graduate Program in System Science and Engineering

Some of the research areas currently under investigation by the faculty members and graduate students in systems science and engineering include the traditional areas of optimal control theory, systems and networks theory as well as the application of systems sciences to broader socioeconomic, urban transportation, power distribution, energy and health systems. The Department of Electrical Sciences has close ties with other related departments in order to meet these new challenges. The present academic and research programs in Electrical Sciences form an excellent basis for such activities. The relevant course sequence is: ESE 502, ESE 503, ESE 531-532, ESE 535, ESE 539, ESE 541, ESE 542, ESE 543-544, ESE 545, ESE 547, ESE 551. In addition a number of courses useful to this subject area and offered by other departments are: UPS 513, UPS 531, ECO 510-511, ECO 514, ECO 520-521, ECO 572, SOC 502, SOC 503, SOC 505, SOC 514.

Graduate Program in Digital Systems and Electronics

Perhaps the most rapidly expanding area of engineering is in the field of digital systems and electronics. The introduction of large scale Integrated circuits, such as microprocessors, has brought the price of digital electronics down so low as to make it possible for digital electronics to take over ever larger functions, from sewing machine stitch controls to inventory control. The Departments of Electrical and Computer Sciences have a PDP Computer and peripherals for their research efforts. They work closely with one another in both research and teaching. The course offerings which are appropriate to this area are: ESE 318, ESE 545, ESE 546, ESE 549, ESE 551, ESE 552, MSC 502.

Graduate Program in Optical Information Processing

The Department of Electrical Sciences houses the Electro-Optical Science Laboratory. This Laboratory is one of the foremost optical research laboratories in the world. Research is currently underway in image deblurring and reconstruction, electron microscopy image enhancement, holography and optical computing. The faculty associated with the Laboratory also contribute heavily to the education program. Students interested in optical information processing may wish to choose the following courses: ESE 560, ESE 561, ESE 515, ESE 518, ESE 520, ESE 521, and ESE 523.

Graduate Program in Solid-State and Quantum Electronics

The program of courses and of research pertinent to solid-state electronics ranges from a study of the fundamental electronic processes in solids and gases through a description of the mechanisms which yield useful devices, to a study of the design of complex integrated-circuit systems. A number of the Ph.D. candidates are working part time in local semiconductor industries while completing the doctoral work. The course offerings which relate to these subject areas are: ESE 510, ESE 511, ESE 512, ESE 514, ESE 515, ESE 516-517, ESE 518, ESE 610. Relevant courses from other departments include: ESM 536, ESM 615, ESM 618, ESM 652-653, PHY 511-512, PHY 540, PHY 555, CHE 521-522.

Graduate Program in Biomedical Systems Engineering

The Department of Electrical Sciences has established graduate course offerings in the subject areas of biomedical systems engineering and bioelectronics. Research work in these areas is presently underway and is expanding. The course offerings from which the student may make a selection include: ESE 547, ESE 570, ESE 572, ESE 596, ESE 660, ESE 541, ESE 542, ESE 516-517, MSA 521, HBY 532, HBY 551, BMO 506, BEB 549.

Evening Extension M.S. Degree Program

This program is designed to help practicing engineers meet today's advancing technology. A set of carefully selected courses fulfilling the requirements of the M.S. degree in Electrical Sciences is offered in two-year cycles during evening hours at the campus of the College at Old Westbury, SUNY. Students in this program may modify their own course of study and specialization by filling some of their course requirements with selections from the full course offering at the Stony Brook campus.

In conjunction with the department of Materials Science an Evening Program in Electronic Materials is offered. This program is designed to familiarize those people working in industry with the design and fabrication of modern solid state circuits. The core material of this

program is covered in ESE 511, ESE 512, ESE 516, ESE 517 plus a course in production processes and a seminar on surfaces and interfaces. The evening programs are administered through the Department of Electrical Sciences and further information concerning these programs may be obtained through the Graduate Program Director of the Department of Electrical Sciences.

Combined BE-MS Degrees

Undergraduate students may enter this special 5 year Master of Science-Bachelor of Engineering program at the end of their junior year. During the next two years a student will complete the requirements for both the B.E. and M.S. degree and for the M.S. Thesis.

Requirements for Graduate Degrees

The faculty of the Electrical Sciences Department has set the following regulations, which are in addition to the College of Engineering requirements.

Immediately upon arrival, every graduate student entering the department is assigned by the graduate program chairman to a temporary advisor, with whom the student plans the first semester of courses. Before the start of the second semester a student should seek the permission of a faculty member to act as research advisor, and with his approval compose a plan of course work which is then filed with the graduate program chairman. Any subsequent changes of advisor or courses should also be reported to the graduate program chairman. There is no residence requirement for the M.S. degree. Passing of the doctoral qualifying examination is one of the requirements for the Ph.D. degree. The residence requirement for the Ph.D. is two consecutive semesters of full-time study. The Ph.D. qualifying examination is normally given once each semester.

Financial support in the department is subject to annual review by the faculty based on available funds and satisfactory progress. Such support is not normally renewed for M.S. candidates after the third semester.

There can be identified, within the total body of graduate courses offered by the Department of Electrical Sciences, sequences which, together with associated research work, constitute a program in specific subject areas of academic interest. These sequences provide a means for the student to focus his work, in depth, within an area of specialization for the M.S. or the Ph.D. degree.

Within the total body of graduate courses offered by the Department of Electrical Sciences, one may identify sequences which, together with associated research work, constitute a program in specific subject areas of academic interest. These sequences provide a means for the student to focus his work, in depth, within an area of specialization for the M.S. or the Ph.D. degree.

Graduate Program in Applied Sciences

This is a 30 credit part-time M.S. program intended for secondary school and community college educators and others who are interested in design, and implementation of inter-disciplinary curricula, and the application of science and technology to education. A bachelors degree in Engineering, natural sciences or social sciences and an average of B in course work is required for admission into the program. The unique feature of the program is its flexibility to meet individual needs and interests. Only five courses, CEN 580, CEN 581, CEN 582, ESE 583, and ESE 584 are required courses. The other 15 credits may be selected from other departments.

Faculty

- Barry, Patrick E., *Assistant Professor*, Ph.D., 1969, State University of New York, Stony Brook: Systems and Control, Optimization Theory.
- Birtwell, William C., *Professor*, B.S., 1941, University of Rhode Island: Biomedical and Clinical Engineering, Counterpulsation Techniques.
- Braun, Ludwig, *Professor*, D.E.E., 1959, Polytechnic Institute of Brooklyn: Bioengineering and Computers in Education.
- Carleton, Herbert R., *Professor*,¹ Ph.D., 1964, Cornell University: Optical Materials, Electro-optics, Ultrasonics, Optical Instrumentation.
- Chang, Sheldon S. L., *Professor*, Ph.D., 1947, Purdue University: Optimal Control, Energy Conversion, Information Theory, Economic Theory.
- Chen, Chi-Tsong, *Professor*, Ph.D., 1966, University of California, Berkeley: Systems and Control Theory, Digital Signal Processing.
- Dollard, Peter M., *Associate Professor and Graduate Program Director*, Ph.D., 1963, Polytechnic Institute of Brooklyn: Digital Communications and Coding Theory, Operations Research in Management Systems.
- Halioua, Maurice, *Adjunct Assistant Professor*, Ph.D., 1971, University of Paris, France: Optical Information Processing, Applications in Biology, Medicine and Engineering.
- Harrison, Shelley A., *Adjunct Assistant Professor*, Ph.D., 1970, Polytechnic Institute of Brooklyn: Quantum Electronics Cybernetics.
- Lee, Edward T., *Assistant Professor*, Ph.D., 1972, University of California, Berkeley: Pattern Recognition, Computer Architecture, Systems Analysis.
- Liao, Thomas T., *Assistant Professor*, Ed.D., 1971, Columbia University: Educational Technology, Unified Science Curriculum.
- Marsocci, Velio A., *Professor*, Eng.Sc.D., 1964, New York University: Solid State Electronics, Integrated Electronics, Biomedical Engineering.
- Piel, Emil J., *Professor*, Ed.D., 1960, Rutgers, The State University, New Jersey: Interdisciplinary Teaching and Evaluation, Textbook Writing.

¹ Joint appointment, Department of Materials Science

- Rappaport, Stephen S., *Associate Professor*, Ph.D., 1965, New York University: Communication Theory, Systems.
- Short, Kenneth L., *Assistant Professor*, Ph.D., 1972, State University of New York, Stony Brook: Digital System Design, Instrumentation.
- Smith, David R., *Professor*, Ph.D., 1961, University of Wisconsin: Logic Design, Computer Architecture.
- Stroke, George W., *Professor*, Dr. es Sc., 1960, University of Paris, Sorbonne, France: Optical Information Processing, Optical Communication, Holography and Applications to Medical Biophysics.
- Thomas, Gary L., *Professor and Chairman*, Ph.D., 1967, University of California, Berkeley: Solid-State Electronics, Transport Phenomena in Solid State Devices, Magnetoelectric Interaction.
- Truxal, John G., *Professor*, Sc.D., 1950, Massachusetts Institute of Technology: Control and Systems Engineering, Science Education.
- Tuan, Hang-sheng, *Associate Professor and Director of Undergraduate Programs*, Ph.D., 1964, Harvard University: Electromagnetic Theory, Integrated Optics, Microwave Acoustics.
- Wayne, David A., *Adjunct Assistant Professor*, Ph.D., 1971, University of Florida, Gainesville: Automated Network Design, Integrated Electronic Circuits, Semiconductor Devices, Computers.

DEPARTMENT OF MATERIALS SCIENCE

The Department of Materials Science offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. The motivating philosophy of the graduate program is to provide the student with a broad synthesis of the theoretical and experimental techniques required for work with all classes of materials. Emphasis is placed on courses which unify the field in terms of fundamentals treated with sufficient depth to enable the student to contribute in diverse areas of materials science and engineering.

Laboratory and course work is structured to provide programs for students who plan on entering industry upon acquiring the Master of Science degree, in addition to research oriented programs leading to the Master of Science and Doctor of Philosophy degrees for students planning to enter teaching or research.

Programs and Facilities

The Department of Materials Science maintains extensive facilities for the synthesis, characterization, and testing of modern materials. Laboratories are dedicated to materials processing, x-ray diffraction, thermal analysis, LEED, corrosion and erosion, mechanical testing, ultrasonics, and electron microscope techniques and are used in both the teaching and research programs of the department.

Surface Science and Technology

A multidisciplinary laboratory has been established within the Department of Materials Science in recognition that the surface of solids

represents a significant barrier to the implementation of many novel materials in modern engineering systems. The research interests of the faculty are focused on the physics, chemistry, and mechanics of surfaces, their mechanical and structural properties and their interaction with the environment.

Degree Requirements

In addition to the College of Engineering and Graduate School requirements, a student will be admitted to the Ph.D. degree program after satisfactorily passing a graduate program Qualifying Examination. (However, see below for students entering with the M.S. degree.) The Qualifying Examination will be given at the beginning of each semester and will be a comprehensive examination covering undergraduate work in materials science, physics, chemistry and applied mathematics. The Qualifying Examination will be taken by every student who plans to study toward the Ph.D. degree, within the first month of the second semester in which he or she is enrolled as a full-time student in the Materials Science Department. However, well prepared students are encouraged to take this examination in their first semester.

Requirements for the M.S. Degree

A. *Course requirements:* There are two options for the M.S. degree in the Materials Science Department:

1. Satisfactory completion of a minimum of 18 graduate course credits and a thesis in the student's area of specialization. A total of 30 graduate credits is required.

or

2. The satisfactory completion of a minimum of 30 graduate credits, 24 of which must be for graduate courses. This option is primarily for part-time students. Full-time students may petition the Graduate Program Committee of the Materials Science Department to elect this option, but the petition must be made at the time of admission application.

In addition, the average grade for all credits, excluding ESM 599, ESM 698, and ESM 699, must be B or better.

B. *Thesis:* For the student who elects to complete a thesis for the M.S. degree, the thesis must be approved by three faculty members, at least two of whom are members of the Materials Science Department, including the research advisor.

C. *Final recommendation:* Upon the fulfillment of the above requirements the faculty of the graduate program will recommend to the Dean of the Graduate School through the Graduate Program Committee, that the Master of Science degree be conferred or will stipulate further requirements that the student must fulfill.

D. *Time limit:* For full-time students, all requirements for the M.S. degree must be completed within three years of the student's first

registration as a full-time graduate student in the Materials Science Department.

Requirements for the Ph.D. Degree

A. *Residency:* Two consecutive semesters of full-time study are required.

B. *Qualifying Examination:* Students must satisfactorily pass a Qualifying Examination as described above. A student who elects the non-thesis option for the M.S. program will be considered a terminal M.S. student by the department and must formally reapply for admission to the department if he or she wishes to pursue a Ph.D. degree. Students who elect the M.S. thesis program, however, will be considered as continuing students in the department and may proceed to the Ph.D. Qualifying Examination.

C. *Plan of work:* Before completion of one year of full-time residence, the student must have selected a research advisor who agrees to serve in that capacity. The student will then prepare a plan of further course work. This must receive the approval of the student's advisor and of the Graduate Committee.

D. *Preliminary Examination:* A comprehensive oral examination on the subjects covered in graduate materials science courses. The Examination Committee will consist of four members including the research advisor, two members of the Materials Science Department, and one member from outside the department. Students entering the program with a baccalaureate degree must take the Preliminary Examination before the end of the 5th semester. If a second examination is required, this must be completed by the 10th week of the 6th semester. Students entering the program with a masters degree must complete the examination by the 10th week of the second semester.

E. *Advancement to candidacy:* After the student has successfully completed all requirements for the degree, other than the dissertation, he or she is eligible to be recommended for advancement to candidacy. This status is conferred by the Dean of the Graduate School upon recommendation of the chairman of the graduate program.

F. *Dissertation:* The most important requirement of the Ph.D. degree is the completion of a dissertation which must be an original scholarly investigation. The dissertation shall represent a significant contribution to the scientific literature and its quality shall be compatible with the publication standards of appropriate and reputable scholarly journals.

G. *Defense:* The candidate shall defend the dissertation before an examining committee consisting of four members including the research advisor, two members of the Materials Science Department, and one member from outside the department.

H. *Time limit:* All requirements for the Ph.D. degree must be completed within four years after advancement to candidacy.

Faculty

- Billelo, John C., *Professor*, Ph.D., 1965, University of Illinois: Mechanical properties; lattice defects; fracture; refractory metals; surface coatings.
- Carleton, Herbert R., *Professor*⁴, Ph.D., 1964, Cornell University: Optical and ultrasonic properties; Brillouin scattering in crystals; surface acoustics.
- Dew-Hughes, David, *Adjunct Professor*¹, D. Eng., 1959, Yale University: Materials problems related to the energy program.
- Goland, Allen N., *Adjunct Professor*¹, Ph.D., 1956, Northwestern University: Solid-state physics; defects; interaction of radiation with condensed matter.
- Herley, Patrick J., *Associate Professor*, Ph.D., 1960, Rhodes University, South Africa; Ph.D., 1964, Imperial College, England: Solid-state chemistry: physical processes occurring in solid inorganic materials; kinetics of thermal and photolytic decomposition; radiation effects; nucleation phenomena; growth of single crystals.
- Herman, Herbert, *Professor*, Ph.D., 1961, Northwestern University: Neutron diffraction; phase transformation; protective coatings; coatings; ceramic surfaces; fine particles.
- Jach, Joseph, *Associate Professor*, D. Phil., 1955, Oxford University, England: Solid state chemical reactions; gas reactions; use of Mossbauer Spectroscopy in study of glass systems.
- Jona, Franco P., *Professor*, Ph.D., 1949, Swiss Polytechnic Institute (E.T.H.), Switzerland: Studies of solid surfaces and their interactions with surrounding agents; determination of atomic arrangements in surface layers; low energy electron diffraction (LEED); Auger-electron spectroscopy (AES); Photoemission (UPS).
- Levine, Sumner N., *Professor*, Ph.D., 1949, University of Wisconsin: Biomedical materials; Industrial management.
- Preece, Carolyn M., *Associate Professor*, Ph.D., 1966, Imperial College, England: Studies of the influence of the environment on the mechanical properties of materials, including cavitation, impact erosion, corrosion, hydrogen embrittlement and liquid metal embrittlement.
- Prewitt, Charles T., *Professor*³, Ph.D., 1962, Massachusetts Institute of Technology: Crystallography; solid state chemistry; mineralogy.
- Seigle, Leslie L., *Professor*, D.Sc., 1951, Massachusetts Institute of Technology: Thermodynamics of solids; diffusion in solids; protective coatings; sintering.
- Siegel, Richard W., *Adjunct Associate Professor*², Ph.D., 1965, University of Illinois: Lattice defects; positron studies; transmission electron microscopy; radiation damage.
- Strozier, John A., *Adjunct Associate Professor*¹, Ph.D., 1966, University

¹ Joint appointment, Brookhaven National Laboratory

² Joint appointment, Argonne National Laboratory

³ Joint appointment, Department of Earth and Space Sciences

⁴ Joint appointment, Department of Electrical Sciences

of Utah: Solid state theory; dynamical theory of diffraction; low energy electron diffraction (LEED); surface reactions; catalysis.
Wang, Franklin F. Y., *Professor*, Ph.D., 1956, University of Illinois: Ceramics; electronic materials; manufacturing processing; solar energy technology.

DEPARTMENT OF MECHANICAL ENGINEERING

Degree Programs

The Department of Mechanical Engineering offers graduate work leading to the Master of Science and Doctoral of Philosophy degrees. The Department offers a broad program emphasizing fundamental knowledge in three academic areas: atmospheric sciences; energy systems and fluid mechanics; and solid mechanics. In each area students are encouraged to participate in research.

Requirements for the M.S. and Ph.D. degrees are listed on pages 00-00. In addition, for admission to the doctoral program in the Department of Mechanical Engineering, a defense of a Ph.D. thesis proposal is required as part of the preliminary examination, unless the student has earned his masters degree, with thesis.

The residence requirement for the Ph.D. degree is two consecutive semesters of full-time study; there is no residence requirement for the M.S. degree.

Laboratory for Planetary Atmospheres Research

The Laboratory for Planetary Atmospheres Research (LPAR) comprises an interdepartmental teaching and research program for students interested in the physics and chemistry of the atmospheres of the Earth and other planets. This program is available to students in the College of Engineering and Applied Sciences and the Division of Physical Sciences. A graduate student in any of the departments of these divisions may, with the consent of his or her chairman, elect to participate in the program. The basic degree requirements are set by the department in which the student is enrolled; they are the same as those for any other student in that department. The student will normally be advised to take two or more courses from the list drawn up by the LPAR faculty in order to obtain a basic background in the atmospheric sciences. He or she must then satisfy departmental requirements regarding a preliminary examination. However, a major portion of this examination will be devoted to problems in atmospheric physics and chemistry; at least one member of the examining committee will be from the LPAR faculty. A research advisor for the dissertation will normally be selected from the LPAR faculty, subject to the approval of the department chairmen.

The Laboratory for Energy Technology

Interdepartmental teaching and research concerned with Energy Technology is coordinated through faculty associated with The Laboratory

for Energy Technology. A graduate student in any participating department may elect to participate in the Energy Technology Program. Basic degree requirements are set by the department in which the student is enrolled. Students interested in this program, which emphasizes the fundamentals and applications of modern energy technology systems, may obtain more detailed information from the Department of Mechanical Engineering.

