Official Bulletin of the University of Rochester/1967-68
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1967-1968

Fall Semester

September 12 (Tuesday) ... Freshmen Week begins
September 14 (Thursday) ... Registration Begins
September 15 (Friday) ... Last day to pay fees without penalty
September 18 (Monday) ... Classes begin Fall Term
September 29 (Friday) ... Final date for Registration and fee payment with penalty
November 22 (Wednesday) ... Thanksgiving recess begins at noon
November 27 (Monday) ... Classes resume
December 4-12 ... Spring Registration Period
December 19 (Tuesday) ... Christmas recess begins after last class
January 3 (Wednesday) ... Classes resume
January 12 (Friday) ... Last day to pay Spring Term fees without penalty
January 13 (Saturday) ... Classes end
January 16 (Tuesday) ... Final Examinations begin
January 26 (Friday) ... Final Examinations end

Spring Semester

January 31 (Wednesday) ... Classes begin Spring Term
February 16 (Friday) ... Final date for Registration and fee payment with penalty
March 23 (Saturday) ... Spring Recess begins after last class
April 1 (Monday) ... Classes resume
April 22-May 10 ... Material for Fall Term Registration distributed
May 1 (Wednesday) ... Dandelion Day
May 17 (Friday) ... Classes end
May 20 (Monday) ... Final Examinations begin
May 28 (Tuesday) ... Final Examinations end
June 2 ... Commencement
1968-1969

Fall Semester

September 17 (Tuesday) ... Freshmen Week begins
September 19 (Thursday) ... Registration begins
September 20 (Friday) ... Last day to pay fees without penalty
September 23 (Monday) ... Classes begin Fall Term
October 4 (Friday) ... Final date for Registration and fee payment with penalty
November 27 (Wednesday) ... Thanksgiving recess begins at noon
December 2 (Monday) ... Classes resume
December 9-17 ... Spring Registration Period
December 21 (Saturday) ... Christmas recess begins after last class
January 6 (Monday) ... Classes resume
January 17 (Friday) ... Last day to pay Spring Term fees without penalty
January 18 (Saturday) ... Classes end
January 21 (Tuesday) ... Final Examinations begin
January 31 (Friday) ... Final Examinations end

Spring Semester

February 5 (Wednesday) ... Classes begin Spring Term
February 21 (Friday) ... Final date for Spring Registration and fee payment with penalty
March 29 (Saturday) ... Spring recess begins after last class
April 8 (Tuesday) ... Classes resume
April 28-May 16 Material for Fall Term Registration distributed
May 7 (Wednesday) ... Dandelion Day
May 23 (Friday) ... Classes end
May 26 (Monday) ... Final Examinations begin
June 3 (Tuesday) ... Final Examinations end
June 8 (Sunday) ... Commencement
The University of Rochester opened its doors in 1850. There are no voluminous records of ceremony or promise. But one noted American of the time, Ralph Waldo Emerson, wrote the following about this event:

"...a landlord in Rochester had an old hotel which he thought would rent for more as a university; so he put in a few books, sent for a coach-load of professors, bought some philosophical apparatus, and by the time green peas were ripe had graduated a large class of students."

The University was founded as a small liberal arts college for men. From the very beginning it has been dedicated to educating intelligent young people to accept the challenge of improving the complex environment in which they live.

For over four generations, the University has pursued as its goal a place among the major institutes of learning. Its motto reflects its continuing efforts to improve—Meliora! Today, the University is a distinguished and diverse co-educational institution of broad scope and increasing influence. It rates as a leader among the country's medium-sized, private universities.

Expansion has always been carefully planned and controlled. Size has not been equated with quality. Growth has been directed toward evolving a better University, not a larger one or one that is broadest in the disciplines taught.
As a matter of history, the word *meliora* was written into the records as the official motto of the University in May of 1851. The seal adopted at that time had a device of a hand pointing forward and upward. The present seal is different in appearance, but the motto is unchanged.

A student can expect innovation as well as inspiration from Rochester. To this end, undergraduate education at the University of Rochester is integrated with graduate education; and to the extent that their capacity and ability prescribe, undergraduates may work at the graduate level. As President W. Allen Wallis explains, “Our objective is not just to see that our undergraduates can pass some set of examinations but to see that each student makes the greatest advance of which he is capable in four years…”

Since today’s student lives in a world of rapid change, the University is constantly adapting its program to meet student needs.

At the freshman level, the University has pioneered in a Preceptorial Program, which introduces selected first-year students to significant and demanding intellectual pursuits. The students engage in intensive readings, seminars, and critiques, all under the guidance of a senior faculty member. Since the program was started in 1962, the number of courses has grown from three to twenty-one, with more still to be included.

The University has the second oldest Honors Program in the country. In this program small groups of students meet regularly for informal seminars. They commit themselves to a demanding regimen of independent reading and study and are exposed to criticism by both their peers and key members of the faculty. The Honors students enjoy latitude in their studies and an opportunity to develop a creative approach in their chosen fields. For this privilege they assume considerable responsibility, a factor which is as important to their growth as the subject matter.

The University of Rochester offers interdisciplinary programs in Canadian studies, Russian studies, East Asian studies, South Asian studies, general science, biomedical engineering, brain research, space science, and the visual sciences.

The curriculum provides the student not only with broad choice, but also with depth. He may range from Astronomy to Astro-Physics, from Primitive Art to Modern Energy Conversion, from Sanskrit to Conversational Chinese.

Among these special programs are the following:

- The nation’s first college-credit course in programmed instruction.
- A teaching internship that is unique and has been cited as one of the ten outstanding teacher-preparation programs in the country.
- The South Asian Language and Area Center, one of fourteen such institutes supported by the government for the study of languages and cultures of India, Pakistan, and Ceylon.
An East Asian Language and Area Center, in which undergraduates who are interested in the area of China and Japan have the opportunity to study the language and related fields of a major civilization while concentrating in a traditional discipline.

The Center for Brain Research, jointly sponsored by the College of Arts and Science, the College of Engineering and Applied Science, and the School of Medicine and Dentistry, concerned primarily with graduate level research on problems of the nervous system; offering research or reading courses to undergraduate students with special permission.

A Faculty of Distinction

The keystone of any university must, of necessity, be the faculty, because both in fact and philosophy, "a teacher affects eternity."

To teach, then, is the first calling of Rochester's 800 full-time and nearly 900 part-time faculty members. The number of faculty whose performance in teaching commands the respect of the entire academic community is, indeed, very high.

Teaching, however, is only one responsibility of a great faculty. Research, synthesis, codification, and creative activities are also vital to the continuing growth of a major university.

Faculty members have earned high honors and gained fame and recognition in the arts and sciences. They have won coveted awards such as the Nobel Prize for Medicine, the Pulitzer Prize, and Prix de Rome in Music.

In 1964, the University was selected as a recipient of a New York State Albert Einstein Chair in Science. In endowing this chair, the charge read in part as follows: "...as a logical extension of existing programs and commitments of an institution that has already achieved national eminence."

Distinguished alumni

The ultimate test of a university's quality is the caliber of its graduates. The University is proud of all of its alumni, for they have attained distinction in a wide variety of pursuits.

The University of Rochester has ranked high among the private universities in the nation in producing scholars who have achieved the Doctor of Philosophy Degree.

Only two medical schools have contributed a higher proportion of their graduates to medical faculty positions. Fourteen graduate fellows in dentistry have become deans of dental schools.

And among the many talented Eastman School of Music graduates, nine are now deans or directors of music schools.

Countless alumni serve with distinction and honor in law, government, industry, finance, communications, and the military service of their country. In philanthropic as well as cultural activities graduates of the University contribute generously in time, talent, and support.
An evolving student body

The academic standards of this University are reflected both in its entrance requirements and in the performance of its undergraduates.

Take the class of 1970 for example. It is fairly typical of a trend. Six out of ten were in the top tenth of their high-school graduating classes. Eight out of ten were in the top fifth.

The average entrant placed among the top five per cent of all freshmen entering college in 1966.

During their stay in Rochester, four out of every 10 undergraduates qualify for the Dean's list. This requires an average of Grade B or better in all courses taken for credit.

Three out of four male undergraduates, and four out of ten women pursue advanced studies.

When what had been a golf course in 1930 was transformed into the River Campus to house the Men's College the total enrollment of the then co-ordinate colleges was 700. That was fewer students than this year's graduating class.

The full-time enrollment now numbers fifty-three hundred. Two thirds of these students are undergraduates. An additional three thousand persons are registered for part-time studies.

In 1920, seventy-two per cent of the freshman class came from the Monroe County area; today eleven per cent come from Monroe County. The University of Rochester has emerged as a national or international center of learning. Students from every part of the country and many parts of the world are now part of the University, at every level of study.

Of the University's more than thirty thousand alumni, nearly half live outside of New York State. And more than eight hundred are residents or citizens of other countries.

They project, wherever they are, an image that is neither conforming nor uniform. Yet all reflect the aggregate of experience and exposure that comes from shared goals and accomplishments. Like the University, with its many autonomous but interconnected colleges, alumni are both products of and contributors to the challenge of meliora.

Variety in opportunity

*The College of Arts and Science*, the oldest of the University's academic units, provides undergraduate and graduate courses in the humanities, the natural sciences, and the social sciences. It offers degree programs in 25 fields. Undergraduate programs of study lead to either a Bachelor of Arts or a Bachelor of Science degree.

*The College of Business Administration* is a professional college for upperclassmen and graduate students. It offers courses leading to a Bachelor of Science with a major in accounting, business economics, or management science.

*The College of Education* provides undergraduate and graduate courses in teacher education. The Bachelor of Science with majors in elementary or secondary education is offered.
The College of Engineering and Applied Science is a professional college for upperclassmen and graduate students. Its curriculum leads to the Bachelor of Science degree. Students may elect a major in chemical engineering, electrical engineering, mechanical engineering, and in optics. In addition, this College serves as the base for a broad range of research activities and an organized program of service to industry through consultation, seminars, and conferences.

The Eastman School of Music offers a diverse curriculum leading to undergraduate and graduate degrees in performing, conducting, composing and music education.

Department of Nursing, School of Medicine and Dentistry, in addition to its graduate program offers study leading to the Bachelor of Science with a major in nursing.

University School of Liberal and Applied Studies provides University-level education for those whose needs are special and are not met by the programs of other divisions of the University. To accommodate such students, most classes are held in the late afternoons, evenings or on Saturdays. A number of courses not given regularly in the College of Arts and Science are available in The University School and are open to students from all colleges.

The University School offers the opportunity for part-time study leading to the degrees: Bachelor of Science with a major in General Studies; Master of Science with a major in General Studies with options for part-time study in applied mathematics, chemical engineering, electrical engineering, materials science, mechanical and aerospace science, and statistics. Work leading to the Master’s degree in any of these fields can normally be completed in three to four years. All courses for these programs are offered during evening hours.

Evening Session is designed primarily for part-time students. The College of Arts and Science and the College of Engineering and Applied Science offer programs leading to the Master’s degree; the Colleges of Business Administration and Education provide graduate and undergraduate instruction.
Part-time students planning to earn the Bachelor's degree in the Colleges of Business Administration, Education, Engineering and Applied Science and Department of Nursing are registered in the University School of Liberal and Applied Studies until admitted to the school or college of their choice.

Summer Session classes are offered on the River Campus and at the Eastman School of Music. Undergraduates at the University of Rochester and from other colleges and universities may take summer instruction and transfer the credits earned to their own institutions. Courses of interest to teachers, nurses and others who need or desire to do regular college work during the summer are included in the River Campus summer sessions.

GRADUATE STUDIES
Almost one-third of the students on the River Campus are engaged in full-time graduate study or research throughout the University. Each school or college is responsible for approval of programs recommending candidates for Master's degrees. The work for the Doctor of Philosophy degree is under the general control of the University Council on Graduate Studies. Each college has an Associate Dean to administer graduate studies.

The following is a summary of the advanced degrees offered by each of the University's schools and colleges:

The College of Arts and Science: Doctor of Philosophy in the following departments: Anthropology, Biology, Chemistry, Economics, English, Foreign and Comparative Literature, Geological Sciences, History, Languages and Linguistics, Mathematics, Philosophy, Physics and Astronomy, Political Science and Psychology.

The degrees Master of Arts and/or Master of Science also are awarded for work in these departments. The Master of Arts is given in the Departments of Fine Arts and Sociology.

The Center for Brain Research offers the degree Doctor of Philosophy in Neuroscience and a Ph.D. in Neurobiology as a joint degree with any of the following departments: Biology, Psychology, Electrical Engineering (College of Engineering), Physiology, Anatomy (School of Medicine and Dentistry).

The College of Business Administration: Master of Science with a major in Business Administration, Master of Business Administration and Doctor of Philosophy with a major in Business Administration.

The Eastman School of Music: Doctor of Philosophy, Doctor of Musical Arts, Master of Arts and Master of Music.


The College of Engineering and Applied Science: Doctor of Philosophy and the Master of Science degrees in Chemical Engineering, Electrical Engineering, Mechanical and Aerospace Sciences and Optics.
The School of Medicine and Dentistry: Doctor of Medicine, Doctor of Philosophy and Master of Science. Information on the program for the degree Doctor of Medicine may be obtained from the Dean of the School of Medicine and Dentistry, University of Rochester, Rochester, New York 14620.

The Department of Nursing of the School of Medicine and Dentistry offers a program leading to the degree Master of Science in Nursing Education. Information may be obtained from the Director of Graduate Studies, Department of Nursing, University of Rochester, Rochester, New York 14620.


Detailed information on the University's graduate programs can be found in the bulletin Graduate Studies. Application forms and bulletins may be obtained by writing to the Secretary of Graduate Admissions, Administration Building, University of Rochester, Rochester, New York 14627.

THE EASTMAN SCHOOL OF MUSIC
The Eastman School of Music is located in downtown Rochester and is known throughout the world as a prime center for the training of professional musicians as well as for the study and creation of music. Eastman alumni include a substantial number of today's most respected performers and composers. The School has been the leading source of first-chair players in American orchestras as well as of deans and directors of conservatories and music schools in all parts of the country.

Judged by the highest professional standards, the Eastman Wind Ensemble and Eastman Philharmonia, composed entirely of student performers have achieved world-wide recognition through their numerous recordings and international tours. They have served the cause of American music notably. The Eastman Opera Theatre produces several operas each year.