Faculty

- Atlas, Robert M., *Visiting Assistant Professor*, Ph.D., 1976, New York University: Weather prediction; air-sea interaction.
- Azbel, David S., *Research Professor*, Ph.D., 1965, Mandeleev Institute of Chemical Technology, Moscow, Russia: Two-phase flow.
- Berg, Fred Jr., *Adjunct Associate Professor*, M.S., 1959, Brooklyn Polytechnic Institute.
- Berlad, Abraham L., *Professor*, Ph.D., 1950, Ohio State University: Combustion; reactive media; stratospheric photochemistry; energy technology.
- Bradfield, Walter S., *Professor*, Ph.D., 1957, University of Minnesota: Environmental fluid dynamics; boundary layer heat transfer; hydrofoil ventilation studies.
- Cess, Robert D., *Professor*, Ph.D., 1959, University of Pittsburgh: Atmospheric sciences.
- Chevray, Rene, *Associate Professor*, Ph.D., 1967, University of Iowa: Transport and turbulent flows.
- Chiang, Fu-pen, *Professor*, Ph.D., 1966, University of Florida: Experimental mechanics; photoelasticity; moiré and other optical methods for stress analysis.
- Hameed, Sultan, *Adjunct Associate Professor*, Ph.D., 1968, University of Manchester: Air pollution dispersion.
- Harris, Stewart, *Associate Professor*, Ph.D., 1965, Northwestern University: Brownian motion theory and its applications; non-equilibrium theory of fluids.
- Hogan, Joseph S., *Associate Professor*, Ph.D., 1968, New York University: Planetary atmospheres; satellite meteorology.
- Irvine, Thomas F. Jr., *Professor*, Ph.D., 1956, University of Minnesota: Measurement of thermo-physical properties; rheological fluid mechanics and heat transfer.
- Lee, Richard S. L., *Professor*, Ph.D., 1960, Harvard University: Fluid mechanics; fire research; suspension flow; flow instability; biomedical fluid flow.
- O'Brien, Edward E., *Professor*, Ph.D., 1960, The Johns Hopkins University: Turbulent transport.
- Stell, George R., *Professor*, Ph.D., 1961, New York University: Statistical thermodynamics.
- Stewart, Richard W., *Visiting Associate Professor*, Ph.D., 1967, Columbia University: Planetary atmospheres; air pollution.

- Tasi, James, *Professor*, Ph.D., 1962, Columbia University: Solid Mechanics.
- Varanasi, Prasad, *Associate Professor*, Ph.D., 1967, University of California, San Diego: Planetary spectroscopy; molecular physics.
- Wang, Linshu, *Associate Professor*, Ph.D., 1966, University of California, Berkeley: Dynamic meteorology; energy technology.
- Yang, Ching H., *Professor*, Ph.D., 1951, Lehigh University: Thermo-kinetic systems.

PROGRAM IN INDUSTRIAL MANAGEMENT

The master of science program in industrial management is designed to meet a growing demand by industry for managers in technologically based firms. Students are drawn from industry who are or have a strong interest in pursuing managerial careers. The program is open to both full and part-time students who have completed a baccalaureate degree in engineering, physical science, social sciences, economics or mathematics. Applicants who do not present a year of calculus will be required to take CEN 558, "Quantitative Methods for Management and Social Sciences." Acquaintance with the elements of computer programming is desirable.

The program in Industrial Management is under the jurisdiction of the Dean of the College of Engineering and Applied Sciences together with an Advisory Committee consisting of key industrial executives in the Long Island area and Stony Brook faculty. Subjects include financial management, data base practices and quantitative analysis.

For course descriptions and further information concerning the program, contact the Graduate Faculty Representative, Professor Sumner N. Levine.

PROGRAM IN ENVIRONMENTAL ENGINEERING

The graduate program in Environmental Engineering is designed to meet a growing need in both the private and public sectors for planners, administrators and design engineers to deal with environment-related problems. This program is intended for professionals presently engaged in other areas of administration, planning and engineering as well as those already in the environmental field. The program is open to full and part-time students who have completed a baccalaureate degree in engineering, physical science, mathematics, economics or a related field.

The program is under the jurisdiction of the dean of the College of Engineering and Applied Sciences and an advisory committee of regional environmental agencies and engineering and planning firms together with Stony Brook faculty. Two basic program tracks are available; Engineering Design and Water Resources Management.

For further information, contact Professor Stewart Harris, Department of Mechanical Engineering.

Allied Health Professions
Basic Health Sciences
Dental Medicine
Medicine
Nursing
Social Welfare

The Health Sciences

The Health Sciences Center is an integral part of the Stony Brook campus, offering a comprehensive education in the health professions. It consists of six Schools set up to provide the special education needed for the training of a larger range of health professionals: the Schools of Allied Health Professions, Basic Health Sciences, Dental Medicine, Medicine, Nursing and Social Welfare. These Schools receive support services in academic, scientific and administrative functions that are common to the programs and needs of more than one School from the following divisions: Biomedical Computer Services, Media Services, Laboratory Animal Resources, Social Sciences and Humanities, the Health Sciences Center Library and the Office of Student Services.

The Health Sciences Center has also established a partnership with four Long Island hospitals, referred to as "clinical campuses," where students receive their essential patient care experience in the "field." These are: Hospital of the Medical Research Center, Brookhaven National Laboratory; Long Island Jewish-Hillside Medical Center and its Queens Hospital Center affiliation; Nassau County Medical Center; and Northport Veterans Administration Hospital. An agreement has also been signed between the Health Sciences Center and the Hamptons Hospital and Medical Center, currently being built in Westhampton Beach, establishing this as a future clinical campus for Stony Brook. In addition, the Schools have limited affiliation agreements with 50 other hospitals and health-related agencies in the region including: Central Islip Hospital, Good Samaritan Hospital, Huntington Hospital, Mercy Hospital, Nassau Hospital, North Shore Hospital, Saint Francis Hospital, Saint Charles Hospital, Saint John's Hospital, South Nassau Communities Hospital, South Oaks Hospital and Southside Hospital.

Since its establishment, the Health Sciences Center has been temporarily housed in buildings on the South and Main (north) Campuses while construction of its permanent facilities—a megastructure being constructed in three stages on a 250-acre campus site, comprised of

a main teaching building, a University Hospital and a Basic Sciences building—has been in progress. During 1976-77, it is expected that several HSC Schools, services and administrative offices will move into Stage 1 of the HSC megastructure on the East Campus, while some components of the Health Sciences Center will remain on the Main and South Campuses.

Stage 1 is a teaching-research building comprised of a five-level network structure, 5.3 acres in base size, topped with a clinical tower housing ten levels of medical research laboratories and faculty offices. It is the tallest habitable structure on Long Island, 342 feet high and approximately 470 feet above sea level.

The University Hospital, Stage 2, is now under construction on the southeast side of Stage 1, expected to be completed by 1978-79. Architecturally striking, the Hospital, planned for up to 540 beds, will consist of a large base or network building, with twin bed towers rising 12 stories high from the base.

The final stage of the HSC complex, a Basic Sciences building, is also under construction and expected to be completed before the end of this decade.

School Organization

With the exception of the Schools of Nursing and Social Welfare, the Schools of the Health Sciences Center are organized structurally around departments:

School of Allied Health Professions

- Department of Allied Health Resources
- Department of Cardio-Respiratory Sciences
- Department of Medical Technology
- Department of Physical Therapy
- Department of Physician's Assistant Education

School of Basic Health Sciences

- Department of Anatomical Sciences
- Department of Biochemistry
- Department of Biomathematics
- Department of Microbiology
- Department of Pathology
- Department of Pharmacological Sciences
- Department of Physiology and Biophysics

School of Dental Medicine

- Department of Children's Dentistry
- Department of Dental Health
- Department of Oral Biology
- Department of Oral Surgery
- Department of Periodontics
- Department of Restorative Dentistry

School of Medicine

Department of Anesthesiology
Department of Community Medicine
Department of Family Medicine
Department of Medicine
Department of Neurology
Department of Obstetrics and Gynecology
Department of Pediatrics
Department of Psychiatry
Department of Radiology
Department of Surgery

School Information: Specific and detailed information about the professional programs offered by the six Schools is contained in the Health Sciences Center Bulletin. Since the Center's training of health professionals requires special academic programming and supportive services, significant sections of the data contained in this Graduate Bulletin are not applicable to the Health Sciences Center; e.g. admission procedures and requirements; registration; student services; educational expenses; financial aid; and academic calendar.

The Health Sciences Center Bulletin can be obtained by writing or telephoning the Health Sciences Center Office of Student Services (516-444-4211), or at the Office of the Dean of a specific school.

Allied Health Professions

The program leading to the degree of Master of Science in Allied Health Sciences is open to qualified, experienced professionals in any health field who now wish to direct their careers into teaching, supervisory, or research roles. The program requires completion of 44 credits of study including a six month internship or practicum. All students will complete a required "core" program consisting of a sequence of 12 credits of common foundation courses; plus an individually planned sequence of courses in one of three tracks: teaching, supervision or research. Both full-time and part-time students are accepted in program.

Eligibility Requirements

All candidates admitted must hold a baccalaureate degree; have achieved professional status in one of the health professions; have completed at least one year of practice in their field; and aspire to a career within the framework of one of the three tracks of teaching, supervision, or research. Each candidate will plan and pursue his or her program with the guidance of a faculty committee of three members; committees will be chosen to include competence in the professional field, in the track area and in an academic discipline germane to the candidate's field of interests.

Further information may be obtained from the project director:

Martin H. Rosenfeld, Ph.D.
Assistant Dean for Graduate Program
School of Allied Health Professions
Health Sciences Center
State University of New York
Stony Brook, New York 11794
(516) 444-2258

Basic Health Sciences

The School of Basic Health Sciences offers programs leading to the Ph.D. degree in Anatomical Sciences, Microbiology, Pathology, Pharmacological Sciences and Physiology and Biophysics. These programs are designed to lead to careers in research and teaching. The currently-offered programs are described on the following pages.

Dental Medicine

The School of Dental Medicine: Admission to the school is highly selective. The School of Dental Medicine does not have a separate application form but participates in the centralized American Association of Dental Schools Application Service. The pre-doctoral program will lead to a dental degree after a period of approximately 3½ years of study containing about 4900 hours of clinical and non-clinical instruction.

Medicine

The School of Medicine: Admission to the school is highly selective and students must take the Medical College Admissions Test in the year prior to the year for which admission is being sought to be considered for acceptance. The school offers a four-year program leading to the M.D. degree.

All questions concerning admission to the Schools of Dental Medicine and Medicine should be addressed to:

The Committee on Admissions (name of School)
Health Sciences Center
State University of New York
Stony Brook, New York 11794
(516-444-2113)

Nursing

The School of Nursing offers a full-time, two-year multidisciplinary Master of Science program for the preparation of nurse-practitioners in Family Health Care and Critical Care Management. All questions concerning future admission requirements, application and admission procedure should be addressed to:

Dr. Lenora McClean
Director Graduate Program in Nursing
School of Nursing
Health Sciences Center
State University of New York
Stony Brook, New York 11794
(516-444-2380)

Social Welfare

The School of Social Welfare: This school offers an MSW degree, a 4-semester program which includes academic courses and field work. The curriculum in the School of Social Welfare is organized into three concentrations:

1. intervention with individuals, families and small groups,
2. theory and analysis,
3. policy planning, research, administration and community organization.

All questions concerning admission to the School of Social Welfare should be addressed to:

Director of Admissions
School of Social Welfare
Health Sciences Center
State University of New York
Stony Brook, New York 11794
(516-444-2143)

SCHOOL OF BASIC HEALTH SCIENCES

The preclinical disciplines fundamental to the health professions are organized in a School of Basic Health Sciences. These disciplines are represented by Departments of Anatomical Sciences, Microbiology, Pathology, Pharmacological Sciences, and Physiology and Biophysics. Also included for certain administrative purposes is the Department of Biochemistry which is housed in the Division of Biological Sciences. These departments, in conjunction with appropriate components of the Division of Biological Sciences, have principal responsibility for preclinical instruction of students in all schools of the Health Sciences Center. The School of Basic Health Sciences also has university-wide responsibility to students in all other schools on the campus, as well as on affiliated clinical campuses, for undergraduate and graduate training and research in the disciplines basic to the health sciences.

The faculty listing that follows includes only those members sharing major responsibility for graduate education. A comprehensive listing of all Health Sciences faculty members is presented in the *Health Sciences Center Bulletin*.

Graduate Programs in Basic Health Sciences

Doctoral programs are being offered in Anatomical Sciences, Micro-

biology, Oral Biology and Pathology, Pathology, Pharmacological Sciences, and Physiology and Biophysics. Each program is under the direction of its own program chairman and executive committee. Students wishing to pursue a combined M.D.-Ph.D. program should apply for admission to both Schools (BHS and Medicine), since admission to one program does not guarantee admission to the other.

Admission Requirements

A. A baccalaureate degree with the following minimal preparation is required: mathematics through one year of calculus, chemistry including organic chemistry, general physics, and one year of biology, including laboratory.

B. A minimum grade point average of 2.75 (B-) in all undergraduate course work, and 3.00 (B) in science and mathematics courses.

C. Letters from three previous instructors and results of the Graduate Record Examination.

D. Acceptance by the School of Basic Health Sciences and the Graduate School.

In special cases, students not meeting requirements A through C may be admitted on a provisional basis. These students must act to remedy deficiencies within the first year, according to individual departmental requirements.

Requirements for the Ph.D. Degree

A. Minimum residence: Two years of full-time graduate study.

B. Language proficiency: Whether or not foreign language proficiency or a substitute (such as computer programming) is required, is left to the discretion of individual departmental programs.

C. Formal course requirements: Successful completion of an approved course of study (approval is the responsibility of the respective program committee).

D. Candidacy (Preliminary) Examination: At the discretion of the department, the Preliminary Examination may be oral, or written, or both and may consist of a series of examinations. Students will normally apply for the examination after completing the major portion of course work, but not later than the end of the fifth semester of course work. In those departments which require foreign language proficiency tests, the latter must be passed before permission can be granted to take the Candidacy Examination.

E. Advancement to candidacy: The School's recommendation with respect to candidacy for the Ph.D. degree will be based upon satisfactory completion of the above requirements. Advancement to candidacy is granted by the Dean of the Graduate School.

F. Research and dissertation: The general requirements of the Graduate School regarding the Dissertation Examination will be followed.

The M.S. Degree

Where the circumstances surrounding a student's failure to complete the Ph.D. program are sufficiently extenuating, the M.S. degree may be awarded, provided that the following requirements are met:

- A. One year residence.
- B. Successful completion of an approved course of study (at least 30 graduate semester credits).
- C. A comprehensive examination based on course work, and/or departmental approval of a written masters thesis and its successful defense in an oral examination.

Preparation for Teaching

As part of their graduate training, all students are required to participate in teaching activities and to demonstrate mastery of teaching skills.

Interdisciplinary Program

An interdisciplinary graduate program in Molecular Biology is offered by the Department of Biochemistry along with faculty drawn from other departments in the School of Basic Health Sciences, the Division of Biological Sciences, and from the Department of Chemistry. This program is under the auspices of the Division of Biological Sciences and is described under that section elsewhere in this *Bulletin*.

ANATOMICAL SCIENCES

The program in Anatomical Sciences offers graduate studies in four broad areas: Developmental Anatomy, Microscopic Anatomy, Macroscopic Anatomy, and Neuroscience. The Program in *Developmental Anatomy* includes genetics, embryology, developmental mechanisms, and fetal biometrics. The *Microscopic Anatomy* Program emphasizes the structure and function of biological membranes, cell organelles, motile and excitable tissues. The program in *Macroscopic Anatomy* consists of biomechanics and biometrics in human and vertebrate anatomy, and physical anthropology, including primatology. The *Neuroscience* Program emphasizes invertebrate and vertebrate neuroanatomy and neurophysiology, and it includes neurocytology, neurohistology, electrophysiology, and animal behavior. Further details of the program in Anatomical Sciences may be obtained from the program chairman, Dr. David L. Williamson.

Faculty

Blaustein, David, *Assistant Professor*, D.D.S., 1957, New York University: Immunocytochemical localization of proteins, ultrastructure of the vertebrate eye, immunochemistry.

Creel, Norman, *Associate Professor*, Dr. rer. nat., 1967, Eberhard-Karls University, Tübingen, Germany: Quantitative taxonomy of primate populations, polyfactorial inheritance, primate evolution.

- Dewey, Maynard M., *Professor and Chairman*, Ph.D., 1958, University of Michigan: Structure and function of biological membranes, comparative structure and function of muscle, electron microscopy.
- Fleagle, John G., *Assistant Professor*, Ph.D., 1976, Harvard University: Evolutionary biology of higher primates; comparative musculo-skeletal anatomy.
- Fusco, Madeline, *Professor and Dean, School of Basic Health Sciences*, Ph.D., 1959, University of Pennsylvania: Neurophysiology, neural control of energy exchange, hypothalamic control systems.
- Gordon, Joel S., *Assistant Professor*, Ph.D., 1971, University of Pennsylvania: Molecular biology of eukaryotic cytodifferentiation, chromatin structure and composition during differentiation, *in vitro* myogenesis and chondrogenesis, mechanisms of Budr action.
- Hauber, Eric J., *Assistant Professor*, Ph.D., 1971, University of California at Los Angeles: Conformation and function of prokaryotic ribosomes and membrane-bound eukaryotic ribosomes.
- Inke, Gabor B., *Professor*, M.D., 1944, Pazmany Peter University, Budapest, Hungary; D.D.S., Halle/Saale, East Germany: Quantitative morphology of the human body, physical anthropology.
- Irving, Ronald E., *Assistant Professor*, Ph.D., 1967, Boston University: Comparative neuroanatomy; cytoarchitectural analyses of auditory pathway nuclei in mammalian species.
- Karten, Harvey J., *Professor*, M.D., 1959, Albert Einstein College of Medicine: Comparative and developmental biology of the vertebrate nervous system, with emphasis on morphological and histochemical studies of nerve tissue; evolution of neural and behavioral biology.
- Kelly, James P., *Assistant Professor*, Ph.D., 1971, Washington University: Physiology and anatomy of sensory regions in the mammalian cerebral cortex.
- Stern, Jack T., Jr., *Associate Professor*, Ph.D., 1969, University of Chicago: Functional morphological and evolutionary mechanisms of primate adaptations; biomechanics, with emphasis on mathematical models of muscle systems and electromyography.
- Twarog, Betty M., *Professor*, Ph.D., 1952, Radcliffe College: Comparative structure and physiology of invertebrate smooth muscles, amine localization in the invertebrate nervous system, biotoxins.
- Walcott, Benjamin, *Assistant Professor*, Ph.D., 1968, University of Oregon: Comparative neurophysiology; relation between muscle tension, sarcomere length, and filament length in striated muscle; sensory integration; electron microscopy.
- Walther, Bernt, *Assistant Professor*, Ph.D., 1972, University of Washington: Molecular biology of cell surfaces, mechanisms of specific cell adhesion.
- Wells, James P., *Assistant Professor*, Ph.D., 1974, University of Massachusetts: Cinematographic motion analysis; primate ethology, with emphasis on positional behavior; physical anthropology.

Williamson, David L., *Associate Professor*, Ph.D., 1959, University of Nebraska: Genetics, maternally inherited infections, biology of spiroplasmas.

Witkovsky, Paul, *Professor*, Ph.D., 1962, University of California at Los Angeles: Structure and function of the vertebrate retina, central control of reflexes in lower vertebrates.

MICROBIOLOGY

The Department of Microbiology offers a variety of programs leading to the Ph.D. degree. The general areas of research being conducted in the Department encompass all aspects of modern microbiology. These consist of prokaryotic systems, animal viruses, eukaryotic cells and subcellular systems. The Department is especially well equipped for research in the rapidly growing fields of eukaryotic cells and viral molecular biology thanks to an N.I.H. Training Grant in Viral Oncology and a central facilities Grant from the Human Cell Program of the National Science Foundation. The required course work will be designed to cover cell biology, biochemistry, genetics, molecular biology and developmental biology. Students are given the opportunity initially to conduct short-term research projects in two or three different laboratories, followed by concentration on a major dissertation research project. Further details may be obtained from the Graduate Advisor, Dr. William Bauer.

Faculty

Bauer, William R., *Associate Professor*, Ph.D., 1968, California Institute of Technology: Structure, enzymology, and interactions of the nucleic acids, especially relating to the properties of circular DNAs; mechanism of action of antitumor drugs.

Bukhari, Ahmad, *Adjunct Assistant Professor*, Ph.D., 1970, University of Colorado Medical School at Denver: The mechanism of integration of bacteriophage Mu and the degradation of abnormal proteins of *Escherichia coli*.

Carter, Carol Ann, *Assistant Professor*, Ph.D., 1972, Yale University: Molecular biology of reovirus replication; roles of methylation and phosphorylation in virus replication.

Delihias, Nicholas, *Associate Professor*, Ph.D., 1961, Yale University: Ribosome surface structure, RNA function, ribosome binding sites; antibiotic interactions.

Dunn, John J., *Adjunct Assistant Professor*, Ph.D., 1970, Rutgers University: Transcription, processing, and translation of RNA.

Kates, Joseph R., *Professor and Chairman*, Ph.D., 1966, Princeton University: Molecular biology of animal virus replication, study of the mechanisms and control of gene expression during cellular growth and differentiation using unucleation and nuclear transplantation techniques with tissue cultured cells.

- Keegstra, Kenneth, *Assistant Professor*, Ph.D., 1971, University of Colorado: Biochemistry of cell surface components; role of complex carbohydrates in functions of surface membranes.
- Kim, Charles W., *Associate Professor and Associate Dean of the Graduate School*, Ph.D., 1956, University of North Carolina, Chapel Hill: Cell-mediated immunity, especially the mechanism of delayed hypersensitivity to *Trichinella spiralis*.
- Ohtsubo, Eiichi, *Assistant Professor*, Ph.D., 1971, Osaka University, Japan: Mapping of functional sites and/or sequences involved in a specialized recombination of bacterial plasmids with bacterial chromosomes.
- Pollack, Robert, *Associate Professor*, Ph.D., 1966, Brandeis University: Cell biology, genetics and molecular biology of carcinogenesis; cell structure and function, control of cell growth.
- Setlow, Jane, *Adjunct Professor*, Ph.D., 1959, Yale University: Recombination and repair of microbial DNA.
- Tegtmeyer, Peter, *Professor*, M.D., 1960, St. Louis University: Genetic analysis of SV40 virus in relation to molecular biology of viral carcinogenesis and papovavirus replication.
- Weitzman, Stephen, *Assistant Professor*, M.D., 1969, New York University Medical School: Cell biology and molecular biology of immunoglobulin synthesis and secretion in cultured myeloma cells.
- Wimmer, Eckard, *Associate Professor*, Ph.D., 1962, University of Göttingen, Germany: Structure and biological function of ribonucleic acids of picornaviruses and RNA tumor viruses and their host cells.

ORAL BIOLOGY AND PATHOLOGY

The graduate program in Oral Biology and Pathology is intended for students interested in study and research towards the M.S. and Ph.D. degrees and for post-doctorates desiring further training or wishing to pursue independent research in this area. The M.S. program is of approximately two years duration and is particularly suited for those dental graduates who wish to obtain basic science training before entering a clinical specialty. While the department is interested in all aspects of oral biology, active programs of research presently being conducted include the following: development, metabolism and control of the oral microbiota; bone and salivary gland structure and metabolism; secretory mechanisms; ultrastructure and metabolism of healthy and diseased periodontal tissues; chemistry and crystallography of the biological calcium phosphates; bacterial cell walls and membranes; molecular basis of cellular differentiation. Further details may be obtained from the program chairman, Dr. Israel Kleinberg.

Faculty

- Eisenbud, Leon, *Professor*, D.D.S., 1940, New York University, College of Dentistry: Influence of systemic disease on oral tissues; chemotherapeutic agents in dental infection.

- Garant, Philius R., *Associate Professor*, D.M.D., 1965, Harvard School of Dental Medicine: Ultrastructure of periodontium in health and disease; ultra-structure of hard-tissue formation, including odontogenesis; comparative odontology.
- Golub, Lorne M., *Associate Professor*, D.M.D., 1963, University of Manitoba, Canada: Gingival crevicular fluid; local and systemic factors in periodontal disease; bone and gingival collagen metabolism.
- Gwinnett, A. John, *Associate Professor*, L.D.S.R.C.S., 1960; Ph.D., 1964, Bristol University, England; Electron microscopy of the tooth surface; interface of adhesive dental materials with tooth structure; morphology of plaque and its formation.
- Kaufman, Hershall W., *Associate Professor*, D.M.D., 1963; Ph.D., 1967, University of Manitoba, Canada: Phytates and other phosphates in mineralization and demineralization processes; effects of lathyrism on hard-tissue mineralization; plaque mineralization.
- Kleinberg, Israel, *Professor and Chairman*, D.D.S., 1952, University of Toronto, Canada, Ph.D., 1958, University of Durham, England: Metabolism of oral mixed bacterial populations; physicochemical mechanisms in dental plaque formation; bacterial growth factors in human saliva; tissue pH and pO_2 monitoring during ischemic conditions; development of oral diagnostic techniques.
- McNamara, Thomas F., *Associate Professor*, Ph.D., 1959, The Catholic University of America: Role of microorganisms in dental caries etiology; immune mechanisms in periodontal disease; enzymes in gingival crevicular fluid and their relation to the onset of periodontal disease.
- Pollock, Jerry J., *Associate Professor*, Ph.D., 1969, Weizmann Institute, Israel: Functional organization of bacterial cell walls and membranes; molecular mechanisms of penicillin action; role of enzymes in dental plaque formation.
- Sciubba, James J., *Assistant Professor*, D.M.D., 1967, Fairleigh Dickinson University; Ph.D., 1974, University of Illinois: Wound healing; tumor pathology; electron microscopy of oral mucosa.
- Sreebny, Leo M., *Professor*, D.D.S., 1945; Ph.D., 1954, University of Illinois at Urbana: Salivary gland metabolism and secretion; salivary enzymes; role of diet, mastication, and endocrines in secretory processes.
- Taichman, Lorne B., *Assistant Professor*, M.D., 1965, University of Toronto, Canada; Ph.D., 1971, University of Wisconsin Graduate School; Mechanism of cell differentiation in cultured cells; molecular structure of chromosomes and its relation to genetic expression.

PATHOLOGY

This program provides a broadly-based approach to research in the pathology of human disease, including immunology and immunopathology, oncology, connective tissue metabolism, mechanisms of tissue injury, and environmental pathology. The curriculum initially is similar to that for first-year medical students, except for modification of clinical training as may be appropriate. Later, the student pursues

advanced courses, selected to provide expertise in the investigative area of his or her major interest, leading ultimately to dissertation research. Further details of the program may be obtained from the program chairman, Dr. Aaron Janoff.

Faculty

Elias, Julius M., *Research Associate*, M.A., 1963, C.W. Post College: Immunohistochemistry of cell and tissue antigens; comparative studies of immunofluorescent and immunoenzyme methods for detection of immune complexes.

Godfrey, Henry P., *Assistant Professor*, M.D., 1965, Harvard University: The study and characterization of the antigen receptor(s) involved in the several delayed-onset, cell-mediated hypersensitivities of the guinea pig.

Habicht, Gail, *Assistant Professor*, Ph.D., 1965, Stanford University: The cellular basis of immunological unresponsiveness (tolerance); lymphocytic chloanes.

Janoff, Aaron, *Professor and Graduate Advisor*, Ph.D., 1958, New York University: Study of the proteolytic enzymes of human polymorphonuclear leukocytes and the role of these enzymes in disease.

Kane, Philip B., *Assistant Professor*, M.D., 1967, New York University: Experimental chemical carcinogenesis of the respiratory tract; characterization of asbestos induced intrathoracic tissue reactions in humans.

Kuschner, Marvin, *Professor and Chairman*, M.D., 1944, New York University: Carcinogenesis, environmental factors in disease.

Lane, Bernard P., *Associate Professor*, M.D., 1963, New York University: Injury and carcinogenesis of respiratory tract in organ culture and in heterotopic grafts.

Malemud, Charles, *Instructor*, Ph.D., 1973, George Washington University: The study of the growth and metabolism of chondrocytes in cell culture.

Miller, Frederick, *Professor*, M.D., 1961, New York University: Lymphocytic chloanes; glycoproteins; immune disease special reference to rheumatic diseases, dermatoses; colon carcinoma.

Norby, David, *Instructor*, Ph.D., 1973, University of Southern California: Collagen chemistry and biosynthesis, genetic polymorphism of collagens; collagen metabolism of chondrocytes in cell culture.

Phillips, Mildred E., *Associate Professor*, M.D., 1950, Howard University: Clarification of the basic mechanisms involved in the cellular and humoral immune responses of tumors.

Sokoloff, Leon, *Professor*, M.D., 1944, New York University: Pathogenesis of degenerative and other joint diseases is studied by cell culture, biomechanical and morphologic means.

Upton, Arthur C., *Professor*, M.D., 1946, University of Michigan: Interactions between ionizing radiation and other mutagenic and carcinogenic agents and genetic factors in the pathogenesis of neoplasia and aging.

Weisbroth, Steven H., *Associate Professor*, D.V.M., 1964, Washington State University: Impingement of intercurrent disease in laboratory animals on the research process, and animal models of human disease.

PHARMACOLOGICAL SCIENCES

The program in Pharmacological Sciences is interdisciplinary and includes the opportunity for graduate studies in *Endocrinology*, *Neurobiology*, *Biochemical Pharmacology* and *Medicinal Chemistry*. Alternatively, graduate students in the Department and their preceptors may choose to participate in interdepartmental programs of *Molecular Biology* and *Chemical Biology*. The curriculum is directed towards developing a broad understanding of chemical and biological principles that underlie the action of drugs, chemicals, and hormones on living cells. Further details may be obtained from the program director, Dr. Moises Eisenberg.

Faculty

- Albert, Adrien, *Professor*, Ph.D., 1937, University of London, England: Chemical biology, medicinal chemistry.
- Brynes, Paul J., *Assistant Professor*, Ph.D., 1975, Cornell University: Bioorganic chemistry of drug-receptor interactions.
- Eisenberg, Moises, *Assistant Professor*, Ph.D., 1972, California Institute of Technology: Membrane biophysics.
- Grollman, Arthur P., *Professor and Chairman*, M.D., 1959, Johns Hopkins University: Molecular pharmacology, mechanisms of action of antitumor and antiviral drugs.
- Horwitz, Susan B., *Assistant Professor*, Ph.D., 1963, Brandeis University: Biochemical pharmacology.
- Johnson, Francis, *Professor*¹, Ph.D., 1954, University of Strathclyde, England: Medicinal chemistry.
- Raisfeld, Ilene H., *Associate Professor*, M.D., 1964, New York University: Clinical pharmacology, mechanism of drug toxicity.
- Reich, Edward, *Professor*, M.D., 1956, Johns Hopkins University: Biochemical basis of neoplasia, cancer biology.
- Williams, David L., *Assistant Professor*, Ph.D., 1972, University of Illinois: Mechanisms of hormone action.

PHYSIOLOGY AND BIOPHYSICS

Two curricular tracks are available, the first for students with broad interests in Physiology and Biophysics, and the second for students who are interested in those aspects of physiology more closely related to clinical medicine. As many of the departmental members are actively engaged in research in neurobiology and the molecular biology of cell membranes, the first track should be particularly attractive to students

¹ Joint appointment, Department of Chemistry

with interests in these areas. Students with a solid background in some branch of the natural sciences but with little formal training in biology are especially invited to inquire further about the program. For the second track, the first year curriculum is similar to that for beginning medical students, save for appropriate modification of clinical training. Further details concerning the programs in Physiology and Biophysics may be obtained from the program chairman, Dr. Stuart McLaughlin.

Faculty

- Benjamin, William, *Assistant Professor*, M.D., 1959, College of Physicians & Surgeons, Columbia University: Endocrinology.
- Fara, John W., *Assistant Professor*, Ph.D., 1970, University of California at Los Angeles: Cardiovascular and gastrointestinal physiology.
- LeFevre, Paul G., *Professor*, Ph.D., 1945, University of Pennsylvania: Cellular physiology, membrane transport.
- Levy, Harvey M., *Professor*, Ph.D., 1955, University of California at Los Angeles: Muscle physiology and biochemistry.
- Masiak, Stanley J., *Assistant Professor*, Ph.D., 1967, Rutgers University: Mechanism of ion transport.
- McLaughlin, Stuart, *Associate Professor*, Ph.D., 1968, University of British Columbia, Canada: Biophysics of membranes.
- Mendelson, Martin, *Associate Professor*, Ph.D., 1962, California Institute of Technology: Sense organs, comparative neurophysiology.
- Strichartz, Gary, *Assistant Professor*, Ph.D., 1970, University of Pennsylvania: Molecular neurophysiology.
- Van der Kloot, William G., *Professor and Chairman*, Ph.D., 1952, Harvard University: Cellular neurophysiology.

The Mathematical Sciences

DEPARTMENT OF APPLIED MATHEMATICS AND STATISTICS

The graduate program of this Department provides a course of study in modern applied mathematics with a view to its utilization in the physical, social, biological, and behavioral sciences, as well as in engineering. The course offerings and the research program cover both the theories and principles which are common to the applications as well as the more specialized methods which arise in specific areas.

The task of translating physically or socially meaningful problems into a mathematical framework is called "Mathematical Modelling" and is often the key element in understanding the complex interrelations which underlie many problem areas. Students with a training in the use of modelling techniques are prepared for careers in government and industry in which mathematics is used to advantage either as a computational or conceptual tool.

Faculty research programs currently in progress include physiological modelling, numerical analysis (sparse matrices and partial differential equations), nuclear reactor theory, crack theory and elasticity, solid and fluid mechanics, modelling of urban service systems, realizability theory, robust tests of hypothesis, data analysis, applied graph theory, stochastic modelling and nonparametric methods.

The Applied Mathematics Program includes a professionally oriented track in Statistics as well as a Postgraduate Extension Program administered in several off-campus locations.

Statistics Track

The statistics track will normally take 3 to 4 semesters to complete. A program consists of 8 required courses and 2 or more electives. See courses listed below. However, students with strong statistics backgrounds may have certain requirements waived, and thus may be able to complete studies in 2 semesters. Adjustments in the program may be accepted for doctoral students in the social and life sciences. Students who do not present an undergraduate course in probability

in their credentials for admission must take MSA 569, Introduction to Applied Probability. It should be noted that familiarity with computer programming is required of students in the statistics track. Required courses in Statistics are listed below:

MSA 570, 571	Mathematical Statistics I, II
MSA 572, 573	Data Analysis I, II
MSA 575	Data Analysis Laboratory
MSA 578	Regression
MSA 581	Analysis of Variance or MSA 582 Design of Experiment
MSM 552	Measure Theory and Integration in Probability

Electives in Statistics: A minimum of two are required, one of which must be selected from a set of applied math courses and the other from a group of courses, in applied math, the social and life sciences, and computer science.

Postgraduate Extension Program

In addition to the resident full-time graduate program leading to the M.S. and Ph.D. in Applied Mathematics and the new M.S. in Statistics, the Department conducts an extensive part-time program at several locations in Nassau and Suffolk counties. The part-time program is governed by regulations governing the resident full-time program with the exception that students in the Postgraduate Extension Program have greater flexibility in choosing the time for the qualifying examination if they are contemplating pursuing the Ph.D.

At the present time, courses in the Postgraduate Extension Program are offered at the State University College at Old Westbury, Grumman Aerospace Corporation and Brookhaven National Laboratory. The purpose of this program is to provide an opportunity for men and women who are employed full time, to pursue serious graduate study leading to advanced degrees in applied mathematics. Applicants will be considered for admission to this program who hold a bachelors degree in applied mathematics, mathematics, engineering, physical science or life science and social science with a strong background in undergraduate mathematics. Qualified students may continue beyond the Masters degree for the Ph.D. degree in this program.

A matriculated part-time degree candidate may pursue courses at any one of the several off-campus locations as well as those offered on campus. Additional information may be obtained from the Administrator of the Postgraduate Extension Program, Esther Weitzman, at the Department of Applied Mathematics and Statistics, State University of New York at Stony Brook, Stony Brook, N. Y. 11794.

Requirements for Degrees in Applied Mathematics and Statistics

Requirements for the M.S. degree may be satisfied through the completion of 8 courses in applied mathematics or in approved related

areas with an average of a B or better. Completion of a Masters thesis may be substituted for 2 of the courses.

Requirements for satisfaction of Ph.D. include successful completion of a qualifying examination, a preliminary doctoral examination, completion of the residency requirement of two consecutive semesters of full-time study, language proficiency in French, German, or Russian and the successful completion and defense of a doctoral dissertation.

Admission to Graduate Study

In addition to the requirements for admission given on page 28, the department requires study of advanced calculus or its equivalent.

Faculty

- Beltrami, Edward J., *Professor and Chairman*, Ph.D., 1962, Adelphi University: Optimization techniques; models for public systems analysis.
- Chen, Yung Ming, *Professor*, Ph.D., 1963, New York University: Numerical analysis and methods; deterministic and stochastic partial differential equations and their applications.
- Dicker, Daniel, *Professor and Director of College of Engineering Postgraduate Extension Program*, D. Eng. Sc., 1961, Columbia University: Boundary value problems of solids and fluids; aeroelastic analysis of suspension bridges.
- Dolezal, Vaclac, *Professor*, Ph.D., 1955 and D. Sc., 1966, Czechoslovak Academy of Sciences, Prague, Czechoslovakia: Network theory; control theory; applications of distribution theory.
- Finch, Stephen, *Assistant Professor*, Ph.D., 1974, Princeton University: Robust estimation and non-parametric statistics.
- Frauenthal, James C., *Associate Professor*, Ph.D., 1971, Harvard University: Mathematical modeling; population dynamics; applied mechanics; shell stability and optimization.
- Gerst, Irving, *Professor*, Ph.D., 1947, Columbia University: Network function theory; special functions as related to the preceding areas.
- Kim, Woo Jong, *Associate Professor and Graduate Program Director*, Ph.D., 1964, Carnegie Institute of Technology; Ph.D., 1968, Carnegie-Mellon University: Ordinary differential equations; oscillation, disconjugacy and monotonicity of solutions; factorization of differential operators; fractional inequalities.
- Leibowitz, Martin A., *Associate Professor*, Ph.D., 1961, Harvard University: Operations research; stochastic processes and applications.
- Simon, Gary, *Associate Professor*, Ph.D., 1972, Stanford University: Categorical data analysis; multivariate nonparametric methods.
- Srivastav, Ram P., *Professor*, Ph.D., 1958, Lucknow University, India; Ph.D., 1963, Glasgow University; D. Sc., 1972, Glasgow University, Scotland: Fracture mechanics; integral equations; complex analysis; integral transforms.

- Tewarson, Reginald P., *Professor*, Ph.D., 1961, Boston University: Numerical analysis and computational methods, sparse matrices, generalized inverses and large non-linear systems; mathematical models of diffusion problems in biology and medicine.
- Tucker, Alan, *Associate Professor*, Ph.D., 1965, Stanford University: Graph theory; combinatorial algorithms.
- Yuan, William J., *Assistant Professor*, Ph.D., 1974, University of California, Berkeley: Nonparametric statistics; biostatistics; data analysis.
- Zemanian, Armen H., *Professor*, Eng. Sc. D., 1953, New York University: Systems theory; network theory; generalized functions; integral transformations and their applications to economics.