The School's Sibley Music Library houses the largest collection of music literature and source materials to be found at any music school in the world. It includes autographed scores of masters of the past as well as many contemporary composers. The 3,355-seat Eastman Theatre and the more intimate 490-seat Kilbourn Hall, both acoustically excellent, are used for local and visiting professional performances as well as for School functions.

The Eastman School's reputation was earned by the total commitment of an exceptional faculty to the uncompromising ideal of the total musician. Under its present Director, the distinguished American conductor Walter Hendl, the Eastman School is building on its solid
base of past achievements. To broaden its scope in all fields, it is increasing its renowned artist faculty and exploring new directions in composition, musicology, educational techniques and areas of performance. Outstanding figures in all phases of musical activity are invited to the School to share their knowledge and experience with the 400 undergraduates and 200 graduate students.

THE MEDICAL CENTER

The University Medical Center, covering 60 acres adjacent to the River Campus, was among the first in the country to house both medical school and hospital in a single building. The School of Medicine and Dentistry offers programs in medical sciences which lead to the M.S. and Ph.D. degrees as well as the M.D. degree. Its extensive facilities provide an excellent spectrum of patient care and research to support the educational opportunities. One part of the Medical Center is Strong Memorial Hospital with a capacity of 700 patient beds. Also located in the University Medical Center is Helen Wood Hall which contains academic and residence facilities of the Department of Nursing of the School of Medicine and Dentistry.

The closeness between the resources and faculties of the River Campus and the Medical Center makes possible many occasions for students on one campus to pursue their special interests with the faculty of facilities of the other campus. For example, students at the River Campus have access to the medical school library, a division of the University library, located at the Medical Center, and some students attend courses or pursue special studies with faculty members at the medical school.

THE MEMORIAL ART GALLERY

The Memorial Art Gallery serves as the art center for students and for the entire population of the surrounding area. It shares the Prince Street campus with the Eastman School of Music. The Gallery's increasingly important permanent collection totals 40,000 works valued at $4,000,000. The collection includes paintings, sculptures, frescoes, tapestries and other art treasures. This collection serves as an invaluable teaching aid to the University's Fine Arts Department.

Educational services of the Art Gallery include scholarships for talented children, special classes for the handicapped and aged, a lending library of more than 300 original art works and lectures and demonstrations both at the Gallery and at schools, hospitals, industrial plants and other institutions. The Gallery also presents a varied schedule of visiting exhibitions throughout the school year. The annual Clothesline Show, one of the nation's largest outdoor art shows, encourages active pursuit of art by amateurs and professionals alike.

The Gallery's Creative Workshop has an enrollment of 1500 in painting, sculpture, ceramics, weaving, enameling, jewelry and print-making classes.
THE RIVER CAMPUS

The River Campus is located in a park-like setting near enough to the heart of the city of Rochester to interchange with it the many advantages of both. Students and faculty benefit from the resources of Rochester and the city warmly responds in its relationship with the University.

Among the facilities on the River Campus are:

**Rush Rhees Library:** The bulk of the University's 1,000,000 volumes, 10,000 current periodicals, Departments of History, Fine Arts, and gallery.

**Morey Hall:** Office of Dean of Student Life, University Office of Counseling and Special Services, administrative offices of the College of Arts and Science, classrooms and offices of Departments of English, Foreign and Comparative Literature, Psychology and Center for Brain Research in the annex.

**Lattimore Hall:** Chemistry Department, laboratories and classrooms.

**Dewey Hall:** Departments of Biology and Geological Sciences, and the College of Business Administration.

**Hoyt Hall:** Lectures, special meetings and conferences.

**Bausch and Lomb Hall:** The Departments of Physics and Astronomy, Mathematics, and Optics.

**Harkness Hall:** NROTC and AFROTC units and offices of the Departments of Anthropology, Economics, Political Science and Sociology.

**Gavett Hall:** The College of Engineering and Applied Science.

**Hopeman Engineering Building:** Offices and laboratories of Departments of Electrical Engineering, Mechanical Engineering and Aerospace Studies and laboratories used by the College of Education.
Taylor Hall: The College of Education.

Computing Center: Ground floor of Towne House Motel.

Administration Building: University administrative offices, offices of Admissions and Student Aid, the Registrar, Cashier, and the University School of Liberal and Applied Science.

Strong Auditorium: Two halls used for assemblies, lectures, Chapel, stage productions and concerts.

Todd Union: Offices and meeting rooms for extracurricular groups, Post Office and snack bar.

Men's Dining Hall: Student dining hall, lounges, meeting rooms, the University Bookstore, Placement Office and Faculty Club.

Alumni Gymnasium: The Department of Physical Education and athletic facilities.

Fauver Stadium: A permanent grandstand accommodating 6,000 spectators, and within the structure, the Department of Languages and Linguistics and the Sculpture and Painting Studios.

Women's Residence Halls: Four units with room, board and recreation facilities for 630 women.

Anderson Tower and Wilder Tower: Nine-story residence halls for Junior-Senior men and women and faculty apartments.

Crosby, Burton, Lovejoy, Hoeing, and Gilbert Halls: Residence halls with accommodations for 1,000 men. The Department of Philosophy is located in Lovejoy.

Tiernan Hall: Residence for women.

Fraternity Quadrangle: Houses built by nine fraternities under a restricted agreement with the University.

Women's Gym

Particle Physics Building: Research facilities for the Particle Physics-Cosmic Ray Research Program.

Cyclotron Complex

deKiewiet and Valentine Towers: Housing graduate and undergraduate students.

A fund-raising campaign initiated in 1965 aims to collect $31 million for the expansion of facilities to meet the demands of the University's growth. Principal projects in the continuing program to provide a better University include the construction of a new wing which doubles the capacity of a completely refurbished Rush Rhees Library; a University Commons to provide a centralized facility for the informal interchange of ideas and a valuable point of contact between students and alumni; a new Chemistry-Biology Building; and additional facilities for humanities, social sciences, psychology and for the Colleges of Education and Business Administration.
In four years at the University of Rochester, a student may call on countless members of the University community. Some offer assistance in the academic area—in choosing courses, developing better study habits and selecting a career. Others provide guidance in the activities and programming areas by orienting students to the social, educational and recreational opportunities on campus and in the community, and by planning and guiding students with residence and all-campus programs. A few specialized services provide assistance in such matters as arranging a loan, locating a part-time job or obtaining a graduate fellowship.

Occasions also arise when a student needs help in working out personal problems and in adjusting to the demands of university life. A wide variety of staff members is available to help students explore these important areas.

The services provided by the Office of the Associate Provost for Student Affairs are available to all students and their maximum use is encouraged.
ADMISSIONS

The University seeks young men and women of character, ability and promise who have a capacity for intellectual growth and the motivation to achieve. Careful consideration is given to all the evidence presented by a candidate for admission including the secondary school record, the results of College Board tests, the school's recommendation and the student's participation in school and community affairs. A conscientious effort is made to select a class varied in interests, talents and goals, and in social and economic background.

Admission to undergraduate programs of study is under the direction of the Committee on Admission.

Recommended Subject Preparation

The quality of the applicant's secondary school record is more important than any prescribed pattern of courses. Sound preparation includes the study of English with continued practice in writing, social studies, foreign languages, mathematics and the laboratory sciences. Additional weight is given to secondary school courses generally known as enriched, honors and Advanced Placement.

Applicants for admission to engineering and science programs should include as much mathematics and laboratory science work as possible within the limits of their secondary school offerings.*

Application procedure

All applications must be made on forms which are provided on request, and accompanied by a non-refundable application fee of $15. Instructions for completing the application for admission are included with all application forms.

Applications should be submitted by January 15 of the final year in secondary school. Applicants are required to take the College Entrance Examination Board Scholastic Aptitude and Achievement Tests either in December or January. (See Scholastic Aptitude and Achievement Tests, below.)

Applicants for the Bachelor of Arts degree with concentration in music should request application forms from the Director of Admissions of the River Campus Colleges. The forms for this program include a supplementary resume of musical training as well as reports by music teachers. All parts of the application (except music teacher report forms) should be returned to the Director of Admissions of the River Campus Colleges. Applicants should communicate directly with the Director of Admissions, Eastman School of Music, to arrange an audition or recording. Decisions on applications for admission to this program are made after the musical qualifications of the candidate have been evaluated by the Eastman School of Music Admissions Committee. These applicants pay the regular application fee.

*Chemistry is required as preparation for the B.S. degree in Chemistry, Chemical Engineering and Biology, and is recommended for the B.S. degree in Nursing. Physics is required for the B.S. degree in Physics and Astrophysics and recommended for all departments in the College of Engineering and Applied Science.
Personal Interview

Applicants are encouraged to arrange a personal interview on campus whenever possible. Although not a requirement for admission consideration, an informal conference is usually very helpful in making college plans. It affords the applicant an opportunity to gain a first-hand impression of the college. Appointments should be arranged by letter or telephone during the summer and fall. Avoid February, March and early April when applications are being processed.

The Admissions Office is open for appointments on weekdays from 9 a.m. to 5 p.m. and on Saturdays from 9 a.m. to noon. It is closed on Saturdays from the middle of June to the middle of September.

Scholastic Aptitude and Achievement Tests

All applicants for admission as freshmen are required to take the Scholastic Aptitude and Achievement Tests, offered several times a year by the College Entrance Examination Board at centers throughout the world.

Applicants for admission should take the Scholastic Aptitude Test in December or January (preferably December) of their senior year in secondary school.

The Achievement Tests should be taken in English Composition and in two other fields related to those which the student will probably study in college. For example, an appropriate test pattern for engineering and science candidates is English Composition, Mathematics and Chemistry or Physics. Applicants may offer Achievement Tests in either the junior or senior year. Ordinarily, students will find it to their advantage to take these tests in December or January of the senior year in continuing subjects (English, foreign language and Mathematics) and in May of the junior year or in July in subjects completed that year. Application to take these tests should be made to the College Entrance Examination Board at least three weeks before the scheduled date.

Application forms for the tests and a Bulletin of Information may be secured from secondary schools or the College Entrance Examination Board, Box 592, Princeton, New Jersey 08540, or the Board's Pacific Coast Office, Box 1025, Berkeley, California 94701.

Notification of Action on Applications for Admission

Applicants are notified of action taken on their applications for admission and, where appropriate, for financial aid by the middle of April. No action is taken on an application until it is complete in detail.

Candidates' Reply Date

The University of Rochester subscribes to the Candidates' Reply Date. This procedure has been established to provide ample time for students to reach a decision on college choice. Admitted students are required to notify the University of acceptance of admission on or before the Candidates' Reply Date.
Early Decision Program

Well-qualified applicants for admission who decide that Rochester is the college of their choice may apply for an early decision upon their application for admission.

To be eligible for early action the applicant must:

1. Submit formal application for admission before November 1, including scores of the Scholastic Aptitude Test.
2. Submit scores of any Achievement Tests taken before November 1. If the applicant has not taken three Achievement Tests, he should do so by March of his senior year in secondary school.
3. Present certification by the secondary school that application is being made only to the University of Rochester.

Candidates are notified of the decision of the Committee on Admissions by December 1 and are expected to make formal acceptance of the offer of admission by January 1. Those applying for financial aid should file the Parents' Confidential Statement by November 1. Notification of action taken is mailed by December 15.

Not more than 25% of the class is accepted under this program. Those not accepted are notified and their applications are considered under the regular admission procedure later in the year.

Advanced Placement

The University of Rochester recognizes work completed in the Advanced Placement Program. Judgments concerning placement in courses and the award of credit for Advanced Placement achievement are made by the academic departments. Satisfactory performance in Advanced Placement courses may be used to fulfill degree requirements. Students are informed of these decisions before they register for the first semester.

Readmission

Students who withdraw from the University or are separated for any reason and wish to re-enter, apply through the Office of Admissions. Applications for readmission are reviewed by representatives of the various Colleges and the office of the Dean of Student Life.

Students who appear ready to resume their programs with profit are generally approved for readmission, subject to space limitations in departments and residence halls. For best consideration, readmission applications should be filed at least a month before the beginning of the term in which the student plans to re-enter.

Admission of Transfer Students

Students from other colleges or universities are ordinarily admitted only at the beginning of the fall semester. Candidates for transfer must meet the admission requirements of the particular college or department to which they are applying. Ordinarily, a student admitted to the College of Arts and Science must be in residence for a
minimum of two years before he shall be considered eligible for the Bachelor's degree. Courses completed in summer school and University School do not fulfill the residence requirement.

The Colleges of Business Administration, Education, and Engineering and Applied Science, and the Department of Nursing, require a minimum of one year in residence. Credentials must include a statement of honorable dismissal and evidence that previous academic work has been of distinctly high quality. Credit for work at other institutions includes only those subjects which can reasonably be accepted as the equivalent of course work the applicant plans to pursue at Rochester. Transfer applications are reviewed beginning in April and notification is sent to candidates as soon as circumstances permit. For best consideration completed applications should be filed no later than July 15.

Financial aid is available to transfer students. Preference is given to students who enter from two-year colleges and those who enter professional programs (Business Administration, Education, Engineering, Nursing). Application forms for financial aid are available from the Office of Admissions and Student Aid.

Students admitted with advanced standing from other colleges and universities are required to report for a brief orientation program to assist them in adapting to a new college environment.

Special Students

Students desiring to pursue a special course not leading to a degree are admitted only for extraordinary reasons. Ordinarily special students are limited to persons holding a degree from a recognized college. Special students are subject to all general regulations and pay a tuition fee based on the current semester hour charge and all incidental fees attached to any course they take.

Summer Orientation Program for Freshmen

Freshmen are urged to participate in a two-day summer program to help them plan and register for fall semester classes. Placement examinations are given, and faculty members are available for assistance in program planning. In addition, students can familiarize themselves with campus facilities. For students unable to attend one of the four summer programs, a special session is scheduled at the beginning of Freshman Week.

FINANCIAL AID

A strong program of financial aid is maintained to provide scholarships, loans and part-time jobs for students who could not attend Rochester without assistance. Although the total amount of aid is large, it is not possible to assist all deserving students who apply and are offered admission. Careful selection of recipients of financial aid is therefore necessary.