DEPARTMENT OF COMPUTER SCIENCE

Ph.D. and M.S. Programs in Computer Science

The graduate programs in computer science are designed to train both academically oriented students and students with professional goals in the many business, industrial, or governmental occupations requiring advanced knowledge of computer theory and technology. Generally speaking, the Ph.D. program serves the first type of student while the professional M.S. program serves the second type. A student who is progressing satisfactorily toward the Ph.D. will earn an M.S. degree. However, the professional M.S. student will, for the most part, be emphasizing more practical and applied subject matter, excluding himself from automatic entry into the Ph.D. program.

Students seeking graduate studies in computer science with strictly limited professional goals in mind are interested in spending a relatively short period of time concentrating on the acquisition of knowledge and skill required for applied computer science. The professional M.S. degree program was designed to satisfy this need. Programming, computing systems, and applications are emphasized in the course work. In addition, each student in the program is given the experience of grappling with a large-scale problem involving analysis, design, evaluation, and implementation. This is accomplished either through M.S. thesis work or workshop-type course activities.

The aims of the Ph.D. program are to give the student a rigorous and thorough knowledge in the subject areas discussed above and to develop in the student the ability to recognize and pursue significant research problems. The first two years of graduate study are generally devoted to the first aim, with the student taking a relatively heavy and well defined program of courses. By the end of the second year the research phase of the student's graduate career should be under way with participation in advanced study activities and preliminary research work. Research for the dissertation represents the final stage of the student's training.

Starting in January 1976, the department will be offering a comprehensive program of evening courses at the Old Westbury Campus

of SUNY in Nassau County which will enable part-time students to earn the Master's degree or to select individual courses of interest. The course schedule has been designed to provide the student with a thorough knowledge of computer techniques at the implementation level. Most require significant programming work to be carried out at computer terminal facilities at Old Westbury. Students wishing to enroll in this program should write to the Department of Computer Science at Stony Brook requesting information concerning the special admission and degree requirements pertaining to the Old Westbury program.

Admission to Graduate Study

For admission to graduate study in computer science, the following are normally required:

- A. Baccalaureate degree in a physical science, biological science, mathematics, or engineering.
- B. Two years of college-level mathematics including ordinary differential equations and linear algebra.
- C. One year of a natural science at college level, with physics strongly preferred.
- D. At least two college-level courses in computer science covering programming in both a language such as FORTRAN and assembly language.
- E. A grade average of at least B in all undergraduate course work and in science, mathematics, and engineering courses.
- F. Results of the Graduate Record Examination Aptitude Test.
- G. Acceptance by the Department of Computer Science and by the Graduate School.

All applicants must submit Graduate Record Examination scores for the general aptitude tests. Applicants are encouraged to submit GRE test scores for the advanced examination in their undergraduate major field as well. GRE score requirements may not be waived, and only provisional admission to the program is possible without them.

Whatever the area of undergraduate specialization, students offering additional preparation in computer science (computer organization, systems programming, digital logic, and systems), or mathematics (probability and statistics, logic, finite mathematics, modern algebra, numerical analysis) can expect more favorable consideration. It is highly recommended that students include courses in digital systems, numerical analysis, and modern algebra as part of their undergraduate preparation. Ph.D. bound students in particular will be seriously handicapped without preparation in either digital systems design or modern algebra.

Students of exceptional promise who are deficient in preparation will be considered for admission to the program on a provisional basis. Upon entrance, students will be informed of the requirements they must satisfy for the termination of provisional status.

Requirements for the M.S. Degree

Students in the professional M.S. degree program choose between two options, the M.S. with thesis and the M.S. without thesis. Students choosing the no-thesis option are required to take the course MSC 524, Laboratory in Computer Science, which extends over a full academic year and provides experience in dealing with large-scale computer-oriented problems.

A. Course requirements: (30 graduate credits)

1. M.S. without thesis:
 - a. Core courses (MSC 502, 521, 522, and 525). (16 credits)
 - b. MSA 506 Finite Structures or MSC 541 Theoretical Foundations of Computing I. (3 credits)
 - c. MSC 524 Laboratory in Computer Science, extending over two semesters. (5 credits)
 - d. Six credits of elective graduate courses, chosen with advisor's approval.
2. M.S. with thesis:
 - a. Core courses (MSC 502, 521, 522, and 525). (16 credits)
 - b. Six credits of elective graduate courses, chosen with advisor's approval.
 - c. MSC 599 Research. (8 credits)

A grade average of B or better is required in the above courses of study.

B. Supplementary requirements: Demonstration of knowledge of numerical analysis and digital systems at the level of MSA 226 and ESE 318, respectively. The following are considered evidence of such knowledge:

1. A grade of at least B is equivalent courses on the student's undergraduate record.
2. Taking and passing the above courses with grade B or higher.
3. Taking the final examination in the above courses, obtaining grade B or higher.

C. Thesis requirements:

1. M.S. without thesis: None.
2. M.S. with thesis: A student choosing the thesis option must select a research advisor who agrees to serve in that capacity. The advisor will supervise research studies and advise on choice of courses. The thesis must be approved by a department faculty committee of no less than three members, appointed by the chairman of the department. At the discretion of the committee, the student may be required to present a seminar on the thesis topic.

D. M.S. degree requirements for Ph.D. students: A student enrolled in the Ph.D. program may satisfy the requirements for the M.S.

degree by completing 30 graduate credits of course work with a B average or better and passing the Ph.D. Qualifying Examination.

E. *Deficiencies in Preparation:* A student who does not meet all of the listed entrance requirements, including proficiency in numerical analysis and digital systems design, cannot in general expect to earn the M.S. degree in less than three semesters. Undergraduate courses that must be taken to make up deficiencies or to acquire proficiency in numerical analysis and digital systems design may not be applied toward meeting graduate degree credit requirements.

Students with insufficient preparation to enroll in MSC 521 and MSC 522 during their first fall semester of residence will generally suffer a full year of delay in satisfying the requirements for the M.S. degree, for these core courses, offered only in the fall, are prerequisites for core courses MSC 525, offered only in the spring, as well as most of the spring electives open to M.S. students. Such students should plan their course of study with these restrictions in mind.

If the applicant's deficiency in preparation can be remedied in one semester, and if the required undergraduate courses are offered in the spring, he should consider applying for special spring admission to the graduate school in order to avoid prolonging the duration of matriculation needlessly.

F. *Thesis:* A student who elects the thesis option generally must have substantial undergraduate background in computer science and well defined subject preferences in order to select a problem area and begin thesis research during the first semester of residence. More often, a full semester of exploration is necessary on the part of the student, and the thesis research is completed during the next two semesters (or occasionally, during the next semester and the following summer). Students who have majored in Computer Science as undergraduates will usually have no difficulty in completing the requirements for either option in one year.

Requirements for the Ph.D. Degree

A. *Residence:* Two consecutive semesters of full-time study.

B. *Qualifying Examination:* The student must satisfactorily pass a comprehensive, written examination to demonstrate ability to undertake the course of study leading to the Ph.D. degree. The examination is given during the fall semester each year. The student must take the examination within three semesters of admission to the graduate school.

Students who perform satisfactorily on the qualifying examination are required to demonstrate their ability to undertake a creative research problem by preparing an oral presentation to the faculty during the spring semester of the same academic year in which the qualifying examination was passed.

C. *Course requirements:* The student seeking the Ph.D. degree shall initially follow a relatively highly structured program of courses in

order to acquire basic knowledge in computer science. The following program of courses will be followed by the majority of students in the Ph.D. program. Students with exceptional strengths or weaknesses follow appropriately modified programs, worked out in consultation with their advisors. In the second year, the program is more variable than the first year of the program in order to allow each student to pursue in greater depth the topics of greatest interest to him.

First Year

Fall Semester

1. MSA 514 Applied Algebra II or
ESE 318 Digital Systems Design
2. MSC 541 Theoretical Foundations of Computing I
3. MSC 521 Data Structures
4. MSC 522 Compiler Design

Spring Semester

1. MSA 506 Finite Structures
2. MSC 542 Theoretical Foundations of Computing II
3. MSC 502 Computer Architecture
4. MSC 525 Operating Systems

Second Year

Fall Semester

1. MSC 543 Automata Theory I
2. MSC 641 Mathematical Theory of Computation
3. MSC 530 Simulation and Modelling
4. MSC 620 Analysis of Computer Systems

Spring Semester

1. MSC 544 Automata Theory II or
MSC 642 Analysis of Algorithms
2. MSC 526 Programming Language Design
3. MSC 532 Information Organization and Retrieval
4. Seminar in appropriate subject

D. *Preliminary Examination:* The preliminary Examination must be scheduled within two years from the time the student has passed the Qualifying Examination. This is an oral examination to ascertain the student's depth of knowledge in the field chosen for thesis research and the breadth of knowledge in other areas of computer science.

The major requirement of the preliminary examination is a complete and detailed Ph.D. thesis research proposal. The student is expected not only to be thoroughly familiar with the background and current status of his research area, and to have clear and well-defined plans for pursuing his research objectives, but also to offer evidence of progress in achieving these objectives. He must be prepared to justify

the effort to be expended in his research in terms of the value of the results expected, and to justify the extent and challenge of his research as evidence of research competence at the Ph.D. level.

E. *Dissertation*: The most important requirement of the Ph.D. program is the completion of a dissertation which must be an original, scholarly investigation. The dissertation shall represent a significant contribution to the scientific literature, and its quality shall be compatible with the publication standards of appropriate reputable scholarly journals.

F. *Approval and defense of dissertation*: The dissertation must be orally defended before the Dissertation Examination Committee, and the candidate must obtain approval of the dissertation from the committee.

Faculty

Akkoyunlu, Eralp A., *Assistant Professor*, Ph.D., 1970, Columbia University: Fields of Specialization: Structured Programming, Languages, Operating Systems.

Bernstein, Arthur J., *Professor*, Ph.D., 1962, Columbia University: The design and correctness of operating systems, the mathematical modelling of computer systems, computer networks.

Cherniavsky, John Charles, *Assistant Professor*, Ph.D., 1972, Cornell University: Major research interests: Verification of Programs, Theory of Computation, Mathematical Logic.

Fidducia, Charles M., *Assistant Professor*, Ph.D., 1973, Brown University: Major Research Interests: Analysis of Algorithms, Computational Complexity, Theory of Computation.

Finerman, Aaron, *Professor and Chairman*, Sc.D., 1956, Massachusetts Institute of Technology: Major Research Interests: Computing Science Education, Management of Computing Facilities.

Gelernter, Herbert L., *Professor*, Ph.D., 1957, The University of Rochester: Artificial Intelligence, Scientific Applications; On-line data acquisition, reduction and experiment control systems.

Heller, Jack, *Professor*, Ph.D., 1950, Polytechnic Institute of Brooklyn: Fields of Specialization: Information Organization and Retrieval, Humanities Data Processing, Data Structures.

Henderson, Peter B., *Assistant Professor*, Ph.D., 1975, Princeton University: Major Research Interests: Scheduling Theory, Concurrent Processes, Operating Systems.

Kieburtz, Richard B., *Professor*, Ph.D., 1961, University of Washington, Seattle: Major Research Interests: Software Engineering, Programming Languages, Theory of Computation.

Smith, David R., *Professor*, Ph.D., 1961, University of Wisconsin: Fields of Specialization: Switching Theory, Digital System Design, Computer Architecture.

Tycko, Daniel H., *Professor*, Ph.D., 1957, Columbia University: Major Research Interests: Pattern recognition, Picture Processing by computers, Scientific applications of computers, Computer systems.

Zalcstein, Yechezkel, *Associate Professor*, Ph.D., 1968, University of California at Berkeley: Computational complexity, automata theory, and formal languages, operating systems theory, semigroup and ring theory, mathematical system theory.

DEPARTMENT OF MATHEMATICS

Masters Program

This program consists of two options: the Secondary Teacher Option (two years, part-time) for secondary school mathematics teachers seeking permanent certification: and the Professional Option (one year, full-time) designed for students who plan careers as professional mathematicians in industry, government or the academic world.

Doctoral Program

This program (three to four years, full-time), an extension of, and the main reason for, the Professional Option in the Masters program, is designed for students who plan careers as research mathematicians.

Admission to the Masters Program

Any student who presents convincing evidence that he or she will benefit from a year of graduate work in mathematics is eligible for admission. Normally that evidence consists of records of prior training in mathematics, letters of recommendation from three mathematicians under whom the student has taken courses, and the results of the Graduate Record Examination Aptitude Test. Applicants to the Secondary Teacher Option are expected to have at least the equivalent of a provisional certificate in mathematics.

An able student who has completed basic work in linear and modern algebra, real and complex analysis, and metric topology is well prepared for admission to the Professional Option. If he has also competed successfully in graduate courses he may be admitted directly to the Doctoral Program.

An applicant whose prior training is seriously deficient may be offered provisional admission for one year after which he or she may apply for regular admission.

Requirements for the M.A. Degree

- A. 30 Graduate credits of courses approved by the department.
- B. Passing the Comprehensive Examination.

The program of courses approved by the department depends on the option. The program for the Secondary Teacher Option normally includes the following: MSM 512, Algebra for Teachers; MSM 513, 514 Analysis for Teachers I, II; MSM 515 Geometry for Teachers; MSM 519 Seminar in Mathematics Teaching; MSM 519 Probability and Statistics for Teachers; CED 560 Introduction to Computing, for a

total of 27 graduate credits. In the other option, the program is worked out individually with each student.

The Comprehensive Examinations are also designed separately for each option. For the Secondary Teacher Option they consist of the final examinations of MSM 512, 513, 514, and 515.

For the Professional Option, Comprehensive Examinations are offered twice a year, at the start and finish of the spring semester. These examinations are designed to test mastery of the fundamental of mathematics. A detailed syllabus for this examination is available upon request.

Admission to the Doctoral Program

A student who presents convincing evidence of significant potential for research in mathematics is eligible for admission. That evidence normally consists of an outstanding performance on the Comprehensive Examination (Professional Option) or on comparable examinations at other universities. However, students who have not as yet entered full-time graduate work in mathematics are also considered for admission to the doctoral program. Each applicant to this program must present records of prior training in mathematics, letters of recommendation from three members of the mathematics faculty under whom the applicant has taken courses, preferably from teachers of graduate courses taken by the applicant, and the results of the Graduate Record Examination Aptitude Test.

Requirements for the Ph.D.

- A. Passing the Comprehensive Examination (Professional Option).
- B. Passing the Doctoral Preliminary Examination.
- C. Demonstrating proficiency in reading mathematics in two of the following: French, German, and Russian.
- D. Two consecutive semesters of full-time study.
- E. Advancement to candidacy.
- F. Approval by the Dissertation Examining Committee.

The Comprehensive Examination

This examination was described above in connection with the Professional Option of the Masters Program. Students who transfer from graduate programs in other universities may in some cases be granted exemption from this requirement at the time they are admitted. Otherwise, such students must take the Comprehensive Examination at their first opportunity.

The Doctoral Preliminary Examination

This examination is oral. Each student must take this examination no later than two years after passing the Comprehensive Examination or receiving an exemption therefrom. The chairman of the examining committee is chosen by the student.

Professional Academic Training Program

All full-time graduate students in mathematics are required to participate in this program. It consists of supervised teaching or tutoring at the lower undergraduate levels, as well as paper grading at all levels.

Faculty

- Adler, Alfred, *Professor*, Ph.D., 1956, University of California, Los Angeles: Differential Geometry.
- Ax, James, *Professor*, Ph.D., 1961, University of California Berkeley: Foundations of Physics, Number Theory, Logic, Differential Algebra.
- Barcus, William, *Professor*, Ph.D., 1955, Oxford University, England: Algebraic Topology.
- Charlap, Leonard S., *Professor and Director of Graduate Program*, Ph.D., 1962, Columbia University: Differential Geometry, Homological Algebra.
- Cheeger, Jeff, *Professor*, Ph.D., 1967, Princeton University: Differential Geometry.
- Cohn, Sylva, *Associate Professor*, M.A., 1972, Stanford University.
- Cowen, Michael, *Assistant Professor*, Ph.D., 1971, Massachusetts Institute of Technology: Global Analysis.
- Doss, Raouf, *Professor*, Ph.D., 1944, University of Cairo, Egypt: Harmonic Analysis.
- Douglas, Ronald, *Professor*, Ph.D., 1962, Louisiana State University: Operator Theory, Functional Analysis.
- Ebin, David, *Associate Professor*, Ph.D., 1967, Massachusetts Institute of Technology: Global Analysis.
- Farkas, Hershel, *Professor*, Ph.D., 1965, Yeshiva University: Complex Analysis.
- Fox, William, *Associate Professor*, Ph.D., 1955, University of Michigan: Complex Analysis.
- Gohberg, Israel, *Visiting Professor*, Ph.D., 1954, State University of Leningrad, USSR: Functional Analysis.
- Gromoll, Detlef, *Professor*, Ph.D., 1964, University of Bonn, W. Germany: Differential Geometry.
- Gromov, Mikhael, *Professor*, Ph.D., 1969, Moscow State University, USSR: Differential Topology.
- Hill, C. Denson, *Professor*, Ph.D., 1966, New York University: Partial Differential Equations, Several Complex Variables.
- Jones, Lowell, *Associate Professor*, Ph.D., 1970, Yale University: Combinatorial Symmetry.
- Kra, Irwin, *Professor and Chairman*, Ph.D., 1966, Columbia University: Complex Analysis, Kleinian Groups.
- Kuga, Michio, *Professor*, Ph.D., 1960, University of Tokyo, Japan: Complex Manifolds, Algebraic Groups.
- Kumpel, Paul G., *Associate Professor*, Ph.D., 1964, Brown University: Algebraic Topology.
- Laufer, Henry, *Associate Professor*, Ph.D., 1966, Princeton University: Several Complex Variables.

- Lister, William, *Professor*, Ph.D., 1951, Yale University: Algebra.
- Maskit, Bernard, *Professor*, Ph.D., 1964, New York University: Complex Analysis, Kleinian Groups.
- Maiorana, James, *Instructor*, Ph.D., 1974, Princeton University: Algebraic Topology.
- Meyer, Wolfgang, *Professor*, Ph.D., 1965, University of Bonn, W. Germany: Differential Geometry.
- Morava, Jack, *Assistant Professor*, Ph.D., 1969, Rice University: Algebraic Topology.
- Osher, Stanley, *Professor*, Ph.D., 1966, New York University: Partial Differential Equations and Numerical Analysis.
- Palmer, John, *Instructor*, Ph.D., 1974, Stanford University: Functional Analysis and Quantum Mechanics.
- Phillips, Anthony, *Professor*, Ph.D., 1966, Princeton University: Differential Topology.
- Pincus, Joel, *Professor*, Ph.D., 1959, New York University: Operator Theory.
- Sah, Chih-Han, *Professor*, Ph.D., 1959, Princeton University: Group Theory and Its Applications.
- Simons, James, *Professor*, Ph.D., 1961, University of California, Berkeley: Differential Geometry.
- Singer, Michael, *Instructor*, Ph.D., 1974, University of California, Berkeley: Logic and Algebra.
- Spencer, Joel, *Associate Professor*, Ph.D., 1970, Harvard University: Probability and Combinatorial Analysis.
- Strasser, E. Rapaport, *Professor*, Ph.D., 1956, New York University: Combinatorial Group Theory.
- Straus, Sandor, *Assistant Professor*, Ph.D., 1972, University of California, Berkeley: Topology, Biomathematics.
- Szusz, Peter, *Professor*, Ph.D., 1951, University of Budapest, Hungary: Analytic Number Theory.
- Taylor, Michael, *Visiting Assistant Professor*, Ph.D., 1970, University of California, Berkeley: Partial Differential Equations.
- Thorpe, John, *Associate Professor*, Ph.D., 1963, Columbia University: Differential Geometry.
- Zaustinsky, Eugene, *Associate Professor*, Ph.D., 1957, University of Southern California: Differential Geometry.

Chemistry
Earth and Space Sciences
Physics

The Physical Sciences

DEPARTMENT OF CHEMISTRY

Degree Programs

The Department of Chemistry offers programs leading to the degrees of Master of Science for students seeking an education at an advanced level in chemistry and the experience of solving a problem in chemical research, and Doctor of Philosophy for those preparing for careers in which chemical research is a central activity. A student in the Ph.D. program may choose the dissertation research in any one of the diverse areas of chemistry represented by the interests of the departmental faculty, or he or she may choose an interdisciplinary study under the guidance of a faculty member in another department. Co-ordinated activities with the Departments of Biochemistry, Earth and Space Sciences, Electrical Sciences, Mechanics, and Physics include formal degree options in chemical physics and chemical biology.

Admission to Graduate Study

The following are required for admission to graduate study in chemistry:

A. A baccalaureate degree in chemistry earned in a curriculum approved by the American Chemical Society, or an equivalent course of study.

B. A minimum grade point average of 2.75 (B—) in all undergraduate work, and 3.00 (B) in all courses in the sciences and mathematics.

C. Results of the Graduate Record Examination Aptitude Test.

D. Acceptance by the Department of Chemistry and by the Graduate School.

In exceptional cases, a student not meeting requirements A and B may be admitted on a provisional basis.

Qualification to Candidacy

At the end of the second semester of graduate study, each student is qualified to candidacy for the graduate degree chosen provided that progress is satisfactory. Course work and research are consid-

ered in proportion appropriate to the student's program. Deficiencies in undergraduate preparation revealed by placement and proficiency examinations may be remedied by independent study or by formal course work.

Requirements for the M.S. Degree

A. Successful completion of an approved course of study comprising at least thirty credits of graduate course work.

B. Successful completion of the CHE 532 seminar and six courses selected from CHE 501 thru 530, 557 thru 589, 601 thru 604, 623 thru 683, and approved courses from other departments or from the CED program.

C. Successful completion of the CHE 590 term paper or research, thesis, and thesis defense.

Requirements for the Ph.D. Degree

A. Residence: Two years.

B. Courses: Successful completion of an approved course of study comprising at least six formal graduate courses of which four are selected from CHE 501 thru 530, in addition to CHE 531, 532, and two semesters of CHE 610 or the equivalent. Qualification to candidacy is based, in part, on achievement in four 500-level chemistry courses to be taken during the student's first year. In consultation with faculty advisors each student selects a course work program to acquire a good background for research in the area of chemistry chosen.

C. Language: Reading proficiency in German, French, or Russian.

D. Advancement to Candidacy Examination: A student is advanced to candidacy for the Ph.D. degree when he has completed all degree requirements except the dissertation. A special committee is designated for each student to aid in progress toward this step. The committee is charged with advising the student and administering the advancement to candidacy examination. This examination, normally completed within one year following qualification to the Ph.D. degree, consists of a written proposition and oral defense, a discussion of the student's research, and a comprehensive examination.

E. Presentation of a departmental seminar.

F. Research, dissertation, dissertation defense, and departmental colloquium.

Research

Each student selects a research advisor from among the faculty at some time between the middle of the first and second semester. The research advisor also serves on the advancement to candidacy committee.

Doctoral Program in Chemical Physics

The doctoral program in chemical physics is provided for students whose interests lie in both chemistry and physics. A graduate student who is admitted to either the Chemistry or Physics Department may elect the program with the consent of the department chairman. A chemistry student elects this program to obtain more extensive training in physics than is normally required by chemistry departments. A physics student elects the program to obtain more extensive exposure to chemical systems than is normally obtained in physics departments. The program is a course option for graduate students in chemistry or in physics; furthermore, a student in the chemical physics program may select a research advisor from either department subject to the approval of the chairmen.

For a chemistry student the requirements are the same as for the Ph.D. in chemistry described above with the following exceptions:

(B.) Courses: As well as CHE 532 and two semesters of CHE 610 a minimum of nine formal graduate courses is required, including the following:

CHE 523 Chemical Thermodynamics

PHY 503 Mathematical Physics

Two courses from among CHE 521, 522 Quantum Chemistry, I, II and PHY 511, 512 Quantum Mechanics I, II

CHE 528 or PHY 540 Statistical Mechanics

PHY 501 Classical Mechanics

PHY 505 Classical Electrodynamics

One course in chemistry from among CHE 501, 502, 503, 511, and 512

(D.) Advancement to Candidacy Examination: In some cases a hybrid of the chemistry and physics programs may be used.

Doctoral Program in Chemical Biology

The doctoral program in chemical biology is provided for students whose interests lie in both chemistry and biology. A graduate student who is admitted to the Chemistry Department, the Department of Pharmacological Sciences, or the molecular biology program may elect, with the consent of the chairmen, the chemical biology program. A chemistry student elects the program if he or she desires more extensive training in biology than is normally accommodated in a chemistry graduate program. A pharmacology or molecular biology program student elects the program if he or she wishes to obtain more extensive exposure to fundamental chemical studies. Thus, the program is a course option for graduate students in chemistry, the pharmacological sciences, or molecular biology; furthermore, a student may select his or her research advisor in the Chemistry Department, the Department of Pharmacological Sciences, or the Molecular Biology program, subject to the approval of the chairmen.

Each student in the program will have an advisory committee con-

sisting of at least one member each from molecular biology, pharmacology and chemistry. When research is initiated, the research advisor will join this advisory committee. The committee advises the graduate student to prepare for a research career in some area of chemical biology.

Qualification for candidacy in this program requires, in addition to the general requirements in chemistry, a satisfactory background in undergraduate biology as judged by the student's advisory committee or as demonstrated by satisfactory performance in course work.

The requirements for this program are the same as for the Ph.D. program in chemistry described above, with the following exception:

(B.) Courses: As well as CHE 532 and two semesters of CHE 610 a minimum of seven formal graduate courses is required as specified by the student's advisory committee.

Specific inquiries from prospective graduate students are welcomed and should be addressed to the chairman. The *Graduate Programs in Chemistry* brochure states in some detail the varied research interests of the Chemistry faculty and is available from the department.

Faculty

Alexander, John M., *Professor*, Ph.D., 1956, Massachusetts Institute of Technology: Nuclear fission, yields and energetics; neutron-emitting reactions, recoil properties.

Altman, Lawrence J., *Associate Professor*, Ph.D., 1965, Columbia University: Biosynthetics investigations utilizing tritium NMR spectroscopy; new methods in synthetic organic chemistry.

Bonner, Francis T., *Professor*, Ph.D., 1945, Yale University: Isotope geochemistry; isotope effects, isotope exchange kinetics and reaction studies in aqueous systems including natural waters.

Chu, Benjamin, *Professor*, Ph.D., 1959, Cornell University: Laser scattering, small-angle X-ray scatterings, critical phenomena, molecular forces; configuration and dynamics of macromolecules; structure of noncrystalline media; liquid crystals.

Dalton, Larry R., *Associate Professor*, Ph.D., 1972, Harvard University: Theoretical and experimental development of time-resolved electron resonance and double resonance spectroscopy and application to the study of the molecular dynamics of classical liquids, glasses, and biomolecular systems.

Doll, Jimmie D., *Associate Professor*, Ph.D., 1971, Harvard University: Theoretical chemistry; semi-classical collision theory, theory of gas/solid surface interactions.

Fowler, Frank W., *Associate Professor*, Ph.D., 1967, University of Colorado: Synthesis and study of heterocyclic molecules and the development of new synthetic methods.

Friedman, Harold L., *Professor and Chairman*, Ph.D., 1949, University of Chicago: Molecular interpretation of equilibrium and dynamic properties of solutions: solvation; excess functions; transport and relaxation coefficients; spectral line shapes; scattering phenomena.

- Funkhouser, John G., *Director of Laboratories*, Ph.D., 1966, University of Hawaii:
- Goldfarb, Theodore D., *Associate Professor*, Ph.D., 1959, University of California, Berkeley: Vibrational spectroscopy; photochemical studies of isomerization in cyclic and acyclic conjugated molecules; low-temperature matrix isolation studies of reactive species; far-infrared spectroscopy.
- Haim, Albert, *Professor*, Ph.D., 1960, University of Southern California: Kinetics and mechanisms of inorganic reactions.
- Hanson, David M., *Associate Professor*, Ph.D., 1968, California Institute of Technology: Theoretical and experimental investigations of molecular crystals.
- Helquist, Paul M., *Assistant Professor*, Ph.D., Cornell University: Organometallic chemistry in organic synthesis; development of new synthetic techniques and total synthesis of natural products.
- Johnson, Francis, *Professor*¹, Ph.D., 1954, Glasgow University, Scotland: Structure and total synthesis of naturally-occurring biologically active molecules; stereochemistry of unsaturated cycloaliphatics; new synthetic methods in organic synthesis; heterocyclic chemistry.
- Johnson, Philip M., *Associate Professor*, Ph.D., 1966, Cornell University: Optical molecular spectroscopy and the electronic structure of very reactive molecules; mechanisms of unimolecular photochemical processes; electronic properties of excited molecules; multiphoton ionization spectroscopy.
- Kerber, Robert C., *Associate Professor*, Ph.D., 1965, Purdue University: Synthesis of organo-transition metal complexes and mechanisms of their reactions; organic nitrogen compounds, esp. small-ring heterocycles; fulvenes.
- Kosower, Edward M., *Adjunct Professor*, Ph.D., 1952, University of California, Los Angeles: Organic chemistry; stable free radicals; physical organic chemistry applied to biochemistry and medicine.
- Krantz, Allen, *Associate Professor*, Ph.D., 1967, Yale University: Chemistry of theoretically interesting molecules in inert gas matrices; mechanism of drug action and chemistry of the nervous system.
- Lauher, Joseph W., *Assistant Professor*, Ph.D., 1974, Northwestern University: Inorganic and organometallic synthesis of new compounds or materials with useful catalytic or solid state properties; theoretical areas of inorganic chemistry.
- Lauterbur, Paul C., *Professor*, Ph.D., 1962, University of Pittsburgh: Nuclear magnetic resonance spectroscopy and applications to crystals, electrolyte solutions, isotope effects, and biological systems; image formation by magnetic resonance, with applications in biology and medicine.
- le Noble, William J., *Professor*, Ph.D., 1957, University of Chicago: Chemistry of highly compressed solutions, with applications such as: solvation effects, carbenes, nitrenes, and the question of non-classical ions.

¹ Joint appointment, Department of Pharmacology

- Levy, Alan, *Assistant Professor*, Ph.D., 1971, University of Colorado: Development of new synthetic methods and the applications of boranes, alanes and organocopper reagents to problems in organic synthesis.
- McDaniel, Dale M., *Assistant Professor*, Ph.D., 1971, Columbia University: Photochemical rearrangements; bioorganic photochemistry, molecular cosmochemistry; chemistry of heterocyclic compounds; synthetic photochemistry; thermal arrangements.
- Okaya, Yoshi, *Professor*, Ph.D., 1956, Osaka University, Japan: Crystallography: development of an on-line computer-controlled system for the automatic collection of X-ray diffraction data, crystal structure and absolute configuration determination.
- Porter, Richard N., *Professor*, Ph.D., 1960, University of Illinois: Theoretical chemistry; classical dynamics of reactive molecular collisions; quantum theory of reaction complexes; many-body and field theoretic treatment of electron correlation.
- Ramirez, Fausto, *Professor*, Ph.D., 1949, University of Michigan: Organic synthesis; mechanisms of reactions; structural and stereochemical aspects of organic compounds of phosphorus; phosphate esters of biological interest; new methods of phosphorylation.
- Schneider, Robert F., *Associate Professor and Associate Dean for Research*: Ph.D., 1959, Columbia University. Infrared and Raman spectra of ionic halides; direct nuclear quadrupole resonance of inorganic compounds.
- Springer, Charles S., *Associate Professor*, Ph.D., 1967, Ohio State University: Metal coordination chemistry: studies of the rates and mechanisms of the reactions of octahedral compounds; stereoselectivity of chiral chelates with chiral ligands; syntheses, characterization, and physico-chemical studies of complexes of the transition and rare earth elements; lanthanide NMR shift reagents.
- Sufishi, Sei, *Professor*, Ph.D., 1949, Purdue University: Organo-silicon-transition metal compounds; synthesis, new reactions, and bonding properties.
- Tu, Shu-I, *Assistant Professor*, Ph.D., 1969, Yale University: Energy conversion mechanisms in mitochondria and chloroplasts, ion transport of biological membranes.
- Weiser, David, *Associate Professor*, Ph.D., 1956, University of Chicago: NPSO bonding theory; history of science, especially Newton, Dalton.
- Whitten, Jerry L., *Professor*, Ph.D., 1964, Georgia Institute of Technology: Theoretical studies of molecular structure and bonding, correlated wave functions; excited electronic states; magnetic interactions and molecular properties.
- Wishnia, Arnold, *Associate Professor*, Ph.D., 1957, New York University: Physical chemistry of proteins; the hydrophobic contribution to stability; the role of hydrophobic groups in protein-subunit and protein-substrate interactions; applications of nuclear magnetic resonance.

DEPARTMENT OF EARTH AND SPACE SCIENCES

The Department of Earth and Space Sciences (ESS) offers courses of study leading to M.S. and Ph.D. degrees in Astronomy-Planetary Sciences, Geochemistry-Geophysics, and Paleobiology-Sedimentary Geology. The unique grouping of these diverse fields into one academic department allows for interdisciplinary courses of study across traditional academic boundaries. The Department occupies a modern, well-equipped building on the Stony Brook campus. The Department library, laboratories for rock processing, a machine shop with three full-time machinists, a carpentry shop, and an electronics shop with two full-time electronics technicians are housed in the ESS Building. The campus computing facilities and the proximity of the Brookhaven National Laboratories and the N.A.S.A. Institute for Space Studies give excellent support for graduate studies in earth and space sciences.

Admission to Graduate Study

For admission to graduate study in the earth and space sciences, the following are required:

- A. A baccalaureate degree in one of the earth or space sciences, or in biology, chemistry, or physics.
- B. A minimum average of B for all undergraduate course work and an overall B average for courses in the sciences.
- C. Results of the Graduate Record Examination Aptitude Test.
- D. Acceptance by the Department of Earth and Space Sciences and by the Graduate School.

In special cases, a student not meeting requirements A and B may be admitted on a provisional basis. Upon admission, the student will be informed of the requirements that must be satisfied for termination of the provisional status.

Astronomy-Planetary Sciences

Courses of study are available in observational astronomy and theoretical astrophysics with emphasis in areas of stellar atmospheres, the interstellar medium, infrared and submillimeter astronomy, molecular spectroscopy, radio spectral line observations, interstellar molecular formation and the physics of the solar system. The organization of the Astronomy Group within the Earth and Space Sciences Department provides for interdisciplinary programs in meteoritics, lunar studies and solar system evolution.

A low student-to-faculty ratio is maintained and early in the program the graduate student is encouraged to commence research in close contact with a faculty member. Support is available for graduate students in good standing.

Over 60 nights of observing time per year on the 60" telescope at Mt. Hopkins in Arizona are allocated for ESS Departmental use through a cooperative agreement with the Smithsonian Astrophysical

Observatory. In addition, the ESS Department has installed a 24" telescope at the Mt. Hopkins site and a 12" telescope for instrument testing at Stony Brook. The millimeter radio astronomy program will make extensive use of the new 45' antenna of the Five College Radio Astronomy Observatory in Amherst, Mass. This system, which will be partially equipped with Stony Brook instrumentation, will be the largest mm wave antenna in the country. Further radio observing time may be available on the new Bell Laboratories facilities in Holmdel, New Jersey. Solar wind, magnetic field, and sectored solar flare particle data acquired by the IMP-6 and IMP-7 earth orbiting spacecraft are received on magnetic tapes from the NASA-Goddard Space Flight Center.

Auxiliary equipment available at either 24" or 60" telescopes include Cassegrain and Echelle image tube spectrographs for optical work, to to 30μ photometers and a Fourier Transform spectrometer for the infrared, and a submillimeter photometer. A 500 channel vidicon photometer is available for use with the spectrographs. Through arrangements with the Smithsonian Astrophysical Observatory, a PEPSIOS and a spectrum scanner are available at Mt. Hopkins. At Stony Brook a PDP-12 is interfaced to a Grant microdensitometer and a Grant radial velocity engine and is also available for general computational use. A molecular astrophysics laboratory incorporating multiple pass gas cells with a 3.4 m spectrograph and a 1 m scanning spectrometer is currently being used for the study of stable and free radical gases important in astrophysical sources.

Geochemistry-Geophysics

As treated in the ESS Department, Geochemistry and Geophysics include a broad range of subjects and problem areas. A student may concentrate on one of the basic disciplines, such as mineralogy, crystallography, experimental and theoretical phase equilibria, petrology, structural geology, tectonophysics, trace element, geochemistry, isotope geochemistry or marine geochemistry; or may combine these to attack such multidisciplinary problems as the origin and evolution of the moon and planets; nature and history of the earth's mantle; or the geochemical history of the crust. The flexibility built into the Geochemistry-Geophysics program is increased by close interaction with programs in sedimentary geology, paleobiology, astronomy and planetary sciences.

General research support, excellent analytical and experimental facilities, and a small student/faculty ratio contribute to a stimulating environment for graduate study and research.

Equipment for geochemical and geophysical research includes an automated A.R.L. EMX-SM electron microprobe; an X-ray diffraction laboratory which includes powder and single-crystal diffractometers interfaced to a PDP-15/30 computer; mass spectrometers for K-ar, U-Pb and Rb-Sr dating, trace element analysis and rare gas analysis; X-ray fluorescence and atomic absorption for chemical analysis; a

laboratory for phase equilibrium studies at temperatures to 1500°C and pressures ranging from vacuum to 50,000 atmospheres; a laboratory for experimental rock deformation and for determinations of physical properties up to temperatures and pressures comparable to the upper mantle; low-level counting (including C¹⁴) and gamma-ray spectrometry for neutron activation studies.

Paleobiology-Sedimentary Geology

Courses of study are available with concentrations in invertebrate paleobiology and paleoecology, biostratigraphy, paleobiogeography, sedimentary geology and carbonate petrology. An introductory first-year field and laboratory program emphasizes the interpretation of various types of marine environments in early and mid-Paleozoic rocks of the central Appalachian Basin. Additional field experience is also available in modern marine environments through independent faculty-directed study at the SUNY Flax Pond Marsh. Students are encouraged to initiate some active research interests as early as possible, normally in conjunction with first-year graduate courses. Furthermore, close working relationships exist between our program and those of Ecology and Evolution and Marine Biology (Biological Sciences). Because of the interdisciplinary nature of our program, applicants from biological as well as geological sciences are encouraged.

In addition to the basic equipment required for preparation and research analysis of fossil and sedimentary rocks, computer facilities are available for statistical analysis. Microprobe, X-ray and cathode-luminescence facilities are housed in the departmental building, and there is easy access to a scanning electron microscope.

Active research programs include studies of stratigraphy, paleontology, and carbonate petrology in Paleozoic rocks of the eastern mid-continent, Appalachian and cordilleran regions, as well as studies of coastal ecology and sedimentology of Long Island Sound.