A complete list of scholarships is available upon request from the Office of Admissions and Student Aid.
Basis for Scholarship Selection
Special conditions are attached to some scholarships, such as nomination by persons outside the University, residence in a particular place, or specific qualifications of the holder. Selections are usually based upon character, personality, maturity of purpose and high scholastic aptitude and achievement. The amount of the individual stipend is determined solely by the financial need of the recipient.

Procedure for Making Application
Applicants for scholarships should file a complete application for admission no later than January 15. They are also required to submit financial statements to the College Scholarship Service, in which the University of Rochester is one of the participating colleges. Detailed information and forms for this purpose are available in the secondary schools. A candidate for scholarship aid is considered for any scholarship for which he is eligible and which meets his requirements.

Renewals of Scholarships
Certain scholarships are normally continued from year to year provided the record, conduct and financial circumstances of the holders justify continuation. Annual financial statements are required.

All other scholarships, however, are granted for an academic year only, and application must be made for renewal. Annual scholarships are usually renewed if the holder’s academic performance is well above minimum satisfactory progress toward a degree, no failing courses are recorded against him, he demonstrates continued need for assistance and he is using time and talents satisfactorily and making a serious effort to help himself financially. Renewal applications should be made on a form provided for the purpose and returned to the Office of Student Aid upon a specified date.

Students who enter without financial assistance from the University are eligible to apply for aid while in college. Application forms are available in the Office of Admissions and Student Aid.

Students are encouraged to discuss their financial problems and questions with a staff member at any time. Every effort is made to assist deserving students.

Scholarship Regulations as Applied to Students Receiving Other Forms of Aid
Recipients of scholarships granted outside the jurisdiction of the University may be eligible to hold University scholarships. The amount of the stipend is adjusted to the student’s needs. It is the responsibility of the student to notify the Office of Admissions and Student Aid immediately upon the receipt of any outside awards.

Additional Regulations
Scholarships are granted only to students who are pursuing a regular course for a degree. If a scholarship holder becomes subject to disciplinary action, he may forfeit his scholarship during the continuance of the discipline.
New York State Financial Aid

The University of Rochester is an approved university in which New York State Scholarships and Scholar Incentive awards may be used. It is important that students seeking this aid obtain full information and meet promptly each application deadline.

1. Scholar Incentive Program: Applications should be filed before July 1 for each academic year, but will be accepted up to December 1. Applications for the spring semester only have an April 1 deadline. Annual application is required.

2. Regents College Scholarships for Undergraduates: Candidates should seek directions from their secondary school principal or guidance counselor.

Information on the above may be obtained by writing: Regents Examination and Scholarship Center, New York State Education Department, Albany, New York 12224.

Federal Financial Aid

Among the forms of Federal financial aid which some undergraduates may receive are NROTC grants (see p. 215) and War Orphans benefits. In recent years Federal legislation has provided loans, grants and part-time jobs to college students whose family financial circumstances meet eligibility requirements.

National Defense Student Loans, Educational Opportunity Grants, and College Work-Study assistance are awarded to eligible students who are also financial aid applicants for University funds. Students may secure details about the Federal programs through their schools.

STUDENT LOANS

Loans for higher education can be divided into two categories: loans to students or prospective students, and loans to students’ parents or guardians.

Loans to students are normally administered through three channels: the University, private agencies and State Guaranteed Loan Agencies. The University administers the National Defense Student Loan program, the Federal Nursing Student program, and its own University Loan fund. For all loans, academic merit and financial need are two of the criteria considered when applications are reviewed.

Several foundations and private organizations conduct student loan programs directed towards particular groups. Church groups, credit unions, labor unions, service organizations and trust funds are some of the agencies making loans to needy students. Further information on these loans is available through the high school guidance office.

Another type of loan widely available to students is the State Guaranteed Loan. The determination of financial need for these loans is generally less rigorous than for loans administered by the University. Information and applications may be obtained from hometown banks.
Commercial loans to students' parents fall into two categories: those from banks, and those from lending institutions specializing in college loans. Generally, commercial loan plans provide payments either to the school or parents or guardians of the student, with repayment in equal monthly installments. The length of the repayment period varies, from one semester through six years in cases where an overall plan for the entire undergraduate program is established.

A particularly attractive aspect of many commercial loan plans is the life insurance feature, which assures the uninterrupted availability of funds for the student to complete his planned education in the event of the disability or death of a parent or guardian. Your local bank can provide you with information concerning its commercial loan program.

While commercial banks normally restrict their lending activities to students who reside in their localities, some lending agencies specializing in college loans are nation-wide. While the University does not endorse any particular company, a few are listed below. They represent only a small number of lending agencies; others may be available from high school guidance offices.
The loan programs above are far from an exhaustive list of possibilities. Questions on financing costs of education should be discussed with a member of the Office of Admissions and Student Aid.

UNIVERSITY LOAN FUNDS

The following loan funds are available to undergraduates in River Campus Colleges and the Department of Nursing:

University of Rochester Regular Fund

Loans from this revolving fund seldom exceed $500. Interest is not charged until the student receives a baccalaureate degree from the University or ceases to be a full-time undergraduate, when interest is five percent.

The Martin F. Tiernan Loan Awards

This loan fund, generously established by Martin F. Tiernan, B.A., 1906, is available to men who meet the University's standards of character, academic work and promise, and eligibility for loan aid.

Kellogg Loan Fund for Students in Nursing

This fund is available through the generosity of the W. K. Kellogg Foundation for the use of students in the Department of Nursing of the School of Medicine and Dentistry. Interest is charged at the rate of two percent per annum.

Clare Dennison Loan Fund

The purpose of this loan fund is to assist students in the Department of Nursing with financial aid for education.

The Professor Horace W. Leet Loan Fund

A fund established by students in honor of Professor Leet's thirty-nine years of devoted service on the engineering faculty. This fund is available to any student in the engineering college. The office of the Assistant Dean of the College of Engineering and Applied Science should be contacted for details.

WORK SCHOLARSHIPS

A number of University Work Scholarships are available to financial aid applicants. A recipient is required to earn $350 in one or more campus positions from September to June. He is credited with $550 at the Tuition Office ($275 per semester) of which $200 is a grant (scholarship) and the remaining $350 earnings.

STUDENT EMPLOYMENT

Students may earn a limited amount of money to help defray college expenses through part-time jobs. A student should have enough
money on hand or in sight upon entering college to meet the expenses of at least his first year. If work is needed, application may be made to the Office of Admissions and Student Aid for part-time employment on or off campus. Ordinarily part-time work schedules should not exceed 15 hours a week. Each year students obtain part-time employment on the campus in a variety of places—the library, the bookstore, departmental offices, laboratories, residence halls, dining halls, fraternity houses—and off campus in retail and industrial firms, restaurants, hotels and private homes.

The Office of Admissions and Student Aid also places students in part-time employment under the provisions of the Federal College Work-Study Program, in addition to the University's Work Scholarship Program mentioned above.

EXPENSES

The cost of a college education far exceeds the tuition paid by the student and his parents. At Rochester, tuition covers approximately 60% of educational costs. The remaining expenses are met through income from endowment and through support from individuals, foundations, corporations and government sources.

Tuition charges continue to increase, reflecting the mounting costs of quality education and general economic trends. Changes in educational costs at Rochester have been accompanied by adjustments in financial aid, making enrollment in the University accessible to qualified students who require assistance.

Tuition and Fees

Tuition for full-time undergraduates, except nursing students, for the academic year is $2,000 or $1,000 for each semester. The tuition applies to students who are enrolled in approved programs of three to five courses. Laboratory fees are included; however, refundable laboratory breakage deposits are charged in some chemistry courses.

The health fee of $57, paid by all except nursing students, includes supplementary individual insurance. If similar coverage is held and the name of the carrier and policy number are provided, the $17 premium is waived, and the student pays $40. Family coverage is available, varying in cost according to the numbers in the family. Health services are described on p. 32.

All students pay an activity fee which varies annually according to the budget of the Finance Board of the College Cabinet. In 1967-68 the fee is $34.50. Most students pay an additional fee of $5 for support of the Residence Halls social program.

Resident students rent mail boxes through the River Campus Station, U. S. Post Office at the annual rates of $.50 to $1.80.

Except for the first copy (free), a transcript fee of $1 per copy is charged for certified copies of a student's record. Transcripts are not normally issued during the last two weeks of a term.
Estimated Student Expenses

Because of fluctuations in cost of living, tuition and fees are subject to change. In the figures used below, estimates for room and board are based upon costs prevailing at the time of publication of this bulletin, but under any circumstances the cost of a year at college is variable, depending largely upon the student’s own budgeting of personal expenditures.

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<thead>
<tr>
<th>ITEMS</th>
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<tbody>
<tr>
<td>Tuition</td>
<td>$2,000</td>
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<tr>
<td>Student activity and social fee</td>
<td>40</td>
</tr>
<tr>
<td>Health fees</td>
<td>57</td>
</tr>
<tr>
<td>Books and supplies</td>
<td>103</td>
</tr>
<tr>
<td>Residence hall room (including linen service)</td>
<td>500</td>
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<tr>
<td>Board</td>
<td>600</td>
</tr>
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<td>$3,300</td>
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Expenditures for personal necessities, organization dues, recreation and travel vary with the individual. Average annual expenditures, including board and room in the usual type of college residence hall, may be estimated at $3,750. Information regarding residence hall accommodations is supplied by the Director of Residence Halls.

Students who live at home in the city of Rochester may estimate a total expenditure of $3,050, which deducts from the budget the expense of residence hall room and board but includes approximately $150 for lunches and $250 for transportation.

UNIVERSITY COUNSELING AND SPECIAL SERVICES

Counseling

Students concerned about vocational choice, educational goals, or personal matters may consult a counselor by scheduling an appointment with the receptionist in the counseling service in Morey Hall. If tests are required as part of the counseling process, they are assigned during a student’s conferences with a counselor. In an emergency an appointment can be scheduled almost immediately, but a waiting period of a week to 10 days for an initial appointment is customary.

Testing

In addition to tests given as part of counseling, many other testing programs and services are administered through the counseling center. Information about the following tests is available at the receptionist's desk in Morey Hall:

- Graduate Record Examinations
- Miller Analogies Tests
- Medical College Admissions Test
- American Dental Association Aptitude Test
- Law School Aptitude Test
- National League for Nursing Examinations
- Admission Test for Graduate Study in Business (ATGSB)
Questions about other national testing programs should be directed to the counseling center. If the test involved is not given there, they will direct the student to the proper location.

Placement and Post-College Planning

Students who want to discuss job opportunities or further career training beyond college are advised to visit the Placement and Post-College Planning Office in the Men’s Dining Center. Much of the work in this office deals with job placement of students currently completing degrees, but the staff is eager to discuss career plans with students and graduates at all levels.

Industrial literature, occupational information, and educational materials (including a collection of college bulletins) may be obtained at the Career Information Center in the Men’s Dining Center during regular University office hours. A receptionist is on duty to help locate information and to answer questions. She also has information on fellowships and programs such as VISTA and the Peace Corps.
Reading and Study Skills

The basic program in the Reading and Study Skills Laboratory consists of a 10-week period of practice, classroom instruction and diagnostic testing. Attention is given to increasing understanding of words and verbal concepts, developing the ability to vary depth of understanding and rate of reading to fit the purpose for which a student is reading.

UNIVERSITY HEALTH SERVICES

The health of the student body is under the care of the physicians of the University Health Services. The out-patient department for all students is in the medical office in Morgan Wing of the Women’s Residence Hall. Infirmary facilities for both men and women are located one floor above the medical office. The infirmary is staffed by the department’s physicians and registered nurses and is open 24 hours daily for the treatment of all types of illness. In case of serious illness or injury students are referred directly to Strong Memorial Hospital, or transferred from the infirmary to the Hospital upon the recommendation of the University Health physicians. Short-term psychiatric care and consultation are available in the medical office on campus.

All full-time students are entitled to the physicians’ services and to such out-patient and infirmary care as may be considered necessary by the physicians. If referred by the University Health Service, the student may be hospitalized for 10 days in Strong Memorial Hospital at semi-private rates and be eligible for $250 in extra charges either as an in-patient or in the out-patient clinics of Strong Memorial Hospital. Elective surgery, refractions and dental care are not provided under the program. If a student prefers to go to a private physician or to a hospital other than Strong Memorial, the cost of such treatment and care becomes his responsibility.

In addition to these Basic Student Health Benefits, all full-time students of the University are required to carry health insurance, not only in case of illness or injury throughout the year, but also to provide coverage while they are not in attendance at the University. The University sponsors such a supplemental insurance plan at a premium of $17 per year for single students. To be covered, all entering students must submit a pre-entrance health evaluation by their own physician on a form sent to them with their notification of admission to the University.
The University of Rochester believes that liberal education is an essential foundation for all applied study. The goal of the College of Arts and Science is to provide students with the perception, skills and knowledge they will need for fulfillment in career and community.

The College of Arts and Science is dedicated to the study and teaching of educational fundamentals at the undergraduate and graduate levels as well as conduct of original research. Its curriculum represents the basis for areas of concentration in the University’s schools and colleges and preparation for post-graduate professional study.

Study in the Colleges of Business Administration, Education, Engineering and Applied Science, and the Department of Nursing in the School of Medicine and Dentistry is predicated on the successful completion of basic course work in the College of Arts and Science.

BACHELOR OF ARTS DEGREE
The College offers courses leading to the degrees of Bachelor of Arts and Bachelor of Science. The B.A. Program is directed toward a broad, comprehensive education, with special attention to the integration of many areas of study.
Within this B.A. program, the following concentrations are offered:

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<th>Concentration</th>
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<tr>
<td>Anthropology</td>
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<td>Astrophysics</td>
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<tr>
<td>Biology</td>
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<td>Chemistry</td>
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<tr>
<td>Chinese (Literature)</td>
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<tr>
<td>Classics (Literature)</td>
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<td>Economics</td>
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<tr>
<td>English</td>
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<td>Fine Arts (Art History, Studio Arts)</td>
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<td>French (Language or Literature)</td>
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<td>General Science</td>
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<tr>
<td>Geological Sciences</td>
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<td>German (Language or Literature)</td>
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<td>History</td>
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<td>Linguistics</td>
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<td>Political Science</td>
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<tr>
<td>Psychology</td>
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<tr>
<td>Russian (Language or Literature)</td>
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<tr>
<td>Sociology</td>
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<tr>
<td>Spanish (Language or Literature)</td>
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Requirements for the degree Bachelor of Arts are as follows:

1. Registration at the University of Rochester for eight semesters as a full-time student and the successful completion of a minimum of 32 courses of work offered in the College with an average grade of "C" or better. Approved course work taken outside the College may be counted as part of the course requirements. Normally, at least four semesters must be spent in full-time residence in the college.