Requirements for the M.S. Degree

- A. Residence: None.
- B. Language: None.
- C. Formal course work: Completion, with a B average, of an approved course of graduate study not to exceed the equivalent of two full academic years. This course of study will be prepared by the student and his or her advisor(s) to suit his or her particular needs, and must be approved by the departmental Graduate Committee. It must consist of at least 30 credits of graduate work, which may include 6 credits of research toward an M.S. thesis or equivalent research papers.
- D. Evaluation:
 - 1. M.S. with thesis: approval of the thesis by an examining committee.
 - 2. M.S. without thesis: Oral examination on the material covered in the approved course of study.

E. Departmental recommendation: When all departmental requirements are completed, the chairman may recommend to the Dean of the Graduate School that the Master of Science degree be granted.

F. Time limit: All requirements for the M.S. degree must normally be completed within three years of the time of the student's first registration as a graduate student.

Requirements for the Ph.D. Degree

A. Residence: One year of full-time graduate study.

B. Language: None.

C. Formal course work: Successful completion with grades of B or better of an approved course of study leading to the Preliminary Examination.

D. Preliminary Examination: This examination will consist of the presentation, and acceptance of one to three written research proposals and the oral defense of the research proposal(s).

E. Advancement to candidacy: The student may be advanced to candidacy for the Ph.D. when he or she has completed all Graduate School and departmental requirements for the degree other than the dissertation. Advancement to candidacy is recommended by the department Graduate Committee, to the Dean of the Graduate School through the department chairman.

F. Research and dissertation: The dissertation must be approved by a Dissertation Examining Committee of at least five members of the faculty, including at least one from outside the department, appointed by the Dean of the Graduate School. A formal oral defense of the thesis will be conducted by the Dissertation Committee. This will be open to all members of the faculty.

G. Time limit: All requirements for the Ph.D. degree must be completed within three years after advancement to candidacy.

Laboratory for Planetary Atmospheres Research

The Laboratory for Planetary Atmospheres Research (LPAR) comprises an interdepartmental teaching and research program for students interested in the physics and chemistry of the atmospheres of the Earth and other planets. This program is available to students in the College of Engineering and Applied Sciences and the Division of Physical Sciences. A graduate student in any of the departments of these divisions may, with the consent of his or her chairman, elect to participate in the program. The basic degree requirements are set by the department in which the student is enrolled; they are the same as those for any other student in that department. The student will normally be advised to take two or more courses from the list drawn up by the LPAR faculty in order to obtain a basic background in the atmospheric sciences. He or she must then satisfy departmental requirements regarding a preliminary examination. However, a major portion of this examination will be devoted to problems in atmospheric

physics and chemistry; at least one member of the examining committee will be from the LPAR faculty. A research advisor for the dissertation will normally be selected from the LPAR faculty, subject to the approval of the department chairmen.

Faculty

- Bence, A. Edward, *Professor*, Ph.D., 1966, Massachusetts Institute of Technology: Heterogeneous phase equilibria in terrestrial and extraterrestrial petrologic systems making use of the electron and ion probes.
- Bretsky, Peter W., *Associate Professor*, Ph.D., 1967, Yale University: Evolution of Paleozoic benthic marine communities.
- Bretsky, Sara S., *Adjunct Assistant Professor*, Ph.D., 1969, Yale University: Evolution of Cenozoic bivalves and numerical taxonomy.
- Burnett, William, *Adjunct Assistant Professor*, Ph.D., 1974, University of Hawaii: Marine geochemistry and sediments, formation of manganese nodules.
- Carter, Neville L., *Professor*, Ph.D., 1963, University of California, Los Angeles: Experimental deformation of rocks, deformation processes in the upper mantle, theoretical geology and shock metamorphism.
- Dodd, Robert T. Jr., *Professor*, Ph.D., 1962, Princeton University: Chondritic meteorites and the metamorphic history of the Precambrian rocks in southeastern New York.
- Flessa, Karl W., *Assistant Professor*, Ph.D., 1972, Yale University: Paleobiogeography and continental drift, quantitative studies of Phanerozoic diversity fluctuations.
- Forman, Miriam A., *Adjunct Assistant Professor*, Ph.D., 1972, State University of New York, Stony Brook: Theoretical studies of solar cosmic-ray propagation in the solar system and interpretation of spacecraft data.
- Hanson, Gilbert N., *Professor*, Ph.D., 1964, University of Minnesota: Application of radiometric and geochemical methods to petrologic and tectonic problems.
- Hardorp, Johannes, *Associate Professor*, Ph.D., 1960, University of Hamburg, Germany: Stellar atmospheres, stellar rotation, Ap and Am stars.
- Hartung, Jack B., *Adjunct Assistant Professor*, Ph.D., 1968, Rice University: Solar systems evaluation, impact-cratering history of terrestrial planets, shock metamorphism and mechanism of microcrater formation.
- Hogan, Joseph S., *Adjunct Assistant Professor*, Ph.D., 1968, New York University: Theoretical calculations of thermal structures of planetary atmospheres.
- Knacke, Roger F., *Associate Professor*, Ph.D., 1969, University of California, Berkeley: Infrared astronomy, star formation, extragalactic studies.
- Kwan, John Y., *Assistant Professor*, Ph.D., 1972, California Institute of Technology: Theory of astrophysical masers, supernovae.

- Lindsley, Donald H., *Professor*, Ph.D., 1961, Johns Hopkins University: Application of phase equilibrium studies of silicate and oxide minerals to metamorphic and igneous petrology.
- Lutz, Barry L., *Adjunct Associate Professor*, Ph.D., 1968, Princeton University: Laboratory astrophysics, planetary and stellar spectroscopy, optical interstellar medium studies.
- Meyers, William J., *Assistant Professor*, Ph.D., 1973, Rice University: Sedimentary geology and carbonate petrology.
- Owen, Tobias C., *Professor*, Ph.D., 1965, University of Arizona: Solar system studies, spectroscopy of planets and comets, planetary atmospheres, participation in space missions.
- Palmer, Allison R., *Professor and Chairperson*, Ph.D., 1950, University of Minnesota: Paleobiogeography, Cambrian stratigraphy, trilobite systematics.
- Papike, James J., *Professor*, Ph.D., 1964, University of Minnesota: Crystal chemistry and chemistry of the rock-forming minerals, mineralogy and petrology of deep sea basalts, iron formations and lunar rocks.
- Penzias, Arno A., *Adjunct Professor*, Ph.D., 1962, Columbia University: Millimeter-wave radio receivers and radio molecular-line studies of the galaxy.
- Peterson, Deane M., *Associate Professor*, Ph.D., 1968, Harvard University: Stellar atmospheres, radiative transfer, Bp stars, premain sequence evolution.
- Prewitt, Charles T., *Professor*¹, Ph.D., 1962, Massachusetts Institute of Technology: Disorder in minerals, crystal chemistry of oxides and sulfides, and phase transitions in lunar and terrestrial silicates.
- Schaeffer, Oliver A., *Professor*, Ph.D., 1946, Harvard University: Marine geochemistry, lunar and meteorite radiometric dating, and cosmic rays.
- Simon, Michal, *Professor*, Ph.D., 1967, Cornell University: Infrared astronomy, solar astronomy, physics of strong radio sources.
- Solomon, Phillip M., *Professor*, Ph.D., 1964, University of Wisconsin: Interstellar molecules, radio astronomy, physics of interstellar medium, stellar mass loss, quasistellar objects.
- Theys, John C., *Assistant Professor*, Ph.D., 1974, Columbia University: Irregular galaxies, hydrodynamics of interstellar medium.
- Weldner, Donald J., *Assistant Professor*, Ph.D., 1972, Massachusetts Institute of Technology: Structure of the earth's interior as revealed by seismic waves and laboratory determinations of physical properties.

¹ Joint appointment, Department of Materials Science

DEPARTMENT OF PHYSICS

Admission to Graduate Study

For admission to graduate study in physics, the following are required:

- A. Baccalaureate degree in physics, from an accredited institution.
- B. A minimum grade average of B in all undergraduate course work, and of B in physics, mathematics, and chemistry.
- C. Results of the Graduate Record Examination Aptitude Test.
- D. Acceptance by the Department of Physics and by the Graduate School.

In special cases, a student not meeting requirement A (or, in unusual cases, requirement B), may be admitted on a provisional basis. Upon entrance, the student will be informed of the requirements he must satisfy for the termination of the provisional status.

For admission to the M.A. (Teaching) program students will be required to exhibit a proficiency in physics equivalent to that attained by successful completion of the University's general program in physics (see the *Undergraduate Bulletin* for details).

Readmission in subsequent years will depend on satisfactory academic progress.

Requirements for the M.A. Degree

A. Satisfactory performance in a program of studies (30 graduate credits) approved by the Graduate Committee. Normally, such a program would include PHY 599 (Graduate Seminars), Classical Mechanics and Electrodynamics, and Quantum Mechanics I, II.

- B. Passing of the Master's Examination.

Requirements for the M.A. (Teaching) Degree

The Master of Arts (Teaching) degree is designed for those students who plan to teach or who are teaching physics at the secondary school level. The degree program will ordinarily involve two semesters of course work and one semester of a supervised intern experience teaching physics in a secondary school.

- A. 30 Graduate Credit-Hour Program
 1. Nine credit hours of graduate courses in physics. Some or all of this credit may be for PHY 585, Special Study, with permission of the student's advisor.
 2. Six credit hours of physics education courses offered by the Department of Physics.
 3. Six credit hours in appropriate courses in educational psychology, philosophy, or history chosen with the approval of the student's advisor.
 4. Six credit hours (one semester) of supervised intern teaching in a secondary school.
 5. Three credit hours of project work (PHY 580) on a topic in physics associated with classroom teaching at the secondary

level. This will generally be an experimental topic. All candidates will be required to demonstrate proficiency in laboratory techniques associated with the teaching of secondary school physics.

B. Successful performance on an oral examination in which the candidate demonstrates proficiency in explaining physics at a level appropriate for secondary school students.

C. All candidates will be required to pass a comprehensive written examination in physics.

Credit for Previous Work: Students who already have provisional teaching certification or who have taken the required courses in education or the teaching internship will substitute appropriate additional courses in science, mathematics, education, or history and philosophy of science with the approval of their advisor. These course requirements will not automatically be waived, however. Credit for such courses or work done elsewhere may depend upon demonstrated proficiency.

Requirements for the Ph.D. Degree

A. One year of residence.

B. Satisfactory completion (grades A, B, or S) of an approved program during each semester of residence or of part-time study.

C. Advancement to candidacy: The Department's recommendation to the Graduate School for advancement to candidacy for the Ph.D. is based on completion of the following requirements:

1. Passing of PHY 515 (Methods of Experimental Research) and of two semesters of PHY 599 (Graduate Seminars) with grades of A or B. The PHY 599 requirement is normally expected to be satisfied in the first year of graduate study.

2. Passing of the Preliminary Examination, which consists of two parts: (a) A written comprehensive examination and (b) an oral examination on broad range of topics relevant to the student's intended area of thesis research. The written examination, given in September and January, must be passed no later than January of the second academic year of graduate study. The oral examination must be passed before the end of the second academic year.

D. Completion, with grade A or B, of two approved advanced courses in areas outside the student's thesis research.

E. Teaching experience at least equivalent to that obtained in a one-year appointment as a teaching assistant.

F. Research, dissertation, and passing of the dissertation examination.

Doctoral Program in Chemical Physics

The program in chemical physics is intended to meet the needs of students whose interests lie in areas common to chemistry and physics. A graduate student in either the Chemistry or the Physics

Department may, with the consent of his or her chairman, elect to participate in the program. Degree requirements for a chemistry student in this program may be found in the Department of Chemistry's section of this *Bulletin*. The basic degree requirements for a physics student are the same as those for other students in this department, as described above. The student will normally be advised to take one or more appropriate courses in chemistry. He or she will take the physics examination, as required of all physics students. The oral part of the Preliminary Examination will be in chemical physics; one member of the committee will be from the Department of Chemistry. A research advisor may be selected from the Department of Chemistry, subject to the approval of the department chairmen.

Doctoral Program in Astrophysics

The doctoral program in astrophysics is provided for students whose interests lie in both physics and astronomy. A graduate student who is admitted to the Department of Physics may elect this program, with the consent of the chairman of the Physics and of the Earth and Space Sciences Departments. The program is designed for those students who wish to gain a greater exposure to current astrophysical problems, observational or theoretical, than would be the case in the usual doctoral program in physics.

For a physics student, the basic degree requirements are the same as for other students in this Department, as described above. The student should have a background in astronomy appropriate to his areas of interest. The student who does not have a background may be advised to take certain undergraduate courses (such as ESS 343, 344) before embarking on the program. A physics student enrolled in the astrophysics program will take the physics Preliminary Examination, as required of all physics students. The oral part of the exam will be in astrophysics, and one member of the committee will be from Astronomy. The advisor may be from either department, subject to the approval of the chairmen of the Department of Physics and of Earth and Space Sciences.

Faculty

Allen, Philip B., *Assistant Professor*, Ph.D., 1969, University of California, Berkeley: Theoretical solid state physics: superconductors and superconductivity.

Arima, Akito, *Professor*, Ph.D., 1958, University of Tokyo, Japan: Theoretical nuclear physics.

Balazs, Nandor L., *Professor*, Ph.D., 1951, University of Amsterdam, the Netherlands: Theoretical physics: statistical mechanics, general relativity.

Blume, Martin, *Professor (part-time)*, Ph.D., 1959, Harvard University: Theoretical solid-state physics: magnetic properties of matter.

- Brown, Gerald E.,* *Professor*, Ph.D., 1950, Yale University; D.Sc., 1957, Birmingham, England: Theoretical physics: the many-body problem.
- Courant, Ernest D.* *Professor (Part-time)*, Ph.D., 1943, University of Rochester: Theoretical physics: high-energy accelerator design.
- deZafra, Robert L., *Associate Professor*, Ph.D., 1958, University of Maryland: Experimental atomic physics; optical pumping and double resonance; quantum electronics.
- Dresden, Max,** *Professor*, Ph.D., 1946, University of Michigan: Theoretical physics: field theory, statistical mechanics, particle physics.
- Eisenbud, Leonard, *Professor*, Ph.D., 1943, Princeton University: Theoretical physics: nuclear theory, foundations of quantum theory.
- Engelmann, Roderich, *Associate Professor*, Ph.D., 1966, University of Heidelberg, W. Germany: Experimental elementary particle physics.
- Feingold, Arnold M., *Professor*, Ph.D., 1952, Princeton University: Theoretical physics, nuclear structure, beta decay.
- Finocchiaro, Guido, *Professor*, Ph.D., 1957, University of Catania, Italy: Experimental high energy physics.
- Fossan, David B., *Professor*, Ph.D., 1961, University of Wisconsin: Experimental nuclear physics, nuclear structure and electromagnetic properties.
- Fox, David, *Professor and Director of Graduate Program in Physics*, Ph.D., 1952, University of California, Berkeley: Theoretical physics, solid state theory, properties of molecular crystals.
- Freedman, Daniel Z.,* *Professor*, Ph.D., 1964, University of Wisconsin: Theoretical physics, scattering.
- Goldhaber, Maurice, *Adjunct Professor*, Ph.D., 1936, University of Cambridge, England: Nuclear and particle physics.
- Goldhaber, Alfred S.,* *Associate Professor*, Ph.D., 1964, Princeton University: Theoretical physics, nuclear theory, particles physics.
- Good, Myron L., *Professor*, Ph.D., 1951, Duke University: Experimental elementary particle physics.
- Graf, Erlend H., *Associate Professor*, Ph.D., 1967, Cornell University: Experimental low temperature physics.
- Grannis, Paul D., *Professor*, Ph.D., 1965, University of California, Berkeley: Experimental high-energy physics, elementary particle reactions.
- Jackson, Andrew D., *Professor*, Ph.D., 1967, Princeton University: Nuclear theory.
- Jostlein, Hans, *Assistant Professor*, Ph.D., 1969, University of Munich, W. Germany: Experimental elementary particle physics.
- Kahn, Peter B., *Professor and Chairman*, Ph.D., 1960, Northwestern University: Theoretical physics, the many-body problem, statistical properties of spectra.

* Member, Institute for Theoretical Physics

** Executive Officer and Member, Institute for Theoretical Physics

- Kao, Yi-han, *Professor*, Ph.D., 1962, Columbia University: Experimental solid state physics, electronic structure of metals and semi-metals; superconductivity.
- Kirz, Janos, *Professor*, Ph.D., 1963, University of California, Berkeley: Experimental high energy physics.
- Kuo, Thomas T. S., *Professor*, Ph.D., 1964, University of Pittsburgh: Nuclear theory.
- Lambe, Edward D. B., *Professor*, Ph.D., 1959, Princeton University: Experimental physics, learning, problem-solving, and instructional processes.
- Lee, Benjamin W.,* *Professor*, Ph.D., 1960, University of Pennsylvania: Theoretical physics, elementary particle theory.
- Lee, Linwood L., *Professor*, Ph.D., 1955, Yale University: Experimental nuclear structure.
- Lee-Franzini, Juliet, *Professor*, Ph.D., 1960, Columbia University: Experimental elementary particle physics.
- Lukens, James, *Assistant Professor*, Ph.D., 1968, University of California, San Diego: Experimental solid state physics.
- McCarthy, Robert L., *Assistant Professor*, Ph.D., 1971, University of California, Berkeley: Experimental elementary particle physics.
- McCoy, Barry M.,* *Associate Professor*, Ph.D., 1967, Harvard University: Theoretical physics, statistical mechanics.
- McGrath, Robert L., *Associate Professor*, Ph.D., 1965, University of Iowa: Experimental physics, nuclear structure.
- Metcalf, Harold J., *Associate Professor*, Ph.D., 1967, Brown University: Atomic physics, level-crossing techniques, tunable lasers.
- Mould, Richard A., *Associate Professor*, Ph.D., 1957, Yale University: Theoretical physics, general relativity, quantum theory of measurements.
- Muether, Herbert R., *Professor*, Ph.D., 1951, Princeton University: Experimental nuclear physics, neutron physics.
- Nathans, Robert, *Professor*, Ph.D., 1954, University of Pennsylvania: Experimental solid state physics.
- Nieh, Hwa-Tung,* *Associate Professor*, Ph.D., 1966, Harvard University: Theoretical physics, elementary particles.
- Paldy, Lester G., *Assistant Professor*, M.A., 1966, Hofstra University: National Science Education Policy; physics education.
- Paul, Peter, *Professor*, Ph.D., 1959, University of Freiburg, W. Germany: Experimental nuclear physics.
- Pond, T. Alexander, *Professor and Executive Vice-President*, Ph.D., 1953, Princeton University: Positron processes, beta and gamma decay.
- Serene, Joseph W., *Assistant Professor*, Ph.D., 1974, Cornell University: Solid state theory, spin fluctuations.
- Shevchik, Nigel, *Assistant Professor*, Ph.D., 1972, Harvard University: Experimental solid state physics, photoemission.

* Member, Institute for Theoretical Physics

- Silsbee, Henry B., *Professor*, Ph.D., 1951, Harvard University: Experimental physics, molecular and atomic beams, magnetic resonance.
- Smith, John,* *Associate Professor*, Ph.D., 1963, University of Edinburgh, Scotland: Theoretical physics, elementary particle physics.
- Sprouse, Gene D., *Associate Professor*, Ph.D., 1968, Stanford University: Experimental nuclear structure.
- Strassenburg, Arnold A., *Professor (part-time)*, Ph.D., 1955, California Institute of Technology: Experimental particle physics, high energy instrumentation, physics education.
- Strottman, Daniel, *Visiting Assistant Professor*, Ph.D., 1969, State University of New York, Stony Brook: Nuclear theory.
- Swartz, Clifford E., *Professor*, Ph.D., 1951, University of Rochester: Experimental high-energy physics, school curriculum revision.
- Toll, John S., *Professor and President*, Ph.D., 1952, Princeton University: Scattering, elementary particle theory.
- Van Nieuwenhuizen, Peter,* *Assistant Professor*, Ph.D., 1971, University of Utrecht, the Netherlands: Theoretical physics, quantum field theory.
- Weisberger, William I.,* *Professor*, Ph.D., 1964, Massachusetts Institute of Technology: Theoretical physics, quantum field theory, particle physics.
- Wilcox, Lee R., *Professor*, Ph.D., 1957, Stanford University: Quantum electronics.
- Yang, Chen Ning,* *Einstein Professor and Director of the Institute for Theoretical Physics*: Ph.D., 1948, University of Chicago: Theoretical physics, field theory, statistical mechanics, particle physics.