2. The successful completion of a course in English in which emphasis is given to the reading and writing of effective prose. Any 100 level English course (except courses numbered 115-129) may be taken to satisfy this requirement. Entering students are advised by the English Department in the selection of courses. Students may occasionally be exempted from this requirement at the discretion of the department. (Note: English 111 is usually offered in the first semester only.)

3. A student must show proficiency in an ancient or modern foreign language. This represents successful completion of course work at the 103 (or 105) level. Some entering students may be exempted from the foreign language requirement on the basis of their proficiency examination score. Foreign language courses at the 101-105 level do not fulfill the literature requirement described below.

4. A broad distribution of courses over a number of departments. To meet the minimum requirements for distribution, students must complete:

   A. Two literature courses which may be selected from courses in literature offered in the Departments of Foreign and Comparative Literature and English (except English 111).

   B. Two laboratory science courses, selected course work from offerings in the Departments of Biology, Chemistry, Geological Sciences, Physics and Astronomy, and Psychology.

   C. Four courses in each of the two groups other than that of his major:
GROUP I—Humanities: East Asian Studies 101, English (except 115, 116, 123, 124, 126, 128), Fine Arts, Foreign and Comparative Literature, Languages (except foreign language courses numbered 101 or 102), Music, Philosophy (only 103, 104, 204, 211, 241, 244), Religion.

GROUP II—Social Sciences: Anthropology, East Asian Studies 102, Economics, History, Linguistics, Philosophy (except courses listed under Group I above), Political Science, Psychology (only even-numbered courses), Sociology.

GROUP III—Natural Science: Astronomy, Biology, Chemistry, Geological Sciences, Mathematics, Physics, Psychology (only odd-numbered courses), Statistics.

These additional notes concerning distribution requirements apply:

1. Course work offered in Aerospace Studies, Naval Science or Physical Education may not be counted toward the distribution requirements; nor may course work taken in the College of Business Administration, Education, Engineering and Applied Science, and in the Department of Nursing.

2. Freshman Preceptorials may be used to meet distribution requirements; some are not readily classified. In cases of doubt, the student should write to the Dean of the College for clarification.

3. Students are not required to complete distribution requirements during the first two years. A delay may provide the student an opportunity to plan a more interesting program and to investigate possible areas of concentration.

Note: The student is responsible for planning his own program to assure that all requirements for the degree are met.

5. The successful completion of four semesters work in Physical Education. Students are expected to meet this requirement in their first two years; they may be excused from all, or part, of this requirement, or be given modified programs, upon the recommendation of the University Medical Officer.

6. The satisfactory completion of work in a program of concentration approved by the major department. This normally includes 6-8 courses within the major department and 2-4 courses in an allied field. A student who plans to complete requirements for the B.A. degree with a major in some department of the College must make formal application to that department at the end of the sophomore year. Before undertaking a concentration, a student should generally have completed at least 16 courses with a grade average of 2.0 or better and have completed the prerequisite work specified by that department with grades of "C" or better.

Students who have failed to meet these requirements by the end of the junior year or who are not doing "C" work or better in the
concentration up to that time, will not be considered to be making satisfactory progress toward the degree and are subject to separation from the College.

Once having begun a program of concentration, it is possible to change to another; however, additional course work may be required. Before deciding to change a selected area of concentration, the student is urged to discuss his plans with his adviser. If transfer to another department is advisable, the student must apply officially to the new department, using the standard Concentration Approval Form available at the College Program Advising Office in Morey Hall.

7. Students may be required by their departments of concentration to pass a comprehensive examination or an approved substitute which is administered before the completion of the senior year. These examinations generally test the student's knowledge of his field of concentration and his ability to correlate material from a variety of educational experiences. During the semester in which a student writes a comprehensive examination, he is excused from taking final examinations in courses within his concentration program. He can be excused from final examinations in other courses only at the discretion of the instructor.

If a student fails the comprehensive examination and does not succeed in passing another or an approved substitute before the completion of the ensuing academic year, he is dropped from the College without his degree.

Seniors in the Honors Program, and seniors in absentia at approved medical or dental schools are exempted from the comprehensive examination requirements.

BACHELOR OF SCIENCE DEGREE

Programs leading to the degree of Bachelor of Science are offered in the following areas of concentration:

- Astrophysics
- Biology-Geology
- Chemistry
- Geological Sciences
- Physics

The requirements for the Bachelor of Science degree are the same as those for the B.A. degree with these exceptions:

1. The number of courses which must be completed successfully varies from 32 to 36. Students should check the synopsis of requirements accompanying the course listing of those departments offering the B.S. degree.

2. Certain departments recommend specific languages for their B.S. candidates. Students should check the statement accompanying course offerings for details.

3. To meet the distribution requirements, students must take three or
four courses in both Group I and Group II. Detailed requirements appear in the synopsis published by each department offering the B.S. degree.

4. While comprehensive examinations or approved substitutes are not normally required of B.S. candidates, a department may deem them appropriate.

All undergraduate students on the River Campus are enrolled in the College of Arts and Science for their first two years. The College of Arts and Science offers most of the preliminary work in programs leading to the Bachelor of Science degree conferred by:

1. The College of Business Administration (majors in Accounting, Business Economics and Management Science).
2. The College of Education (majors in Elementary Education and Secondary Education).
3. The College of Engineering and Applied Science (majors in Chemical Engineering, Electrical Engineering, Mechanical and Aerospace Sciences, and Optics).
4. The Department of Nursing of the School of Medicine and Dentistry.

BACHELOR'S DEGREE WITH DISTINCTION

Bachelor degrees are awarded in three grades of distinction: with distinction, with high distinction and with highest distinction in the departmental major.

In the College of Arts and Science students interested in receiving degrees with distinction should inquire at the department early in the senior year.

Degrees with Honors can be earned only by participation in the Honors Program. The criteria for these degrees have been established by individual departments.

HONORS PROGRAM

Students who undertake Honors work pursue special goals within their department of concentration. They may elect to participate in personal reading projects, individual research, or Honors seminars which stress creativity and individual responsibility.

The Bachelor of Arts degree with Honors is offered in the following areas of concentration:

Biology; Comparative Literature; Economics; English; History; Philosophy; Political Science; Sociology.

In addition, Honors seminars are offered in Anthropology, Fine Arts and Religion.

Honors seminars limited in enrollment to approximately 10 students meet weekly for a three-hour session. Each Honors seminar is the equivalent of two regular courses. Students may also undertake research projects on an independent basis with the guidance and spon-
sorship of an appropriate member of the faculty. Such projects may be the equivalent of one or two regular courses.

Each instructor and supervisor prepares an evaluation of the student's performance which becomes a part of the student's permanent record. At the conclusion of the second semester, students in Honors write an examination prepared and graded by faculty members of other universities. Senior Honors students are also examined orally. On the basis of these examinations, the instructor's evaluations, and the students' record in regular courses, students may be awarded Highest Honors, High Honors or Honors. Before these recommendations are transmitted to the faculty for confirmation they are reviewed by the Honors Committee.

Each department offering a degree with Honors establishes its own prerequisites, criteria, requirements and sequences. In the absence of expressly stated departmental requirements or exceptions, a candidate for the degree with Honors must take a minimum of four seminars. Honors students are permitted to register for two seminars and one course or one seminar and three courses each semester. A candidate for Honors normally takes at least one seminar in each semester of his junior and senior years. A student may take no more than five seminars in his department of concentration; normally he must take at least two courses or seminars from departments other than his department of concentration.

To elect a degree with Honors a student should consult the Director of Honors or a member of the committee from that department in which he expects to concentrate. Normally students enter the Honors program at the beginning of the junior year; however, qualified sophomores may participate. Students expecting to spend the junior year abroad should begin seminar work in the sophomore year.

INDEPENDENT STUDIES PROGRAMS

All departments permit qualified students to undertake special reading and research courses. Ordinarily, a student may register for such courses only if the department's offerings do not meet his particular needs and if a member of the faculty agrees to supervise his work. Because each course is individually planned, the student must consult with the department before registering for the course.

Freshman Preceptorial Courses

Selected, well-qualified freshmen are given the opportunity to participate in unique seminar courses offered by a number of departments in the College of Arts and Science and other academic units of the University. Each course is limited in number to 10-15 students who are selected from among those who express an interest in it. Preceptorials include directed reading, seminar discussions and critical reports. Preceptorials carry full course credit and may be applied toward distribution requirements. Those who may register are notified before the end of the pre-registration period.
Anthropology Department

190. Preceptorial: The Images of Man. Discussion of some of the “exotic” peoples studied by European and American anthropologists; anthropological views of other societies compared with those of historians, biographers, travellers, missionaries, government officers, and writers of fiction.

Economics Department

195. Preceptorial: Value of a Life. The relative values of prolonging life as contrasted with increased productivity or amelioration of pain will be considered against a background of cultural, philosophical, and economic ideas. A historical development will be followed by consideration of factors which have made the cost of health care such an urgent issue today.

English Department

190. Preceptorial: Comedy and Romance. An historical examination of their development, permutations and interactions.

191. Preceptorial: The Artist As Hero. A study of the different conceptions of the artist as hero through the close examination of selected texts and the development of their social and artistic implications. Readings from Goethe to Sartre.


193. Preceptorial: Politics and Literature. A survey of political literature, polemical and imaginative, since the French Revolution. Readings in political rhetoric from Edmund Burke to William Buckley; in political fiction and satire from William Godwin to Camus; and in contemporary political journalism.


Fine Arts Department

190. Preceptorial: The Art of East and West. A comparative study of masterworks of painting and sculpture. Selected works are analyzed in detail and interpreted with reference to the aesthetic ideals of the civilization which produced them. This course is an introduction to the great traditions of world art.

195. Preceptorial: Exploring the Visual Experience. An investigation into the organization of the visual world and the factors which give it meaning through the study of the use of forms, images, and symbols as developed by visual artists.
Comparative Literature

190. Preceptorial: The Mystical Tradition in Literature. Readings in the mystical tradition from modern poetry back through Blake to the ancient mystery religions and mystical philosophers. Omitted 1967-68

French Literature

131. Introduction to Modern French Literature. Critical readings of representative 19th and 20th century poetry and fiction; practice in the explication de texte method. Prerequisite: satisfactory performance on Placement Examination or in French 103, or permission of the instructor.

Note: In the fall term only, section 1 of this course is offered as a Preceptorial.

German Literature

131. Introduction to Modern German Literature. Close reading and analysis of representative works of poetry and fiction of the 19th and 20th centuries. Prerequisite: satisfactory performance on Placement Examination or in German 103, or permission of the instructor.

Note: In the fall term only, section 1 of this course is offered as a Preceptorial.

Russian Literature


Spanish Literature

131. Introduction to Modern Spanish Literature. Close reading and analysis of representative works of poetry, drama, and fiction of the 19th and 20th centuries. Prerequisite: satisfactory performance on Placement Examination or in Spanish 103, or permission of the instructor.

Note: In the fall term only, section 1 of this course is offered as a Preceptorial.

General Science

193. Science and Cultural Innovation. A study of relations between science and other elements of our culture, with emphasis on concepts of innovation and avant-garde. Relationships between science and art, literature, philosophy and political institutions will be considered, with comparisons of innovative problems in each field. Twentieth-century physics will be used as the principal scientific example.

History Department


194. Preceptorial: Problems in Historical Analysis. An introduction to selected analytical theories.

Philosophy Department


191. Preceptorial: Self-Knowledge. A study of some problems in the philosophy of mind, including our knowledge of the self and of other selves, and the privacy of mental states. Readings from three of the most important recent works in philosophical psychology, viz. Strawson's Individuals, Hampshire's Thought and Action, and Ayer's The Concept of a Person. Omitted 1967-68

Physics Department

191. Preceptorial: Current Problems in Physics. A qualitative account of modern physics, exhibiting the transition from classical to current views. No prior knowledge of physics or advanced mathematics is required. The textual material for this will utilize readings from such authors as Hoyle, Massey, Peterls and the various monographs for the intelligent layman on special subjects in physics that have been appearing over the recent years.

Political Science Department

191. Preceptorial: Current Problems in Politics. A qualitative account of modern theoretical and experimental politics, exhibiting the transition from classical in creating new political systems and cultures.

Religion

190. Preceptorial: The Elements of Buddhism. Examination of Buddhist thought and practices from their Indian origins to the present-day.

Sociology Department

190. Preceptorial: Social Causation. Why are crime rates apparently increasing? What effect does environment have on students' grades? Questions like these involve the study of causal relations. This course will explore the ways in which sociologists try to answer such questions; it will emphasize modes of thought rather than the empirical findings. Omitted 1967-68
TRANSFER TO PROFESSIONAL COLLEGES

Freshmen and sophomores who are enrolled in the College of Arts and Science with the declared intention of transferring to a professional college at the end of the sophomore year are assigned advisers from that College.

Before the end of their sophomore year, students should obtain a Concentration Approval Form from the Program Advising Office (Morey 315), complete it and return it to that office. The student will be notified of acceptance, conditional acceptance or denial.

The transfer procedures for each of the Professional Colleges on the River Campus are as follows:
College of Business Administration

To qualify for admission into the College of Business Administration a student must have completed not less than 16 courses with an over-all grade average of 2.0 (3.0 if applying for the program in business economics) at the University of Rochester or at some other accredited institution. Specific distribution requirements for majors in accounting, business economics and management science are identified in the Business Administration section of the Bulletin. Students from other institutions should apply to the University of Rochester Admissions Office.

College of Education

Students should familiarize themselves with all material regarding the programs in the College of Education. A student may remain in the College of Arts and Science, complete the requirements for a B.A. degree and also satisfy the state certification or licensing requirements for secondary school teaching.