* Member, Institute for Theoretical Physics

Anthropology
Economics
History

The Social Sciences

DEPARTMENT OF ANTHROPOLOGY

Admission to Graduate Study

In addition to the admission requirements of the Graduate School, the Anthropology Department requires:

- A. A baccalaureate degree from an accredited college.
- B. A minimum grade point average of 3.00 (B) in all undergraduate course work, and 3.25 (better than B) in the major field of concentration.
- C. Results of the Graduate Record Examination Aptitude Test.
- D. Acceptance by the Department of Anthropology and the Graduate School.

Applicants need not have majored in anthropology as undergraduates but will be expected to make up deficiencies in their backgrounds by taking additional courses.

Graduate Program

The Department of Anthropology offers graduate work leading to the Master of Arts and Doctor of Philosophy degrees. The program for the first year is designed to give the students a general knowledge of social and cultural anthropology, including culture history, ethnography and linguistics. A Progress Examination must be taken after completion of the first year's work. This examination is given two or three times each year, usually in September, January and April. Students entering with advanced standing may take the Progress Examination during their first semester. Graduate students should gain some practical experience and training in teaching and research. All graduate Trainees are assigned as Teaching Assistants in at least one undergraduate course and they assist in all aspects of teaching. Research training is gained through independent study, field-work, and assisting in departmental research projects. Museology and the analysis of material culture are taught in the University Museum.

The M.A. Degree in Anthropology

The Master of Arts program is designed for students who desire graduate anthropology training for a career in education, health, applied social sciences, or community professions. The M.A. may be granted to those students who complete the requirements and who wish to terminate their studies, or who wish to obtain the M.A. as a mark of progress towards the Ph.D. It is not required for the Ph.D. candidacy. However, students in the Ph.D. program who have already been advanced to candidacy may, upon petition, receive a Masters degree without submitting a masters thesis. Requirements for the M.A. are:

A. One year minimum residence, and completion of a minimum of 30 graduate credits.

B. The Progress Examination passed at an appropriate level.

C. A course study planned and carried out with the approval of the student's M.A. Guidance Committee. This may require library research, laboratory study, and/or fieldwork as the basis of the M.A. thesis, which must be accepted by a committee appointed by the department. No final defense is required.

The Ph.D. in Anthropology

This program is designed to provide specialized training in social, cultural, linguistic and ecological anthropology. Minimum residence is four semesters beyond the baccalaureate, including at least two consecutive semesters of full time study. A minimum of 48 credits must be completed.

After satisfactory performance in the first year's course work and the Progress Examination, the student selects a guidance committee to supervise his studies. The student will then:

1. Choose 3 fields of specialization. One or two of these will be topical or theoretical fields and the rest ethnographic areas. One or more fields may be interdisciplinary, and involve study with faculty in other departments. For each field of specialization the student will write an essay outlining his or her views on the subject's theoretical and research problems and including a bibliography.

2. Demonstrate an understanding of the use of quantitative methods in social sciences, by successfully completing ANT 505 or equivalent work.

3. Demonstrate reading proficiency in the language or languages necessary for the fields of specialization as determined by the department. The language or languages should be used in preparing the preliminary essays and tested by a procedure approved by the student's guidance committee.

4. Prepare a dissertation research project within his fields of specialization. This will demonstrate the student's ability to formulate independent research.

After completion of the above requirements, a written and oral preliminary examination will be administered by the guidance committee

with additional faculty consultants within and outside the Anthropology Department. After satisfactory performance in the Preliminary Examination the student will be advanced to candidacy. If field research is not a part of the thesis project, a period of field work, and report on this, will be required before the student may be advanced to candidacy. A doctoral dissertation will then be submitted. Research, including field work gathering material for the dissertation, is frequently carried out away from the Stony Brook campus. Dissertation procedures and award of the Ph.D. follow Graduate School requirements. A final defense and/or presentation to a colloquium is required.

Faculty

- Arens, William, *Associate Professor*, Ph.D., 1970, University of Virginia: Social anthropology, complex societies, ethnicity, social change; Africa.
- Bonvillain, Nancy L., *Assistant Professor*, Ph.D., 1972, Columbia University: General anthropology, Social Organization, Culture change, North American Indian ethnography and acculturation, Language and culture, Linguistics.
- Carrasco, Pedro, *Professor and Department Chairman*, Ph.D., 1953, Columbia University: Theory, economics, preindustrial civilizations, ethno-history; Mesoamerica, Tibet.
- Faron, Louis, *Professor*, Ph.D., 1954, Columbia University: Latin America, especially Chile, Peru, Panama, Mexico; kinship and marriage systems, ecology, religious systems, complex societies.
- Gardner, Richard, *Assistant Professor*, Ph.D., 1974, University of California, Los Angeles: Urban anthropology, quantitative and qualitative methods, socio-cultural change, Caribbean.
- Glick, Paula Brown, *Professor*, Ph.D., 1950, University of London, England: Oceania, social anthropology, ecology and economy, multiethnic societies, politics, social change.
- Hicks, David, *Associate Professor*, Ph.D., 1971, University of London, England: Indonesia, Brazil, kinship and marriage systems, symbolism.
- Jones, Rex, *Assistant Professor*, Ph.D., 1973, University of California, Los Angeles: India, Nepal, Tibet; Social anthropology; American Indians; Religion.
- Kennedy, Theodore R., *Assistant Professor*, Ph.D., 1974, Princeton University: Symbolic anthropology, Kinship and the Socialization of the Family. Urbanism in terms of cultures as a system of symbols.
- Lanning, Edward, *Professor*, Ph.D., 1960, University of California, Berkeley: Prehistory, Ecology, New World.
- Newton, Dolores, *Assistant Professor and Museum Curator*, Ph.D., 1972, Harvard University: Teaching museum, relation of material culture to social organization; culture history Brazil; North America.
- Starr, June, *Associate Professor*, Ph.D., 1970, University of California, Berkeley: Anthropology of law, political anthropology, peoples and cultures of the Middle East, psychological anthropology.

- Stevenson, Robert, *Associate Professor*, Ph.D., 1965, Columbia University: Africa, China, political systems, ecology, cultural evolution, theory.
- Weigand, Phil C., *Associate Professor*, Ph.D., 1970, Southern Illinois University: Early civilizations and urbanization, archaeology, ethnography, culture history, culture change and theory; Near East, Meos-america, Southwestern U.S.A.
- Wheeler, Margaret C., *Associate Professor*, Ph.D., 1957, Yale University: Urban anthropology, Jewish culture, culture of poverty, physical anthropology.

DEPARTMENT OF ECONOMICS

The Department of Economics has both a Ph.D. and a terminal M.A. program.

The Ph.D. Program in Economics

The Department of Economics offers a Ph.D. program whose goal is the learning of rigorous economic theory and quantitative methods and their creative application. The applications emphasize foci in two broad overlapping areas: public sector economics and the analysis of economic systems. Public sector economics deals with a variety of problems that relate to public finance, urban economics, health economics, economics of education, environmental and energy policies, and monetary and fiscal stabilization. It draws upon, and develops, such "abstract" economic theories as those of public goods, externalities, general equilibrium, behavior under uncertainty, and welfare theory. Analysis of economic systems covers economic organization in contents radically different from the industrial market economy, especially planned, developing, and pre-industrial economies. It draws upon theories about optimal use of information, investment in human capital, capital accumulation and growth, and non-market (e.g. cultural) constraints. These application areas are accompanied by a strong program in advanced (mathematical) economic theory.

Students' course work is supplemented by independent study and research seminars. Emphasis is placed on achieving competence in doing independent research rather than on formal course requirements. Each student's program is fitted to his individual interests and needs, and close student-faculty relations are encouraged.

Admission to the Ph.D. Program

For admission to the Ph.D. program, the following are required:

A. A baccalaureate degree, with an average of at least B in the undergraduate major subject.

B. Proficiency in a year course in introductory differential and integral calculus, demonstrated by a grade of at least B in such a course.

- C. Results from the Graduate Record Examination Aptitude Test.
- D. Acceptance by the Department of Economics and by the Graduate School. Students who do not meet all these requirements may also apply if they feel that special circumstances should be considered.

Requirements for the Ph.D. Degree

The Ph.D. program is based on attaining competence rather than on registering for a predetermined number of courses. The following areas of proficiency are required of all students:

A. *Mathematics*: Proficiency may be demonstrated by a grade of at least B in ECO 590 and 591 or their equivalent, or in a special examination. This requirement should be met during the first year of study. The proficiency requirement must be met before permission is given to take the preliminary examination.

B. *Core fields*: Microeconomic theory, macroeconomic theory, and quantitative methods. Because of the necessity for maintaining a basic minimum level of competence in these fields, most students will probably take the basic courses offered by the department. Since these fields are tools of economic research, they should be taken as early as possible, although students who need to bring their mathematics up to standard may wish to postpone quantitative methods to their second year.

C. *Optional fields*: Two optional fields must be offered by each student.

One of the optional fields must be chosen from among the following fields on which the Department places emphasis: public sector economics, analysis of economic systems, advanced microeconomic theory, advanced macroeconomic theory, or advanced econometrics. The other optional field may be chosen from among these fields and/or any other field certified by the Ph.D. committee as acceptable.

All students will be required to demonstrate proficiency in the five fields by passing written preliminary examinations in each field, normally by December of the third year, but no later than the beginning of the fourth year. These examinations may be supplemented by an oral examination at the discretion of the examiners. The examination in one optional field may be waived if the student has achieved a satisfactory grade in all his course or other work in the field. In preparing for the examinations, experimentation and flexibility are expected and encouraged; the student may elect courses given by the department or other departments, an individual reading program under faculty supervision, research seminars, or appropriate part-time work for governmental or other agencies. Prior approval of such a program must be obtained from the Ph.D. Committee.

D. *Languages*: The department requires demonstration of proficiency in a foreign language only in cases where the dissertation research involves knowledge of a foreign language for successful completion. In such cases, the dissertation advisor will notify both the

student and the members of the Graduate Committee, who will arrange the details of the language proficiency examination.

E. *Residency*: Although the University residency requirement is for at least two consecutive semesters of full-time study, the Economics Department recognizes that normally students should plan on four semesters of full-time residency in order to prepare themselves adequately for the preliminary examinations.

F. *Advancement to Candidacy*: Upon successful completion of the mathematics proficiency requirement, the language proficiency requirement (if necessary), and the field examinations in the core and optional areas, the student will be admitted to candidacy for the Ph.D. degree. A student who selects a dissertation topic involving language competency after advancement to candidacy must, however, fulfill the language requirement subsequent to such advancement.

G. *Departmental Seminars*: Attendance at Departmental seminars is considered an important and integral part of a student's progress towards his doctorate. Seminars are presented on a regular basis by faculty, visitors and graduate students and students are strongly urged to attend.

H. *Doctoral dissertation*: Each candidate for the Ph.D. must complete a dissertation. The prospectus must receive approval of the thesis advisor and members of the thesis committee. Within one year of advancement to candidacy, each student is expected to present a workshop seminar on his dissertation progress. Final approval will be by a committee including the candidate's principal advisor, two other department members and one member from another department. The results of the dissertation will be presented at a colloquium convened for that purpose.

Additional Information

Teaching: The department is committed to achieving a high quality of teaching and encourages all graduate students to acquire teaching experience during their graduate study.

Early completion: In order to encourage early completion of all degree requirements, departmental approval will be required to continue a student's program if it extends more than five years from the time of entry.

Certification of Ph.D. candidates: Students who satisfactorily complete all Ph.D. requirements except for the dissertation and who find it impossible to complete the dissertation may apply for a certificate of completion of all but thesis requirements.

The M.A. Program in Economics

Option A

Students admitted to the Ph.D. program are expected to have the aptitude for and an intention of obtaining the Ph.D. degree. For stu-

dents who must terminate their enrollment before obtaining the Ph.D., the M.A. will be awarded under the following conditions:

1. Thirty hours of resident graduate credits (exclusive of Teaching Practicum) in which a grade of B or better has been received.
2. Not more than three years since first registration as a graduate student.

Students pursuing the Ph.D. Program may wish to change their course to Option B prior to obtaining the M.A. Such students should consult the Graduate Program Director.

Option B

This option is designed for part-time (evening) students, seeking a graduate education in economics for professional reasons and who do not intend to become students in the doctoral program. The M.A. Program in Economics presents surveys of methods of economic analysis and major problems of economic policy. A bachelor's degree is required for admission, but no prior training in economics is necessary. Completion of this program does not generally permit the student to transfer into the Ph.D. program. Students wishing to make such a transfer should consult the Department as soon as possible about how to do so with a minimal loss of time.

The Master of Arts degree will be awarded upon the completion of 30 hours of graduate course credit with an average grade of B. Only one grade of C is acceptable and it must be offset by a grade of A in another course. Normally, students should take two courses per semester for two years, and two courses during the intervening summer. Deviations from this rate of work may be permitted in special cases.

The basic core (which also provides the prerequisites for courses indicated as requiring prerequisites) consists of ECO 573 Prices and Markets, ECO 580 National Income, Employment and Money, and ECO 574 Statistics and Data Analysis for Public Policy. Students are also urged to follow these courses with ECO 581, 582 Economic Aspects of Public Policy and ECO 576 Economic Accounting. Student programs will be planned to meet individual needs, guided by academic advisors. With the consent of the Department, students in this program may enroll in a research seminar and write a master's thesis, but a thesis is not required. Students may transfer credit earned in CED economics courses toward their M.A. degree. Courses in related social sciences, in mathematics, or other disciplines may be given credit toward the degree where such courses serve a useful part of the student's career objectives.

Faculty

Ames, Edward, *Professor*, Ph.D., 1952, Harvard University: Theory of economic systems; general equilibrium dynamics.

Denci, Michael S., *Adjunct Assistant Professor and Assistant Dean of*

- the Graduate School*, M.S., 1961, Columbia University; Managerial accounting.
- Dusansky, Richard, *Professor*, Ph.D., 1969, Brown University: Taxation and money in general equilibrium; econometrics of property tax shifting and tax capitalization; third party reimbursement and cost-price structures in health care facilities.
- Hoffmann, Charles, *Professor*¹, Ph.D., 1954, Columbia University: Chinese economy: work incentives, industrial organization, economic development.
- James, Estelle, *Professor and Provost of Social and Behavioral Sciences*, Ph.D., 1961, Massachusetts Institute of Technology: Applied welfare economics, human resources.
- Kalman, Peter J., *Professor*, Ph.D., 1965, Purdue University: Economic theory, mathematical economics, and public sector economics.
- Kanovsky, Eliyahu, *Associate Professor*, Ph.D., 1961, Columbia University: Economic implications of the peace in the Middle East and economic development of Middle Eastern countries.
- Kristein, Marvin M., *Associate Professor and Director, Economic Research Bureau*, Ph.D., 1955, New School for Social Research: Health Economics: Hospital reimbursement and cost control; preventive medicine cost effectiveness, blood bank pricing; monetary economics; securities markets.
- Muench, Thomas J., *Professor and Chairman*, Ph.D., 1965, Purdue University: The microeconomics and general equilibrium theory of markets with externalities, public goods and uncertainty; econometric methods of analyzing time series.
- Neuberger, Egon, *Professor*, Ph.D., 1958, Harvard University: Decision-making approach to comparative economic systems; transmission of international stagflation to socialist countries, Yugoslav self-management.
- Sattinger, Michael J., *Assistant Professor*, Ph.D., 1973, Carnegie-Mellon University: Income distribution; microeconomics; international trade.
- Staley, Charles E., *Associate Professor*, Ph.D., 1956, Massachusetts Institute of Technology: International Economics; history of economic thought.
- Stekler, H. O., *Professor*, Ph.D., 1959, Massachusetts Institute of Technology: Macroeconomic forecasting and stabilization policies.
- Van Roy, Edward, *Associate Professor*, Ph.D., 1965, University of Texas: Economic anthropology and economic development with special emphasis on Southeast Asia.
- Walker, Mark, *Visiting Assistant Professor*, Ph.D., 1970, Purdue University: Informational and incentive properties of collective decision procedures.
- Wile, John, *Assistant Professor*, Ph.D., 1971, Brown University: Urban and regional economics, location theory, microeconomics.

¹ Joint appointment, Department of History

- Wooders, Myrna H., *Assistant Professor*, Ph.D., 1976, University of Minnesota: Local public good economies, optimality and incentive properties of resource allocation mechanisms.
- Zschock, Dieter K., *Associate Professor*, Ph.D., 1967, Tufts University: Economic development and human resources analysis (employment, education, health).
- Zweig, Michael F., *Associate Professor*, Ph.D., 1967, University of Michigan: Political economy, fiscal crisis and general economic crisis.

DEPARTMENT OF HISTORY

Admission to Graduate Study

For admission to graduate study in history, the following are required:

- A. An official transcript of undergraduate record.
- B. Letters of recommendation from *three* previous instructors.
- C. Results of the Graduate Record Examination Aptitude Test.
- D. A baccalaureate degree in history or its equivalent.
- E. A minimum grade point average of 2.75 (B-) in all undergraduate course work, and 3.00 (B) in history courses.
- F. Acceptance by the Department of History and the Graduate School.

In special cases, students not meeting requirements D and E may be admitted on a provisional basis.

With the approval of the Dean of the Graduate School and the History Department, a student holding an M.A. degree from another accredited institution may be admitted directly to the Ph.D. program at Stony Brook.

Foreign Languages

Ph.D. candidates are expected to be able to use whatever languages are necessary for research in their major field. The student and his advisor will decide what those languages should be, with the approval of the Graduate Committee. In most cases proficiency in at least one foreign language must be demonstrated by examination before a student may be examined for the M.A. or Ph.D.

Supervised Teaching

Teaching assistants in history are expected to perform either research or teaching functions in the department, up to a possible 12 hours a week.

Those who are teaching will enroll in HIS 581 Supervised Teaching for three units per semester of degree credit. Their work will be supervised by the member of the faculty to whom they are assigned.

All doctoral students beyond the M.A. level, whether teaching assistants or not, are expected to perform some kind of supervised teaching within their graduate career.

Master of Arts Degree

The department offers two options at this level: *Option 1* for those primarily interested in graduate study leading to university teaching or research positions and *Option 2* for those primarily interested in teaching history in the schools and community colleges. Those in the *Option 1* will be awarded a degree upon satisfactory completion of at least 30 graduate credits and upon demonstration in an oral examination of competence in a field of history. Those in *Option 2* will be awarded a degree upon satisfactory completion of at least 30 graduate credits and the submission of an acceptable M.A. Project. (For a description of the M.A. Project, see "Master of Arts" (History Education *Option 2* section below.)

Advising

Upon registration, M.A. candidates will be assigned advisors in their anticipated area of study (e.g., U.S., Europe, Latin America, History Education). The students will work out fields of study and schedules of appropriate courses with their advisors.

Option 1

Field of Examination

The M.A. examination field is a substantial area of study in which a significant historical literature exists and in which significant questions are raised. A field may be defined geographically or topically. Aspects of the field may be selected for special emphasis, but knowledge of the general contours of the whole field will always be assumed by the examiners. The examination field selected should be submitted to the Graduate Committee for approval.