A student who plans a career in teaching or wishes to explore the prospect of a career in education should make an appointment with the Director of Academic Advising in the College of Education as early as possible during the freshman year. The state certification and licensing requirements must be met, and they are not the same as degree requirements. The Director of Academic Advising has information on the requirements of various states and can guide the student in planning a program which satisfies these requisites.

College of Engineering and Applied Science

Engineering is unique among the professions in that a significant amount of time in the undergraduate program is devoted to professional studies. Engineering students enroll in the College of Arts and Science for two years and then may transfer to the College of Engineering and Applied Science for the last two years. Students who satisfactorily complete this four-year sequence receive a B.S. degree.

Students seeking a broader training in the liberal arts than is provided in the regular four-year program may enroll in the Two-College Program, under which they spend three years in Arts and Science before transferring to Engineering. Those who complete this five-year sequence satisfactorily may receive both a B.A. and a B.S. degree.

Department of Nursing, School of Medicine and Dentistry

Students intending to complete work for the degree in the Department of Nursing are directed to the requirements, p. 195 of this bulletin.

Members of the Department of Nursing faculty appointed as advisers to students declaring their intention to major in nursing, approve the student’s program.
JUNIOR YEAR ABROAD

Students may participate in a year of study abroad during their junior year.

During their absence, they remain on the rolls of the University of Rochester and pay one-fourth the usual tuition. Upon their return, they receive full credit for all work that is successfully completed in accordance with the requirements and recommendations of the major department and the Junior Year Abroad Program Committee. Course number 299 is used on the transcript to record credit earned in this program.

Applications for participation in the Junior Year Abroad program should be filed with the director of the program early in the sophomore year. Information about procedure may be obtained from the Junior Year Abroad office in Morey Hall.

SENIOR YEAR IN ABSENTIA

A small number of students each year elects to spend the senior year in absentia. Prior approval is required and is given upon satisfactory completion of three years work in the college and acceptance for further study in an accredited graduate school or in an approved medical or dental school.
Students who spend the senior year in absentia must fulfill the distribution requirements. In addition, the major department may require the comprehensive examination. Those who enter medical or dental schools are normally awarded the degree Bachelor of Arts in General Science upon completion of the first year's work.

Those considering the senior year in absentia should discuss the possibility with the Dean of the College and petition the Administrative Committee in writing for approval. It is unlikely that students who spend the junior year abroad will receive approval to spend the senior year in absentia.

Satisfactory-Fail Option

For courses outside the area of concentration, students may elect to receive a grade of Satisfactory (S) or Fail (F) in one course a semester to a maximum of eight courses. Satisfactory (S) includes all grades "A" through "D." Under this option, grades are not figured into the cumulative average.

This option must be declared on the Program Approval Form at the time of registration, and may not be changed after the first four weeks of the semester. Instructors turn in regular letter grades for all students; they are not routinely informed which students elect this option. The Registrar records only an (S) or (F) keeping the letter grades "A" through "D" on file in the event of a change of major.
Courses of Instruction
in The College of Arts and Science
Aerospace Studies is a two-year Professional Officer Education Program available to students with two academic years remaining in either undergraduate or graduate status. The requirements for entering this program are discussed under the Air Force Professional Officer Course on page 214.

The four 200 level courses listed below must be successfully completed to qualify for a commission as a second lieutenant in the United States Air Force upon graduation.

At the center of the Aerospace Studies curriculum is "Dialogue," the principle of instruction which imposes upon the student the responsibility of being chief agent for his quest for knowledge. Each student is helped to develop the ability to: define a problem, accumulate information, identify resources, conduct an inner-dialogue, formulate a plan, participate in inter-dialogue, make a decision, recommend action, and take responsibility for that action. This principle is applied to a variety of the standard teaching methods. Course enrollment will be controlled to provide for seminar-size sections of 12 to 17 students.

93. Flight Instruction. A student pilot ground school course of approximately 30 hours. The Sanderson Films, Inc. records and film strips are employed in this course, which includes: Pre-Flight Facts, Meteorology, Navigation, Radio Navigation, Flight Computer, and Federal Aviation Regulations. (A senior fall course) Open to a limited number of non-ROTC students.

201. Military History and Aerospace Power I. Throughout this and subsequent Aerospace Studies courses the cadet should develop the ability to speak and write with accuracy, clarity, and dignity of style. The course of study includes: (1) the nature of military conflict and the development of aerospace power into a prime security element, (2) the development of doctrine governing the employment of aerospace forces, (3) the military characteristics of aerospace power and the mission and organization of the United States Air Force, and (4) the modes of employment of aerospace forces in general war, limited war, and action short of war. (A fall course, three academic hours plus one hour of corps training per week.)

202. Military History and Aerospace Power II. A continuation of the development of the ability to speak and write with accuracy, clarity and dignity of style. The course of study includes: (1) the importance of the national space effort and how the space program evolved, (2) the known characteristics of the solar system that affect space explorations and operations, (3) the types of orbits and trajectories, including the principles and problems affecting their use, (4) the operating principles, characteristics, and problems associated with the components of space vehicle systems, and (5) the current and planned capabilities for space operations. (A spring course, three academic hours plus one hour of corps training per week.)

211-212 The Air Force Officer. A study of professionalism, leadership and management. The study includes theories of leadership, discipline, human relations, management and problem solving. These theories will be developed around Air Force subject matter and by use of sample problem-situations faced by the junior officer or the junior executive. (Three academic hours plus one hour of corps training per week.)
The Department of Anthropology offers work leading to a concentration for the B.A. degree.

A program of concentration for the B.A. degree will normally consist of six to eight courses taken in the Department of Anthropology beyond the introductory work.

A student, in addition, is expected to take additional courses to bring the total in his concentration to ten in the related fields of Biology, Economics, English, Fine Arts, Foreign Languages, History, Philosophy, Political Science, and Psychology.

The departmental adviser should be consulted to determine in each student's case what courses in the department will be required for fulfillment of the concentration requirement and to select the field outside of the department which will support and enhance his work in the department.

101. Introduction to Anthropology. The nature and development of culture; social and cultural patternings; social and cultural universals and diversities; the individual and society.

201. The Development of Man, Culture and Society. Evolution of man and development of culture and society from earliest Pleistocene remains to beginnings of civilization in the Near East; development of human skill; religion and art in the Upper Paleolithic; agricultural revolution; development of cities and civilization in Southern Mesopotamia; spread of man into the New World.

202. Early Civilizations of the Old World and the New. Comparative study of Mesopotamian, Egyptian, Indus, Chinese, Middle American and Central Andean civilizations; theoretical approaches to such studies, with special emphasis on the value and limitations for the study of ancient civilizations of comparative evidence from existing societies.

209. Selected Studies in Ethnography. Examination of some of the basic descriptive studies in ethnography with particular attention to demonstrating the relation between field work and the development of method and theory in social anthropology.


211. Systems of Kinship and Descent. The major elements of kinship and descent; critical examination of specific systems, and of different approaches to the study of them; the relations between kinship and descent and other aspects of social structure.
212. Habitat, Economy and Society. Major types of ecological adaptation; modes of subsistence, land-use, and land-tenure; ecology in relation to economic organization; ecological problems viewed as socially and culturally defined. Omitted 1967-68


215. Comparative Political and Legal Systems. An analysis of the mechanisms for sanctioning and arbitrating social behavior in selected non-European cultures.

216. Indians of North America. A survey of the cultures of the aboriginal peoples in America north of Mexico. Culture area concept and its applications; major types of social structure and their variations; historical problems.

217. The Civilizations of Aboriginal Middle America. Growth of aboriginal civilization in Middle America from the earliest time to the Spanish Conquest; Olmec, Zapotec, Maya, Teotihuacan, Toltec, Mixtec, Veracruz and Aztec civilizations; problem of relationship with the Old World, evaluations and comparisons; Indian Mexico since the Conquest. Omitted 1967-68

218. Peoples of Africa I. Major culture areas of Negro Africa; detailed ethnographic studies; nature and diversity of indigenous social structure.

219. Peoples of Africa II. Selected problems in social anthropology and ethnography as they relate to the peoples of Africa or particular regions in Africa. Omitted 1967-68

220. Peoples of India. Ethnology of South Asia with emphasis upon the relationship between tribal and village cultures and the high civilizations of the area. Omitted 1967-68

221. Cultural and Social Change. Problems of cultural diffusion; analysis of types of culture contact and cultural interchange; the nativist movement; the charismatic leader and the legitimization of authority.

222. The Study of Complex Societies. Problems and theoretical approaches in the study of complex societies and civilizations; emphasis is on contemporary pre-industrial societies, and on selected ancient civilizations. Omitted 1967-68

223. Language and Culture. The roles of linguistics in anthropology. Language differences and cultural differences. Language in society; the reflection of social organization in the formal aspects of verbal behavior. Anthropology 101 or Linguistics 205 prerequisite.

224. Readings in Anthropology.

225. Problems in Anthropology. The investigation, under guidance, of a special problem in selected areas of anthropology and sociology. By special permission of instructor only.


228. Problems in Social Anthropological Analysis. Consideration of current approaches to problems in social anthropology. Particular emphasis is placed on methodological and theoretical questions and on assessment of recent progress and possible lines of new development.

229. Anthropological Linguistics I. Training in linguistic analysis as applied to the description of the second systems of language, with particular emphasis on the uses of such analysis in anthropological fieldwork.

230. Anthropological Linguistics II. Training in linguistic analysis as applied to the description of grammatical systems, with special stress on anthropological fieldwork.
Astronomy (see page 122)

Biology

Allan McCulloch Campbell, PH.D. (Illinois) ... Professor of Biology
Ernst Wolfgang Caspari, PH.D. (Göttingen) ... Professor of Biology
Johannes Friedrich Karl Holtfreter, PH.D. (Freiburg, Germany) ... Tracy H. Harris Professor of Zoology
Arnold Warren Ravin, PH.D. (Columbia) ... Professor of Biology
Wolf Vishniac, PH.D. (Stanford) ... Professor of Biology and Chairman of the Department
Thomas T. Bannister, PH.D. (Illinois) ... Associate Professor of Biology
Jerram L. Brown, PH.D. (California) ... Associate Professor of Biology and Associate Professor in the Center for Brain Research
George E. Hoch, PH.D. (Wisconsin) ... Associate Professor of Biology
Jerome Sidney Kaye, PH.D. (Columbia) ... Associate Professor of Biology
William B. Muchmore, PH.D. (Washington) ... Associate Professor of Biology
*Babette Brown Coleman, PH.D. (Cornell) ... Associate Professor of Botany and Research Associate in Botany
*James Charles Peškin, PH.D. (Columbia) ... Associate Professor of Biology and Optics
Conrad Alan Istock, PH.D. (Michigan) ... Assistant Professor of Biology
Uzi Nur, PH.D. (California) ... Assistant Professor of Biology
Jakov Krivshenko, D.S.C. (Ukraine) ... Senior Research Associate in Biology
Minna B. Rotheim, PH.D. (Rochester) ... Research Associate and Assistant Professor of Biology
Paul Butler, PH.D. (Leeds) ... Research Associate in Biology
Kuo-Chun Chen, PH.D. (Columbia) ... Research Associate in Biology
Charles R. Weston, PH.D. (Princeton) ... Research Associate in Space Biology
*Alice del Campillo Campbell, PH.D. (Michigan) ... Research Associate in Biology
*Rachel McMaster Kaye, PH.D. (Columbia) ... Research Associate in Biology
Gary M. Kayajanian, PH.D. (Rochester) ... Postdoctoral Trainee in Biology
Doris Zallen, PH.D. (Harvard) ... Postdoctoral Trainee in Biology
J. P. T. Pearman, M.A. (Cambridge) ... Assistant Chairman and Technical Associate
*Part-time

The Department of Biology offers courses of study leading to the B.A., B.A. with Honors, M.S., and Ph.D. degrees. It also offers, jointly with the Geology Department, a program leading to a B.S. degree in Biology-Geology.

Biology 110 is a prerequisite for all advanced courses except Biology 135.

B.A. Program

Professional work in Biology requires advanced training in graduate school. The departmental program for Biology majors is primarily a preparation for graduate school and seeks to acquaint the student with contemporary trends in the development of the biological sciences.
Students planning to concentrate in Biology should take a minimum of ten semester courses in biology and allied fields that are more advanced than Biology 110 and introductory courses in other subjects. Six of these advanced courses will normally comprise biological subjects and should include two that deal with systematic aspects (e.g., Biology 122, 125, 131, 132, 272); the remainder may be chosen freely from among the other advanced courses in Biology. Progress should, in all cases, be planned in consultation with the departmental advisers.

Recent developments in biology lay increasing emphasis on its quantitative aspects and these cannot be treated satisfactorily except in terms of the laws that describe the properties of all matter and energy. The Department, therefore, requires all Biology majors to take the following courses in allied fields:

- Chemistry 121 and 122 or 123 and 124.
- Chemistry 161 and 162 or 163 and 164.

It is recommended also that the student take Chemistry 152 or 251 and 252, Physics 101 and 102, Mathematics 161 and 162.

Two additional courses chosen from Mathematics 163, 164, Statistics 110 and a course in computing.

The student is urged also to acquire a reading knowledge of one of the following foreign languages: French, German or Russian.

Students not majoring in Biology, but wishing to fulfill their science requirements with biology courses, may elect Biology 101 to be followed by either Biology 102 or Biology 135. High school chemistry is a prerequisite for Biology 101.

**Honors Program in Biology**

Students who have demonstrated to the department's satisfaction a high level of competence may, at the end of the sophomore year, elect Honors in Biology. A faculty member must be willing to guide the student in his Honors work during his junior and senior years. The Honors work will consist of the following:

- a. Biology 291, Readings in Biology, will be taken in the first semester of the junior year. The purpose of this course is to prepare the student for a specific piece of research. Additional readings in Biology 291 are optional in the second semester of the junior year.

- b. Biology 293, Problems in Biology, will be taken in each semester of the senior year, but may be taken as early as the second semester of the junior year.

- c. During his senior year the student will take Biology 385, Honors Seminar in Biology, to afford him an opportunity to discuss his work with other Honors students and to discuss with staff members current research in Biology.

- d. At the end of the senior year the student will prepare a paper describing his research and will defend it in an oral examination before an outside examiner. Upon successful completion of the Honors Program the student will be awarded a B.A. in Biology with Honors.