Samples:

United States to 1824.

United States since 1824, with emphasis upon political/constitutional (or intellectual or diplomatic or social) history.

Europe since 1815, with emphasis upon Britain, France, and Germany.

Modern Europe, with emphasis upon intellectual history, 1715-1890.

Modern Europe, with emphasis upon Russia since 1600.

Latin America before Independence.

Latin America since Independence, with emphasis on Brazil, Argentina, and Mexico.

Expansion of Europe, 1500-1750 or 1750-recent times.

Courses:

Each M.A. candidate must complete satisfactorily at least 30 units of appropriate graduate course work before taking the M.A. oral examination. These courses shall normally include:

1. Two reading and/or research seminars in the exam field (6 units).
2. At least one additional reading colloquium with a different instructor (3 units).
3. Electives chosen among further reading colloquia and individual directed readings.

Examination:

An examining committee of three faculty members, chosen by the chairman of the History Department, shall assess the candidate's competence in his or her chosen field in oral examination.

Normally the M.A. examination shall be taken at the end of two semesters of study. It must be taken by the end of the third semester, except in exceptional circumstances by permission of the Graduate Committee.

Option II

Master of Arts Degree (History Education)

The History Education option is designed to provide new modes of graduate study in history for those who are primarily interested in teaching in the schools and community colleges. A student's program combines traditional graduate courses with a special seminar on teaching. In place of the oral examination in the Option I program, a student prepares an M.A. Project. The project may be an original instructional unit, or a research paper and smaller teaching unit based on the paper. Other options are possible, but the objective in all cases is to integrate in meaningful ways a student's reading and research with teaching in the classroom.

The admission requirements to this program are the same as those indicated above under "Admission to Graduate Study." Ordinarily no special language proficiency will be required.

Courses:

Each candidate in the History Education option must complete satisfactorily 30 hours of appropriate graduate course work. He must also submit an M.A. Project, described above, which must be approved upon completion by two members of the department. A student's program will normally include:

1. HIS 597, 598: The Teaching of History, I, II (6 units).
2. HIS 599: Research for M.A. Project (6 units).
3. Reading and/or research seminars, individual directed readings (18 units).

A "B" average will be a formal prerequisite for the degree. The History Education Committee, charged with the administration of this M.A. option, will recommend conferral of the degree when all requirements, including the M.A. Project, have been satisfied.

Doctor of Philosophy Degree

The Ph.D. is the highest professional degree granted by the history department. Candidate for the degree must hold an M.A. awarded either by the State University of New York at Stony Brook, or by another institution which it recognizes. Candidates must have been formally admitted to the Ph.D. program in history and have an advisor/thesis director who has agreed in writing, even if conditionally, that he or she will guide the student through the Ph.D. qualifying examinations and direct the dissertation. A Ph.D. preparation committee, made up of members of the graduate faculty in fields in which the student has an interest will prescribe the nature of a student's work. A foreign language requirement will be set by this committee, and will in no case be less than a reading knowledge of one foreign language. The Ph.D. preparation committee will, most critically, assist the student to define and master three fields of knowledge.

Field 1: Dissertation Field: An area of historical knowledge which encloses the student's expected research interest, and which comprises a field sufficiently broad for the purpose of undergraduate teaching. Example: Modern European History, with emphasis upon 19th century Germany.

Field 2: Additional Teaching Field: A broadly defined area of historical study which comprises a second, distinct teaching field (although it may be chosen for the comparisons it evokes with the dissertation field). Examples: Latin American History After Independence; History of Science.

Field 3: Cognate Field: A specialty in another discipline, or in history but with a specific methodological emphasis. Examples: Econometrics; Political Theory; Art History. This field will not be formally examined. The student can satisfy the requirement by successful completion of at least six credits of formal course work on the graduate level, and the completion of a paper or project which attests to the student's ability to adapt this specialty to historical research. A student's Ph.D. preparation committee will certify satisfactory completion of this requirement.

A student may not take the examinations in fields 1 and 2 before both satisfying the language requirement and passing the cognate field.

Course Work

A student's program should be planned in consultation with this Ph.D. preparation committee. In every case, however, it must include two graduate seminars beyond the M.A., one of which must be a research seminar in the dissertation field. This requirement must be met before qualifying examinations are taken. All students holding full or partial traineeships must register for three credits of HIS 581, supervised teaching in each semester in which they hold such an appointment. Students who have not held a traineeship in the course of their gradu-

ate careers must take HIS 581 for at least one semester during their Ph.D. program. Full-time students are expected to take their qualifying examinations at the end of their third and not later than the end of their fourth semester of post-M.A. work.

Qualifying Examinations

There are three examination options open to the student in consultation with his Ph.D. preparation committee:

Option 1: A single oral examination of not less than two hours duration in which both the dissertation field and teaching field are examined, the two fields being assigned equal importance. An examiner from another department, ordinarily representing the cognate field, will be present and welcome to examine where he sees appropriate. expected to take into consideration a student's overall graduate record before recommending advancement, or non-advancement to candidacy.

Option 2: A written examination of the teaching field followed, no more than one month later, by a written examination of the dissertation field. As soon as the second exam has been passed, a brief review oral examination will be held, the examiners to include at least two readers of each of the two written exams and an examiner from another department, ordinarily representing the cognate field. This committee may examine the student on any aspect of his three fields, but will consider his over-all graduate record before recommending advancement, or non-advancement, to candidacy.

Option 3: A written examination of the teaching field followed, no more than one month later, by an oral examination, principally of the dissertation field. At least one reader of the written exam in the teaching field must be present and free to ask additional questions concerning that field. An examiner from another department, ordinarily representing the cognate field, will be present and welcome to examine where he sees appropriate. The examining committee will be expected to take into consideration a student's overall graduate record before recommending advancement, or non-advancement, to candidacy.

A student who fails the oral or written examinations in all options may repeat each one, except that in option 2, failure of both written examinations prohibits a repetition of the oral.

Advancement to Candidacy

After the student has passed the Qualifying examination, the department shall propose to the Dean of the Graduate School that the student be advanced to Ph.D. candidacy.

Dissertation

A dissertation is required for the Ph.D. degree. After advancement to candidacy, a student will register for dissertation credits in consulta-

tion with his or her advisor. The student will select a dissertation topic within the major field. At present, the department offers dissertation fields in United States, Modern European, Latin American history and Expansion of Europe.

The dissertation must upon completion be approved by a dissertation examining committee of at least four members of the faculty, appointed by the Dean of the Graduate School. This committee may include the dissertation supervisor and must include at least one person from outside the department.

Before final approval can be granted, the student must present the results of the dissertation research at an informal dissertation colloquium convened for that purpose by the department and open to interested faculty members and graduate students.

Time Limit

All requirements for the Ph.D. degree must be completed within four years after advancement to candidacy. In rare instances, the Dean of the Graduate School will entertain a petition to extend this time limit, provided it bears the endorsement of the chairman of the department.

For further details, see Item #8 of the Graduate School regulations.

Faculty

Alin, Per, *Associate Professor*, Ph.D., 1961, University of Vienna, Austria: Ancient History, Cypriot Iron Age, Mycenaean pottery, Archaeology.

Angress, Werner T., *Professor*, Ph.D., 1953, University of California, Berkeley: Modern Europe, Germany, political and labor history, Jews in modern Germany.

Bottigheimer, Karl S., *Associate Professor*, Ph.D., 1965, University of California, Berkeley: Tudor-Stuart England and Ireland, The English Civil War, Overseas Expansion.

Burner, David, *Associate Professor*, Ph.D., 1965, Columbia University: 20th Century U.S., Political and Social History, Herbert Hoover.

Chinchilla-Aguilar, Ernesto, *Professor*, Ph.D., 1952, Escuela Nacional de Antropología de Mexico: Central America and the Caribbean, Colonial History, Archival training and diplomatics.

Cleland, Hugh G., *Associate Professor*, Ph.D., 1957, Case-Western Reserve University: U.S. Labor and Socialism, Innovative Teaching, Visual materials in U.S. History.

Cowan, Ruth S., *Associate Professor*, Ph.D., 1969, Johns Hopkins University: History of Science, Biology, Technology, Women in Modern Society.

Fox, Daniel, *Adjunct Associate Professor*, Ph.D., 1964, Harvard University: U.S. History, Social Welfare and Government Institutions.

Garber, Elizabeth, *Assistant Professor*, Ph.D., 1966, Case-Western Reserve University: History of Science, Physics and Thermodynamics, European Intellectual and Social History.

- Hoffman, Charles, *Adjunct Professor*¹, Ph.D., 1954, Columbia University: Economics and Economic History, 19th Century U.S. Economic History, The Peoples Republic of China.
- Kuisel, Richard F., *Associate Professor*, Ph.D., 1963, University of California, Berkeley: Modern Europe, France, Technocrats in modern society.
- Lampard, Eric, E., *Professor*, Ph.D., 1954, University of Wisconsin: Economic History, Urban History, U.S. and Modern European cities.
- Lebovics, Herman, *Associate Professor*, Ph.D., 1965, Yale University: Modern Europe, Intellectual and Social History, Germany and France.
- Lee, Robert, H. G., *Associate Professor*, Ph.D., 1963, Columbia University: China and the Far East, Manchuria, Borders and cultural contacts.
- Lemay, Helen, R., *Assistant Professor*, Ph.D., 1972, Columbia University: Medieval and Renaissance Intellectual History, Paleography.
- Levine, Robert M., *Associate Professor*, Ph.D., 1967, Princeton University: Latin America and Brazil, Political and Social History.
- Lida, Clara, *Associate Professor*², Ph.D., 1969, Princeton University: Spain and Latin America, Labor and Political History.
- Main, Jackson T., *Professor*, Ph.D., 1949, University of Wisconsin: U.S. Colonial, Social and Political.
- Marcus, Robert D., *Associate Professor*, Ph.D., 1967, Northwestern University: 19th and 20th Century U.S. Political and Cultural.
- McCarthy, Michael P., *Assistant Professor and Director of Option II, M.A. Program*, Ph.D., 1970, Northwestern University: U.S. Urban History, Teaching Methods and Skills.
- Pratt, John W., *Associate Professor*, Ph.D., 1960, Harvard University: U.S. Constitutional and Political, New York History.
- Rapp, Richard T., *Associate Professor*, Ph.D., 1970, University of Pennsylvania: Economic History, Italy, Econometrics and Quantitative Methods.
- Rosenthal, Joel T., *Professor and Chairperson*, Ph.D., 1963, University of Chicago: Medieval History, Medieval England, Social History.
- Semmel, Bernard, *Professor*, Ph.D., 1955, Columbia University: Modern British History, Social and Intellectual History, The British Empire and English-Speaking World.
- Stein, Steven J., *Assistant Professor*, Ph.D., 1974, Stanford University: Latin America, Peru, Social History and Popular Culture.
- Taylor, William R., *Professor*, Ph.D., 1956, Harvard University: 19th and 20th Century U.S. History, Cultural and Intellectual History.
- Trask, David F., *Professor*, Ph.D., 1958, Harvard University: U.S. Diplomatic, Spanish-American War and World War I.
- Weinstein, Fred, *Professor*, Ph.D., 1962, University of California, Berkeley: Psychohistory, Theory in History, Russian History.

¹ Joint appointment, Department of Economics

² Joint appointment, Department of Hispanic Languages and Literatures

- Weltsch, Ruben, *Associate Professor*, Ph.D., 1961, University of Colorado: Eastern Europe, Reformation, Hapsburg Empire.
- Wildman, Allan K., *Associate Professor*, Ph.D., 1962, University of Chicago: Russian History.
- Williams, John A., *Associate Professor*, Ph.D., 1963, University of Wisconsin: British Empire, Africa, The Commonwealth, Expansion of Europe.

Directories

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State University of New York

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GENERAL STATEMENT

The State University of New York, now in its 28th year of service, is the largest, centrally managed, multi-level system of public higher education in the nation.

Since its founding in 1948, through consolidation of 29 State-supported but unaffiliated campuses, the University has grown in response to need until its services are now felt educationally, physically and culturally the length and breadth of New York State.

The University's 64 geographically dispersed campuses bring educational opportunity within commuting distance of virtually all New York citizens. In many communities, the SUNY campuses are cultural centers of the area and a significant contributor to the local economy.

In academic 1976-77, nearly 355,000 students are studying in its classrooms or pursuing study at home, at their own pace, through such innovative institutions as Empire State College, a campus without walls. More than 100,000 students are 24 years of age or older, reflecting SUNY's ability to adjust to meet the needs of more mature students.

During its relatively brief existence, it has graduated more than 600,000 alumni, the majority of whom are pursuing their careers in villages, towns and cities across the State.

Chancellor Ernest L. Boyer, in a recent report to the University's Trustees, emphasized the diverse role of SUNY when he said:

"The State University welcomes not only the future architects, business executives, engineers, surgeons and literary critics, but also future dairy farmers and medical technicians, accountants and social workers, foresters and automobile mechanics. And through work in films, electronics, pollution control, data processing, police science, urban studies and similar fields, the University seeks to educate persons for tomorrow's roles as well as those of today."

To provide such opportunity on a continuing basis, the University is uniquely organized into a system comprised of:

Four University centers (two of which, Buffalo and Stony Brook, include health science centers); two medical centers; 13 colleges of arts and science, a non-residential college; three specialized colleges, six agricultural and technical colleges; five statutory colleges administered in cooperation with Cornell and Alfred Universities, and 30 locally-sponsored community colleges.

In addition to baccalaureate studies, 12 of the senior campuses offer graduate study at the doctoral level, and 22 at the master's level.

The two-year colleges offer associate degree opportunities in arts and science in a wide range of technical areas. They also provide transfer programs within the University for students wishing to continue to the baccalaureate degree.

Ten Educational Opportunity Centers serve the educationally deprived by upgrading occupational skills for more gainful employment and identifying students with college potential to prepare them for enrollment in the state's public and private colleges.

Overall, at its EOCs, two-year colleges, four-year campuses and university and medical centers, the University offers 3,500 academic programs.

State University is governed by a Board of Trustees, appointed by the Governor, which determines the policies to be followed by the 34 State-supported campuses.

The 30 community colleges operating under the program of State University have their own local board of trustees. The State contributes one-third to 40 percent of their operating costs and one-half of their capital costs.

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

Campuses

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; Upstate Medical Center at Syracuse.

Colleges of Arts and Science

College at Brockport; College at Buffalo; College at Cortland; Empire State College; College at Fredonia; College at Geneseo; College at New Paltz; College at Old Westbury; College at Oneonta; College at Oswego; College at Plattsburgh; College at Potsdam; College at Purchase; College at Utica/Rome.

Specialized Colleges

College of Environmental Science and Forestry at Syracuse; Maritime College at Fort Schuyler (Bronx); College of Optometry at New York City.

Agricultural and Technical Colleges (Two-Year)

Alfred; Canton; Cobleskill; Delhi; Farmingdale; Morrisville.

Statutory Colleges

College of Ceramics at Alfred University; College of Agriculture and

Life Sciences at Cornell University; College of Human Ecology at Cornell University; College of Industrial and Labor Relations at Cornell University; Veterinary College at Cornell University.

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; Bronx Community College; Broome Community College at Binghamton; Clinton Community College at Plattsburgh; Columbia-Greene Community College at Athens; Community College of the Finger Lakes at Canandaigua; Corning Community College at Corning; Dutchess Community College at Poughkeepsie; Erie Community College 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 Herkimer; Hostos Community College at South Bronx; Hudson Valley Community College at Troy; Jamestown Community College at Jamestown; Jefferson Community College at Watertown; Kingsborough Community College; LaGuardia Community College at Long Island City; Mohawk Valley Community College at Utica; Monroe Community College at Rochester; Nassau Community College at Garden City; New York City Community College; Niagara County Community College at Sanborn; North Country Community College at Saranac Lake; Onondaga Community College at Syracuse; Orange County Community College at Middletown; Queensborough Community College; Rockland Community College at Suffern; Schenectady County Community College at Schenectady; Staten Island Community College; Suffolk County Community College at Selden; Sullivan County Community College at South Fallsburg; Tompkins-Cortland Community College at Groton; Ulster County Community College at Stone Ridge; Westchester Community College at Valhalla.

State University of New York At Stony Brook

MEMBERS OF THE COUNCIL

Subject to powers of State University trustees defined by law, the operations and affairs of the State University at Stony Brook are supervised locally by a Council appointed by the Governor. Members of the Council at time of printing are listed below: All positions listed are correct as of November 10, 1975.

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OFFICERS OF ADMINISTRATION

All positions listed are correct as of November 20, 1975.

- | | |
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Graduate School</i> |

- Mortimer Kreuter, B.A., M.A.,
Ed.D.
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Education*
- Robert Marcus, B.A., M.A., Ph.D.
Dean for Undergraduate Studies
- Richard Margison, B.S.
Director of the Budget
- George Marshall, B.B.A.
Director, Department of Safety
- Velio A. Marsocci, Eng.Sc.D.
*Acting Associate Dean,
College of Engineering and
Applied Sciences*
- Joseph McConkey, B.B.A.
*Assistant Vice President;
Director of Management
Systems*
- James McKenna, B.A., M.A., Ph.D.
Director of Academic Planning
- Ruth Miller, B.A., M.A., Ph.D.
*Assistant Academic Vice
President*
- Ralph Morrison, B.A., M.A.
*Director of International
Student Affairs*
- Roger Phelps, B.S., M.S.
Director of University Housing
- Monica Riley, B.A., Ph.D.
*Provost pro tem for Biological
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- Max B. Rosselot, A.B., A.M.
*Dean for Student Administrative
Services*
- Vincent Ruggi
Payroll Director
- Robert Schneider, A.B., M.A.,
Ph.D.
Associate Dean for Research
- Jerry K. Schubel, B.S., M.A.T.,
Ph.D.
*Director, Marine Sciences
Research Center*
- Carl J. Singler, B.B.A.
Director of Internal Audit
- Kent Sjolin, A.A.
Interim Director of Public Safety
- John Brewster Smith, B.S., M.S.
*Dean of Library Services;
Director of Libraries*
- William Strockbine, A.B., M.A./L.S.
Director of University Records
- Sei Sujishi, B.S., M.S., Ph.D.
*Provost pro tem for Physical
Sciences and Mathematics*
- Charles R. Wagner, A.B., Arch.
Director of Facilities Planning
- Ralph Watkins
Director, Special Programs
- Harry Weiner, S.M.
*Acting Dean, W. Averell
Harriman College for Urban
and Policy Sciences*
- Herbert Weisinger, A.B., M.A.,
Ph.D.
Dean of the Graduate School
- Bache Whitlock, B.A., M.A.
Director of Financial Aid
- David Woods, B.A., M.A.
Director of University Relations
- Lee Yasumura, B.A.
*Director of Personnel; Acting
Affirmative Action Officer*

STAFF OF THE GRADUATE SCHOOL

Betty T. Bennett, Ph.D.
Assistant to the Dean

Lois Branch, A.A.
Assistant for Grant Processing

D. Ann Carvalho, M.A.
Assistant to the Dean

Harriet Christman, M.A.
Assistant for Research Information

Chester D. Copemann, Ph.D.
Assistant Dean for Graduate Recruitment and Counseling

Michael S. Denci, M.S.
Assistant Dean of the Graduate School

Charles W. Kim, Ph.D.
Assistant Dean of the Graduate School

Phyllis A. Reed, M.A.
Assistant to the Dean

Kathryn S. Rockett, M.A.L.S.
Assistant for Grant Processing

Robert F. Schneider, Ph.D.
Associate Dean for Research

Herbert Weisinger, Ph.D.
Dean of the Graduate School

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