**101. General Biology I.** Introductory course for students wishing to include Biology in their program of studies but not intending to take advanced courses in it. Prerequisites: Principles of modern biology; cellular and molecular biology; organismic biology; genetics, evolution and ecology. Three lectures a week, no lab.

**102. General Biology II.** A continuation of Biology 101 for students not intending to take advanced courses in biology. Further studies of biological principles and phenomena, particularly at the level of organs and whole organisms. Prerequisite: Biology 101. Three lectures a week, no lab.

**110. Introduction to Modern Biology.** A rigorous introductory course for students expecting to major in Biology and a prerequisite to all advanced courses. Covers the same topics as Biology 101 but in greater depth. The laboratory acquaints the student with the practical methods that constitute the experimental basis of biology. Prerequisites: Chemistry 121 and 122 or 123 and 124 (122 or 124 may be taken concurrently). Three lectures and one three-hour lab a week.

**122. Invertebrate Zoology.** Anatomy, physiology, behavior, life histories and evolution of animals constituting the principal groups of invertebrates. Biology 110 prerequisite. Three lectures and one three-hour lab a week.

**125. Structure and Function of Vertebrates.** Systematic changes in the line of descent leading from primitive jawless fish to modern mammals. Background for the understanding of human anatomy. The structure of fossil vertebrates and the development and structure of modern chordates are dealt with by laboratory observation, dissection or lecture. Biology 110 prerequisite. Three lectures and one three-hour lab a week.

**131. The Plant Kingdom.** General biology of plants. Survey of the plant kingdom. The structural, developmental, and ecological adaptations of plants are examined, and provide the basis for an understanding of the evolution of plants, of their distribution, and of their roles in the organic world. Biology 110 prerequisite. Three lectures or conferences, one three-hour lab or field trip a week.
132. Biology of Flowering Plants. Introduction to plant anatomy, systematics, ecology, and field work by study of the most advanced and dominant plants of the earth's vegetation. The evolutionary success of flowering plants is interpreted in terms of the advantages conferred by the vascular system and seed habit; two notable specializations which historically have linked plants to man. Biology 110 prerequisite.—Three lectures or conferences, one three-hour lab or field trip a week.


220. Cytology. Introduction to the study of cells. Topics include: morphology and chemistry of chromosomes, mitochondria, the Golgi apparatus, centrioles, the sarcoplasm. Prerequisites: Biology 110, Chemistry 122, Chemistry 161 and 162 or 163 and 164.—Three lectures or demonstrations, one three-hour lab a week.

221. Genetics. Genes and cytoplasmic factors as the units of heredity: a general introduction to modern genetics including its molecular basis and its morphogenetic and evolutionary implications. Prerequisites: Biology 110, Chemistry 161 and 162 or 163 and 164.—Three lectures and one demonstration-discussion section a week.

222. Evolution. The evidence for organic evolution and the principles governing the evolution of plants and animals. Biology 110 and 221 prerequisite.—Three lectures a week, no lab.

241. General Embryology. Early stages of development in animals, including maturation and fertilization, cleavage and the formation of the primary germ layers. Development of tissues, organs and systems in vertebrates. Biology 110 and 122 or 125 prerequisite.—Three lectures and two three-hour labs a week.

260. Animal Behavior. The study of the behavior of animals other than man, especially from an evolutionary viewpoint. Emphasis is placed on animal communication and social organization in natural populations. Prerequisites: Biology 110, 122 or 125, 221 and Psychology 101.—Three lectures a week, no lab.

261. Ecology. An introduction to the factual material, theoretical considerations, and methods involved in current studies of plant and animal associations. Field and laboratory work. Each student carries out an independent field investigation and submits a written analysis of his work. Prerequisite: Biology 110. Omitted 1967-68

265. * Cellular Physiology and Metabolism. Processes common to all cells. Topics include: substances of which cells are composed, the metabolic processes by which the substances are formed, thermodynamic and kinetic characteristics of these processes, processes of diffusion, osmosis, and passive and active transport and origin of biologic activity. Laboratory work includes quantitative experiments on nutrition, mineral nutrition, water relations, permeability, reactions of isolated organelles, and other cellular phenomena. It is strongly recommended that students registering for the course have prior training in quantitative analysis, organic chemistry, general physics, and calculus.—Two lectures, one discussion period, and one four-hour lab a week.

270. Plant Physiology. Physiological phenomena peculiar to higher plants. Topics include: water relations, transpiration, growth and differentiation, tissue culture, plant hormones, germination, flowering and fruit development. Students are required either to write a term paper on a selected problem or to perform some selected experiments under supervision in laboratory. Prerequisites: Biology 110 and 265. Omitted 1967-68

272. *Comparative Microbiology. Survey of microorganisms. Physiological patterns of certain algae, bacteria and protozoa, and the evolutionary trends in these patterns. Topics considered: growth curves and their interpretation, adaptation and mutation, the evolution of metabolic pathways, the limitation imposed by size, and the evolution of structure. Prerequisites: Biology 110 and Chemistry 161 and 162 or 163 and 164 (which may be taken concurrently).—Three lectures, four hours lab a week.

291. Readings in Biology. A special program of reading in advanced topics may be arranged according to the needs and interests of individual students. Biology 110 prerequisite. Registration upon approval of departmental advisor.

293. Problems in Biology. Special problems may be arranged for advanced students wishing individual instruction in the methods of general biological, botanical or zoological investigation. Biology 110 prerequisite. Registration upon approval of departmental advisor.

385. Honors Seminar. A required course for all honors students in Biology. Discussion of their own research and a consideration of important problems in modern biology. Open to qualified seniors by permission.—Three hours a week.

COURSES OFFERED IN THE EVENING SESSION, with approval for college credit in the case of undergraduates other than Biology concentrators and pre-medical students.

115. Genetics and Human Heredity. Principles of inheritance with emphasis on genetically determined human characteristics. Prerequisite: Biology 101 or the instructor's permission.—Two lectures a week.

COURSES OFFERED IN THE SCHOOL OF MEDICINE, with approval for college credit in the case of undergraduates other than Biology concentrators and pre-medical students.

117. Microbiology. A course in which bacteria, fungi, and viruses are studied from the point of view of their biological characteristics and of their importance in public health, industry, and agriculture. Biology 101 and Chemistry 121 and 122 or 123 and 124 prerequisite.—Lectures, two three-hour labs a week.

*Although the lab sections of Biology 265 and Biology 272 are not identical, students taking both courses will take only one semester of lab work, either in spring or in fall.
The Center for Brain Research, jointly sponsored by the College of Arts and Science, the College of Engineering and Applied Science and the School of Medicine and Dentistry, is concerned with education at the Ph.D. level and with research in problems of the nervous system. Undergraduates with special permission may take special research or reading courses offered by the Center.
Frank Paul Buff, Ph.D. (California Institute of Technology) . . . Professor of Chemistry
Albert Benjamin Ford Duncan, Ph.D. (Johns Hopkins) . . . Professor of Chemistry
Marshall DeMott Gates, Jr., Ph.D. (Harvard) . . . Professor of Chemistry
John R. Huizenga, Ph.D. (Illinois) . . . Professor of Chemistry
William Hundley Saunders, Jr., Ph.D. (Northwestern) . . . Professor of Chemistry and Chairman of the Department
Winston Danae Walters, Ph.D. (Johns Hopkins) . . . Professor of Chemistry
David Wilson, Ph.D. (California Institute of Technology) . . . Professor of Chemistry
Marshall Blann, Ph.D. (California) . . . Associate Professor of Chemistry
Jack Kampmeier, Ph.D. (Illinois) . . . Associate Professor of Chemistry
Henry M. Sobell, M.D. (Virginia) . . . Associate Professor of Chemistry
Lawrence David Colebrook, Ph.D. (Auckland) . . . Assistant Professor of Chemistry
Louis E. Friedrich, Ph.D. (Berkeley) . . . Assistant Professor of Chemistry
Kenneth G. Harbison, Ph.D. (Massachusetts Institute of Technology) . . . Assistant Professor of Chemistry
Robert W. Kreilick, Ph.D. (Washington University, St. Louis) . . . Assistant Professor of Chemistry
Keiji Morokuma, Ph.D. (Kyoto University) . . . Assistant Professor of Chemistry
George C. Nieman, Ph.D. (California Institute of Technology) . . . Assistant Professor of Chemistry
Francis R. Nordmeyer, Ph.D. (Stanford) . . . Assistant Professor of Chemistry
Richard H. Schlessinger, Ph.D. (Ohio State) . . . Assistant Professor of Chemistry
James Aspden, Ph.D. (Univ. College, London) . . . Postdoctoral Fellow in Chemistry
Keith Brown, B.S.C. (Univ. of Liverpool) . . . Postdoctoral Fellow in Chemistry
Gilbert DeBoer, Ph.D. (Cal. Institute of Technology) . . . Postdoctoral Fellow in Chemistry
A. Ekambaram, Ph.D. (Annamalai University, India) . . . Postdoctoral Fellow in Chemistry
Lorraine Labana, Ph.D. (Cornell) . . . Postdoctoral Fellow in Chemistry
Tzu F. Lin, Ph.D. (Oklahoma) . . . Postdoctoral Fellow in Chemistry
Anthony R. Marsh, Ph.D. (University of Hull) . . . Postdoctoral Fellow in Chemistry
Fernando Mazza, Ph.D. (University of Rome) . . . Postdoctoral Fellow in Chemistry
T. D. Sakore, Ph.D. (Indian Institute of Technology, Bombay) . . . Postdoctoral Fellow in Chemistry
Madeline Schreiber, Ph.D. (University College, London) . . . Postdoctoral Fellow in Chemistry
B. Sugavanam, Ph.D. (Indian Institute of Science) . . . Postdoctoral Fellow in Chemistry
Yu-Wen Yu, Ph.D. (Illinois Institute of Technology) . . . Postdoctoral Fellow in Chemistry
Ethel Louetta French, Ph.D. (Rochester) . . . Professor Emeritus of Chemistry
Ralph William Helmkamp, Ph.D. (Harvard) . . . Professor Emeritus of Chemistry
Willard Riggs Line, Ph.D. (Columbia) . . . Professor Emeritus of Chemistry
Edwin Odde Wiig, Ph.D. (Wisconsin) . . . Professor Emeritus of Chemistry
The Department of Chemistry offers work leading to a concentration in Chemistry for the B.A. or B.S. degree and to the M.S. and Ph.D. degrees. Training at the post-doctoral level is also offered.

Two introductory courses are offered. Chemistry 123 and 124 are designed specifically for majors in Chemistry (both B.A. and B.S.), Chemical Engineering, Physics, and Biology. Students planning to take Chemistry 123 and 124 should present secondary school Chemistry for admission. A few other students may be admitted to this course provided their records warrant it. Chemistry 121 and 122, which do not have secondary school Chemistry as a prerequisite, are taken by concentrators and majors other than those mentioned above, either for the purpose of satisfying professional requirements or of meeting the science distribution requirement. Students who wish to major in Chemistry after taking Chemistry 121 and 122 may do so upon obtaining departmental approval.

The undergraduate program in Chemistry allows opportunity for independent study, both for B.A. and B.S. candidates. Both Chemistry 415 and 435 are taught on an individual basis, with the students working on unknowns directly under the instructors in the course. All Chemistry majors take the Senior Seminar, which involves preparation and presentation of a topic from the original literature under the direction of one or more staff members. All of the B.S. candidates, and those B.A. candidates who wish to, take a senior research problem with a member of the staff, in which they carry out original work, with the opportunity of publishing this in a scientific journal if it is successful. In recent years a number of seniors have had publications from their research. Furthermore, some of the undergraduate majors are able to work during the summer on research problems with members of the staff, either as hired research assistants or as participants in the National Science Foundation Undergraduate Research Program.

B.A. Program

The minimum requirements for students concentrating in Chemistry for the B.A. degree are:
A. Chemistry 121 and 122 or 123 and 124
B. Chemistry 143 and 214 or Chemistry 213 and 214
C. Chemistry 161 and 162 or Chemistry 163 and 164
D. Chemistry 251 and 252
E. Chemistry 285 and 286

Chemistry 251 and 252 require as prerequisites one year of Physics, and Mathematics through differential and integral calculus with some differential equations. (This requirement is met by completion of Mathematics 164.) At least one year of Chemistry in addition to the senior seminar must be taken in the senior year. If the student wishes to meet requirements for membership in the American Chemical Society upon graduation, he should take, in addition to minimum requirements, an advanced lecture course, an advanced laboratory course, and German.

Additional courses in Physics and Mathematics and courses in other sciences, such as Biology, Geology, etc. may be taken as part of the concentration program. Students are urged to elect German to satisfy the foreign language requirement. The Senior Seminar, Chemistry 285 and 286, is the prescribed substitute for the comprehensive examination.

B.S. Program

This program is designed to give the student the training deemed essential to qualify as a professional chemist or to give him a thorough preparation for graduate work in Chemistry; students wishing to do graduate work in Biochemistry may major in Chemistry with electives in Biology. A reading knowledge of technical German is required (German 105 or 103). It is advantageous to present two years of preparatory school German for admission since this allows the student two additional electives. The synopsis of this curriculum follows:
**FIRST YEAR**
2. English Requirement
3. Math. 161 Analysis I
4. Phys. 115 Physics I
   Phys. 117 Physics IA
   Physical Education

**SECOND YEAR**
1. Chem. 163 Organic Chemistry
2. Foreign Language (Group I)*
3. Math. 163 Analysis III
4. Phys. 125 Physics II
   Phys. 127 Physics IIA
   Physical Education

**THIRD YEAR**
1. Chem. 213 Quantitative Analysis I
2. Chem. 251 Physical Chemistry I
3. Group I
4. Group II

**FOURTH YEAR**
1. Chem. 214 Quantitative Analysis II
2. Chem. 257 Physical Chemistry II
3. Elective
4. Group II

**Courses in Biology, Mathematics or Physics approved by the Department of Chemistry may be substituted.**

**Notes:**
1. Most students can complete their requirement in foreign languages with one term of college work. Those who need more than one term must take the necessary courses as electives.
2. The choice of courses required in the senior year will be determined by the department counsellor. A student who is not taking Chemistry 435 may register for Chemistry 295 during the first semester if approval is obtained from the thesis adviser or department counsellor before the end of the junior year.
3. Students who intend doing graduate work in Physical Chemistry should make every effort to include additional work in mathematics and physics.
4. Two of these courses must be elected during the senior year.
5. Prerequisite: German 101 and 102 or equivalent.
121. General Chemistry I. Fundamental principles of chemical science and the chemistry of several important metals and non-metals and their compounds. This course, less advanced than Chemistry 123, is primarily intended for premedical students and others who may plan to follow with Chemistry 141 and 142 and for mechanical and electrical engineers and others not planning to continue work in Chemistry. Upon recommendation of the department, students may be transferred to Chemistry 123 during or at the end of the first term.—Two lectures, two recitations, one lab a week.

122. General Chemistry II. A continuation of the concepts introduced in Chemistry 121 with more emphasis placed on the descriptive chemistry of the various elements of the periodic table. Organic chemistry is discussed briefly. An abbreviated scheme of semi-micro qualitative analysis is carried out in the laboratory. Emphasis is placed on structure of the atom and related topics. Prerequisite: Chemistry 121.—Two lectures, two recitations, one lab a week.

123. General Inorganic Chemistry. A more advanced course than Chemistry 121, designed primarily for students majoring in Chemistry, Chemical Engineering and Physics. General principles underlying chemistry and some of the important non-metals and their compounds. Upon recommendation of the department, students may be transferred to Chemistry 121 during the semester. Entrance Chemistry prerequisite.—Two lectures, two recitations, two labs a week.

124. General Inorganic Chemistry and Qualitative Analysis. A continuation of Chemistry 123. The chemistry of the metals and their compounds, atomic structure, natural and artificial radioactivity and the principles underlying qualitative analysis. The laboratory work is devoted entirely to semi-micro qualitative analysis. Upon recommendation of the department, students may be transferred to Chemistry 122 during the semester. Chemistry 123 or its equivalent prerequisite.—Two lectures, two recitations, two labs a week.

143. Elementary Quantitative Analysis. A course designed for students preparing for medicine and dentistry and for those who may wish to take a one-term elementary course in the subject. Biology, geology, or general science majors may wish to take this course. The principles, stoichiometry and techniques of quantitative analysis are developed and applied. Chemistry 121 and 122 or 123 and 124 prerequisite.—Two lectures, two labs a week.

152. Chemical Principles. Introduction to thermodynamics, equilibria, elementary chemical kinetics, electrochemistry, colloid and surface chemistry, molecular structure. Prerequisites: one year of calculus and Chemistry 143. May not be taken for credit by Chemistry majors.

161. Organic Chemistry I. A study of the more important classes of carbon compounds and the fundamental theories of organic chemistry. Chemistry 121 and 122 or 123 and 124 prerequisite.—Three lectures, two labs a week.

162. Organic Chemistry IA. Continuation of Chemistry 161.

163. Organic Chemistry II. An introduction to the structural theory of organic chemistry and the important types of organic reactions with special emphasis
on reaction mechanisms and the dependence of reactivity on structure. Laboratory work will include modern techniques, representative syntheses, and an expanded introduction to qualitative organic analysis. Required for the B.S. in Chemistry, recommended for the B.A. in Chemistry. Prerequisite: Chemistry 121 and 122, or 123 and 124. Three lectures, two labs a week.

164. Organic Chemistry II A. Continuation of Chemistry 163.

213. Quantitative Analysis I. Designed primarily for chemists and chemical engineers. The theories, fundamental principles and stoichiometry of quantitative analysis, and the techniques of quantitative methods are developed and applied. More rigorous and exacting than Chemistry 143. Chemistry 123, 124, and 161, 162 prerequisite. May not be taken for graduate credit. Two lectures, two labs a week.

214. Quantitative Analysis II. Continuation of Quantitative Analysis I. A more comprehensive study of the principles of the science. Some of the laboratory work involves the quantitative separation and determination of constituents in materials of industrial importance. Electrochemical, colorimetric, and other photometric methods. May not be taken for graduate credit. Chemistry 213 or consent of instructor prerequisite. Two lectures, two labs a week.

251. Physical Chemistry I. The first semester's work consists of an introduction to thermodynamics and its interpretation from the molecular standpoint. The ability to apply these concepts is developed both by a large variety of problems, which the student is required to solve, and by laboratory work. Prerequisites: Physics 101 and 102 or 125 and 126 or 127 and 128; Mathematics 163, 164. Three lectures, one lab a week.

252. Physical Chemistry II. The second course continues the application of thermodynamics to heterogeneous and homogeneous chemical equilibria and concludes with a treatment of chemical kinetics. Prerequisite: Chemistry 251. Three lectures, one lab a week.

285. Senior Seminar I. Required of all senior students majoring in chemistry. Papers requiring journal or other library research are prepared under supervision of the staff members and presented orally before the seminar group. Satisfactory participation is the approved substitute for a comprehensive examination in chemistry. No credit. One lecture a week.

286. Senior Seminar II. Continuation of Chemistry 285.

*291. Senior Reading Course in Chemistry I. Students majoring in chemistry, who are unable to register for regular scheduled advanced courses, may register for this course with special permission of the department. Three lectures a week.

292. Senior Reading Course in Chemistry II. Continuation of Chemistry 291.

295. Senior Thesis Research I. Each student selects a thesis topic, the investigation of which will teach him how to attack a problem involving laboratory and library work. This project affords an opportunity for independent reading and research. A written thesis presenting the results and analyzing their significance in a critical manner is required. Chemistry 415 or 435 prerequisite.

296. Senior Thesis Research II. Continuation of 295.

401. General Biochemistry. Will be given at the River Campus by members of the Biochemistry Department of the Medical School provided at least ten students register for credit. Designed primarily for graduate students and senior year undergraduate students in Chemistry who have had Organic Chemistry 161, 162 and Physical Chemistry 251, 252 or their equivalents, but other students may attend by special permission. Topics include: the reaction sequences and cycles involved in the metabolism of carbohydrate, fat, nucleic acids, and amino acids, biosynthetic pathways, enzymatic mechanism, biological oxidation, and energy considerations. Less emphasis is placed on biological and physiological aspects and on areas of the chemistry of natural products offered in other courses. Credit—two hours. Two lectures a week.

*412. Advanced Inorganic Chemistry. An advanced course in systematic inorganic chemistry taken up from the standpoint of the periodic law and supplemented by the study of special topics illustrative of recent advances in the subject. Credit—four hours. Three lectures a week.

*415. Advanced Analytical Laboratory. Recently developed analytical procedures, colorimetry, spectrophotometry, spectroscopy, electrical methods, and other physical-chemical methods of analysis. The lectures, credit one hour, may be taken by graduate students who are not registered for the laboratory. Credit—two hours. One lecture, one lab a week.

*431. Advanced Organic Chemistry I. Stereochemistry and conformational analysis, followed by detailed consideration of some important synthetic methods. Three lectures a week.

*432. Advanced Organic Chemistry II. Bonding in organic molecules, atomic and molecular orbitals including Hückel MO calculations, kinetics and mechanisms of organic reactions. Three lectures a week.

*433. Advanced Organic Laboratory. The identification of organic compounds, organic semi-micro quantitative determinations, and advanced preparations. Open to students who have had or are taking Chemistry 431. One lecture, two labs a week.


*452. Advanced Physical Chemistry II. Spectroscopy, statistical mechanics, chemical kinetics, nuclear processes, molecular structure. Three lectures a week.

*453. Mathematics of Physical Chemistry. Aspects of mathematics of particular utility to those working in physical chemistry will be discussed. Topics to be introduced include vector and matrix analysis, differential equations, the calculus of variations, and group theory. Three lectures a week.

For Industrial Chemistry and other courses in Chemical Engineering see pages 182-183.

*Taken with consent of the instructor.
East Asian Language and Area Center

Committee on East Asian Studies

Robert W. Compton, A.M. (Stanford) ... Assistant Professor of Chinese Literature
Ralph C. Croizier, Ph.D. (Berkeley) ... Assistant Professor of History
Diran Dohanian, Ph.D. (Harvard) ... Associate Professor of Fine Arts
Robert B. Hall, Jr., Ph.D. (Michigan) ... Professor of History and Geography and Chairman of the Committee
Chung-Kai Huang, A.M.L.S. (Michigan) ... East Asian Librarian
Harry Harootunian, Ph.D. (Michigan) ... Associate Professor of History
Caroline H. Wood, A.B. (Tsing Hua, Peking) ... Instructor in Chinese

The East Asian Language and Area Center, established in 1967 at the University of Rochester, is designed to permit students concentrating in the social sciences and humanities to develop knowledge of East Asian problems and languages as a complement to their disciplinary concentration. A student selecting this program will, in addition to fulfilling the requirements of his department, arrange the following special program which will be drawn from his electives.

1. Basic course in East Asian history and civilization.
2. Two years of either Chinese or Japanese language.
3. Three courses from those listed below:
4. Inter-disciplinary seminar for seniors participating in the program.

Upon graduation the student will receive a certificate in East Asian studies as well as a B.A. in his department of concentration.

Students planning to take work in the East Asian Studies program should consult with Mr. Harootunian or Mr. Croizier.

101. Great Literature of East Asia. An introduction to the humanistic traditions of East Asia through reading, discussion, and analysis of selections from the great poetry, prose, fiction, and dramatic literatures of China and Japan; the functions of literature within East Asian cultural traditions. Omitted 1967-68

102. Introduction to East Asian Civilizations. An introductory study of East Asian civilizations in terms of the physical and geographical features of the area, the evolution of man and culture, social and political configurations, the impact of the West, and problems of industrialization, urbanization, and rationalization. Omitted 1967-68

Departmental offerings acceptable in the program are:
Fine Arts 103, 222; Foreign and Comparative Literature—Chinese 251, 284, 285, Japanese 285; History 281-287, 382, 386, 388; Languages and Linguistics—Chinese 201, 202, 203, 205, 221, 222, Japanese 201, 202, 203. (See departmental headings for course descriptions.)
Economics

The Department of Economics offers a program of study for Bachelor of Arts candidates and, at the graduate level, for the Master of Arts and Doctor of Philosophy degrees.

Economics 101 and Economics 207 are prerequisites for all other courses in economics except with special permission of the Department. Students who plan to concentrate in economics will be expected to have completed the prerequisite work specified by the department with grades of "C" or better. Students majoring in economics are required to present two courses of mathematics, Mathematics 101 and either Mathematics 100 or 161; these will normally be taken during the first two years.

Departmental requirements for concentration include Economics 207, 209, 231, and 285. Eight of the ten courses specified by the College of Arts and Science for a concentration program must be courses in economics. The remaining two courses may be taken from the following related fields: Anthropology, Business Administration, History, Mathematics, Philosophy, Political Science, Psychology, and Sociology.

207. Intermediate Economic Theory. An analysis of economic equilibrium under conditions of free competition and various degrees of monopoly control. Attention also is given to the theory of distribution of wages, rent, interest, and profits.

209. National Income Analysis. National income accounting concepts are discussed as measures of social welfare, and as quantities whose changes and fluctuations can be explained by theories of income determination and business cycles.

211. Money, Credit, and Banking. Introduction to the study of money and credit. Major emphasis is placed on those institutions in which the money supply is generated and on the influence of monetary and fiscal policy on economic stability and growth. Descriptions, statistics and historical experiences are taken mainly from internal problems of the United States.

213. Monetary and Central Banking Policy. An intensive study of Federal Reserve policies against the background of monetary theory. Inter-relations of fiscal and monetary policies are analyzed theoretically and empirically. International as well as national effects of monetary policy are considered. Major emphasis is placed upon post-WWII problems. Prerequisite: Economics 211.

223. Labor Problems. Analysis of wages and other conditions of employment in an industrial society. Emphasis is placed on the impact of unions on workers, management and the public. Consideration is given to economic factors and other issues involved, including labor legislation.

227. Strategic Factors in American Economic Growth. Analysis of the main features of American economic growth since 1800. Recent statistical studies of national product, industrial structure and capital formation are evaluated.

231. Economic Statistics. Regression analysis applied to time series and cross-section data to estimate economic relationships; also elementary exposition of the estimation of simultaneous equations and analysis of variance. Prerequisite: Mathematics 110.

235. Economic Growth. The theory of the growth of the economy as a whole. Three types of growth theory are considered, the Classical, the Neo-classical and the Keynesian, and the relationship between them is discussed. Their applicability is examined (a) to problems of the underdeveloped economy and development planning and (b) to problems of the advanced economy, with some reference to long-run employment and the business cycle.


253. The Canadian Economy. Development and structure of the expanding Canadian economy in terms of population growth, gross product and other basic characteristics. Critically important economic relations between the United States and Canada receive special attention. Omitted 1967-68

263. Public Finance and Fiscal Policy. Economic criteria for judging government policies which alter the allocation of resources and the distribution of income. Government policies to stabilize prices, reduce unemployment, and foster economic growth. Special reference to United States' policies and problems.


279. General Equilibrium Analysis. Exposition of traditional general equilibrium analysis with an introduction to welfare economics, input-output analysis, and activity analysis. Prerequisites: Economics 207, Mathematics 161, 162 (or equivalent mathematics courses as determined by the instructor).
Honors Seminars

Students majoring in Economic Honors are required to take course work in Economics 207, 209, and 231 as a substitute for one Honors seminar. Normally, Economics 207 and 231 will be taken in the fall semester of the junior year along with an Honors seminar. In the spring semester of the junior year, Economics 209 will be taken in addition to two Honors seminars.

301. The History of Economics Doctrine. The bulk of the material from the 18th and 19th centuries; considerable emphasis placed on Adam Smith and the classical school and on Marx and other Marxians, together with historical application to social and economic policy.

307. Economic Theory. Theories of value, production and distribution, with emphasis on modern work in these areas. Analysis of market structures. Introduction to general equilibrium theory and Keynesian modern income analysis.

323. Labor Economics. Labor in a modern, industrial economy, with emphasis on economic analysis of such problems as wages, labor productivity, employment and unemployment. History and growth of trade unions and their relations with government.

327. Strategic Factors in American Economic Growth. Main features of American economic growth since 1860. Recent statistical studies of national product, industrial structure and capital formation are evaluated. Considerable use is made of price theory and modern growth theory.

329. Monetary Theory. Functions and services of money, factors governing the demand for, and supply of, money, and money substitutes; the relationships between money and levels of prices, employment, interest rates and the balance of payments; the effectiveness of monetary policy; and the coordination of monetary policy with debt management and fiscal policy.

337. The Soviet Economy. The Soviet economy will be examined as a system of economic organization. Its problems with respect to efficiency will be considered, and its performance in terms of growth will be evaluated and analyzed.

363. Public Finance and Fiscal Policy. Economic criteria for judging government policies which alter the allocation of resources and the distribution of income. Government policies to stabilize prices, reduce unemployment, and foster economic growth. Concentration on United States' policies and institutions, but student papers may be based on experience in other countries.

369. International Economics. Theory of international trade and balance of payments problems. Commercial policy in its effects on the export-import pattern, the distribution of income, and the gains from trade. A discussion of postwar monetary institutions and the problems they are designed to solve.
Rowland L. Collins, Ph.D. (Stanford) ... Professor of English
George H. Ford, Ph.D. (Yale) ... Joseph H. Gilmore Professor of English and Chairman of the Department
William H. Gilman, Ph.D. (Yale) ... Roswell S. Burrows Professor of English
Robert Benedict Hinman, Ph.D. (Johns Hopkins) ... Professor of English
Howard C. Horsford, Ph.D. (Princeton) ... Professor of English
Cyrus Hoy, Ph.D. (Virginia) ... Professor of English
James William Johnson, Ph.D. (Vanderbilt) ... Professor of English
Richard M. Gollin, Ph.D. (Minnesota) ... Associate Professor of English
Sherman Hawkins, Ph.D. (Princeton) ... Associate Professor of English
Anthony Hecht, M.A. (Columbia) ... Associate Professor of English
Jay A. Levine, Ph.D. (Johns Hopkins) ... Associate Professor of English
William Howe Rueckert, Ph.D. (Michigan) ... Associate Professor of English
Wystan Curnow, M.A. (Auckland) ... Assistant Professor of English
Charles Daves, Ph.D. (Minnesota) ... Assistant Professor of English
Robert Folkenflik, M.A. (Minnesota) ... Assistant Professor of English
Harvey D. Goldstein, Ph.D. (Northwestern) ... Assistant Professor of English
George Grella, M.A. (Kansas) ... Assistant Professor of English
Bruce Johnson, Ph.D. (Northwestern) ... Assistant Professor of English
Stanley J. Kahrl, Ph.D. (Harvard) ... Assistant Professor of English
Paul Levine, Ph.D. (Harvard) ... Assistant Professor of English
John R. Nabholtz, Ph.D. (Chicago) ... Assistant Professor of English and Assistant Chairman of the Department
Robert Parker, Ph.D. (Columbia) ... Assistant Professor of English
Russell A. Peck, Ph.D. (Indiana) ... Assistant Professor of English
Jarold W. Ramsey, Ph.D. (Washington) ... Assistant Professor of English
Beth A. Casey, M.A. (Columbia) ... Instructor in English
Monica McAlpine, M.A. (Rochester) ... Instructor in English
George Chester Curtiss, A.M. (Harvard) ... Professor Emeritus of Rhetoric and English Literature
Wilbur Dwight Dunkel, Ph.D. (Chicago) ... Professor Emeritus of English
Kathrine Koller, Ph.D. (Johns Hopkins) ... Professor Emeritus of English
Joint Appointments

McCrea Hazlett, Ph.D. (Chicago) . . . Professor of English and Vice President and Provost of the University
Ralph James Kaufmann, Ph.D. (Princeton) . . . Professor of History and English
Bernard Nicholas Schilling, Ph.D. (Yale) . . . Trevor Professor of English and Comparative Literature
Alice N. Benston, Ph.D. (Emory) . . . Associate Professor of English and Associate Professor of Humanities, Eastman School of Music
Lawrence Wm. Kuhl, Ph.D. (Western Reserve) . . . Associate Professor of English and Associate Dean of the College
Lisa Rauschenbusch, A.M. (Cornell) . . . Associate Professor of English and Adviser for Student Play Productions
Kenneth Cameron, M.F.A. (Carnegie Tech.) . . . Assistant Professor of English and Fine Arts

The Department of English offers work leading to a concentration for the B.A. degree, for the B.A. degree in the Honors Program, and, at the graduate level, for the M.A. and Ph.D. degrees.

The Colleges of the River Campus require a course in English at the 100 level (excluding courses numbered 120-129); see statement of Degree Requirements in this Bulletin. Students wishing to take any English course numbered 200 or higher are required to have taken at least one of the following courses in addition to the course required by the College: 102, 103, 111, 120, 131, 132, 133, 141, 144, 190-199. For concentrators in English the additional requirements are listed below. Courses numbered between 120 and 129 may be taken as electives, but do not ordinarily count towards satisfaction of either general College distribution or departmental concentration requirements.

Courses numbered from 200-249 are customarily open to juniors and seniors and to qualified freshmen and sophomores. Courses numbered from 250-299 are customarily open to seniors and to qualified juniors; approval of the instructor may be required for enrollment.

Students planning to concentrate in English should plan their underclass program to include three* courses at the 100 level, as follows: English 102 (Continental Masterpieces), English 144 (Shakespeare), and at least one of English 130, 131, 132, 133, 141 and 190-199. The Department strongly recommends that these courses be completed before the end of the sophomore year.

A program of concentration should include at least six courses at the 200 level in English and American literature and the balance in acceptable allied fields to make a total of ten courses.

These advanced courses are to include English 206 (Chaucer) or English 213 (Milton and Later Renaissance), and at least two others from the literature of two of the three following periods: sixteenth and seventeenth centuries (210, 211); eighteenth century (214, 215, 216); or nineteenth century (217, 218, 219).

At least two of these specific requirements are to be met by the end of the junior year, including either or both 206 and 213.

At least one of the courses required for the major is to be in American literature, taken at either the 100 or 200 level. Ordinarily, students will not take more than one of the group English 221, 223, and 224.

*Two courses if the Shakespeare requirement is met by taking English 212 instead of English 144.
Concentrators working for a secondary school teaching certificate may substitute not more than one of English 115, 123, or 124 for one of the 200 courses in English not listed as a requirement.

On the basis of this historical foundation, the concentrator will wish in the remainder of his choices to pursue particular interests—for example, in the drama or in the novel. The minimum two courses in allied fields should be selected, in consultation with the student’s adviser, from among specified courses in History, Philosophy, Fine Arts, Foreign and Comparative Literature, Anthropology, Languages and Linguistics, and certain others. Especially recommended are courses in the History of England and Greater Britain, preferably to be completed before the junior year.

Students majoring in the Honors Program are required to fulfill similar requirements, except that they may do so by taking a combination of courses and seminars.

Outstanding senior English majors who are not in the Honors Program may be invited to register for a tutorial, English 293, in which they will prepare an essay to be considered, along with other evidence, for the Degree with Distinction. Designed to give such qualified seniors an exceptional opportunity for independent study, English 293 also counts as one of the six 200-level English courses required for the major.

Students transferring into the College from elsewhere and who wish to be admitted for a concentration in English will need to make individual arrangements with the Department regarding the satisfaction of underclass requirements.

102. Continental Masterpieces. A course which aims to develop the understanding and enjoyment of literature through the reading of great works, especially for their expression of enduring problems of mankind. Books are selected from the classics of ancient and medieval periods. Open to all students. Required of English concentrators.

103. English and American Masterpieces. Books are by English and American writers and are selected from the Renaissance and modern periods. Open to all students except juniors and seniors who are concentrating in English.

111. Exposition and the Analysis of Ideas in Literature. An introduction to problems in writing expository and argumentative prose through critical analysis and evaluation of selected literary works. Readings from such authors as Orwell, Baldwin, Sophocles, Joyce, Shakespeare, Conrad, and Hemingway. Instruction will include close supervision of written assignments through the use of small discussion groups. This course is usually offered in the first semester only.

115. Advanced Expository Writing. Principles and practice of expository and narrative writing; frequent papers and exercises, with class discussion of student work. Generally open to sophomores, juniors and seniors with grades of B or better in English. Sophomores by special arrangement with the instructor. For admission to this course, written permission of the instructor is needed.

116. Creative Writing. Short story, poetry, and playwriting workshop. A weekly three-hour meeting for criticism and discussion. Frequent conferences. The student is encouraged to improve by constant comparison of his work with the best achievements in fiction or poetry. May be repeated for credit with the consent of the instructor. For admission to this course, written permission of the instructor is needed. English 116 ordinarily cannot be substituted for English 115 in order to satisfy requirements for teaching English in secondary schools.

123. Speech. A basic course designed to clarify the principles underlying sound and effective speaking of all sorts. Practice and training in group discussion, individual expository, argumentative, and other speeches, and reading aloud. Sections limited to 15 students.

124. Oral Communication of Literature. Practice and training in transmitting varied works of various kinds of literature by reading them aloud. By permission of the instructor.

126. Drama and Theatre. Designed primarily to enable students to "hear" and "see" plays as they read them. A close study of plays of various kinds, with reading aloud by the students and discussion of the relations of the written drama to its suitable production.

130. Concepts of Literature. An introduction to practical critical analysis involving the close study of major texts of modern literature primarily written in English and drawn from prose non-fiction, fiction, drama, and poetry. (Not open to students who have taken Eng. 111.)

131. The Lyric in English. An examination of works from selected representative poets of major stature, considered as illustrations of the range of poetic exploration and definition of human experience.
132. Narrative Literature. A study of representative ways in literature of dealing with experience, using narrative forms, the reading to be drawn primarily from works in English.

133. Dramatic Literature. A study of a broad selection from world drama of many periods, considered as illustrations of the range of representations of experience within the conventions of the theaters which produced the plays.

134. Classic American Literature. A study of the most significant achievements by American writers of poetry, fiction and other prose in the nineteenth and twentieth centuries.

144. Shakespeare. An introductory study of Shakespeare's major plays. Either 144 or 212 is required of all students concentrating in English.

200. History of the English Language. Development of English sounds, inflections, syntax, and vocabulary, with special emphasis on the structure of present-day English as described by modern linguistic analysis. Recommended for those planning to teach English.

201. Introduction to Old English. Development of a reading knowledge of Old English poetry and prose, with emphasis on specimens of Old English literature rather than on the structure of the language.

202. The Old English Epic. The structure of Old English heroic poetry, with emphasis on Beowulf. Prerequisite: English 201.

206. Chaucer. A study of the principal works of Chaucer, in their historical and intellectual context. Readings in Middle English.

207. Middle English Literature. A survey of Middle English literature exclusive of Chaucer. The readings include Piers Plowman, Sir Gawain and the Green Knight, Pearl, folk romances, lyrics, mystery plays, and Malory's Morte Darthur. Readings in Middle English.

210. The English Renaissance. A study of such influential continental writers as Petrarch, Boccaccio, Castiglione, Erasmus, and Montaigne, and of the writers of the English Renaissance from More to Shakespeare.

211. English Literature of the Earlier Seventeenth Century. Leading poets and prose writers from Donne and Bacon to 1660. Omitted 1967-68

212. Shakespeare and His Contemporaries. A study of representative comedies, histories, and tragedies of Shakespeare. Read in conjunction with the work of other Elizabethan dramatists.


215. The Augustan Age (1700-1750). Prose, poetry, criticism, and selected drama with emphasis on Swift, Addison, and Pope. Omitted 1967-68

216. The Age of Johnson (1750-1798). Literature of the later part of the Neo-Classical era, particularly the writings of Dr. Johnson and his circle.

217. Romantic Literature. Major writers, other than novelists, of the early part of the nineteenth century, with particular emphasis on poets from Blake through Keats.

218. Victorian Issues. The major intellectual controversies of the Victorian period as framed by the chief prose writers from Carlyle to Pater. Omitted 1967-68

219. Victorian Poetry and Poetics. A study of the major Victorian poets from Tennyson to the early Yeats, and of the critical problems they confronted.

220. American Puritans Through the Early Romantics. From 1630 to 1830, including Bradford, Taylor, Mather, Edwards, Franklin, Fenno, Cooper, Bryant, and others.

221. The American Renaissance. From 1830 to 1865, including Emerson, Hawthorne, Poe, Thoreau, Melville, Whitman and others. Not open to students who have taken English 141.

222. American Realists. From 1866 to 1912, including Dickinson, Twain, Howells, Henry James, Henry Adams, William James, Stephen Crane, Norris, Dreiser, Robinson, and Frost. Omitted 1967-68

223. American Moderns. From 1913 to 1941, including Eliot, Stevens, Faulkner, Hemingway, Fitzgerald, O'Neill, W. C. Williams, and others.

224. American Contemporaries. From 1941 to the present, including Roethke, Lowell, Wilbur, Bellow, Arthur Miller, Tennessee Williams, Baldwin, Nabokov, and others.

225. American Criticism and Culture. From Emerson to the present, including, among others, Poe, Whitman, Henry James, Henry Adams, William James, Santayana, Pound, Eliot, Wilson, Burke, and Paul Goodman.

231. The English Novel. The novel from the beginnings to the late nineteenth century, emphasizing such major novelists as Defoe, Fielding, Austen, and Dickens.

232. The Modern English Novel. The novel from the late nineteenth century to the present, emphasizing such novelists as Conrad, Joyce, and Lawrence.

233. Medieval Drama. English drama from its beginnings until 1580, including material from the mystery cycles, moralities, and early Tudor drama.


235. Modern Drama. Great modern dramas from Ibsen to Eliot as reflections of the main currents in modern thought and feelings.

241. Comedy and Satire. The uses of the comic spirit in a range of great literature.


245. Literary Criticism. A survey of the major critics from Aristotle to Coleridge.

Course numbered 250 to 299 are special courses limited in enrollment. They will usually be devoted to intensive examination of particular writers, forms, or literary problems. The content of these courses is not specified, because it will be determined from the interests of students and instructors and will vary from time to time. Annual schedules will describe the content of a given course in a given semester and will indicate prerequisites for admission, if any.


251. Studies in Medieval Literature. Omitted 1967-68


254. Studies in Drama. Omitted 1967-68


257. Studies in the History of Ideas.

291. Reading Course in English.

293. Tutorial Course. For selected senior English majors pursuing the Degree with Distinction.

400 Level Courses

Qualified undergraduates may enroll in advanced seminars at the 400 level by permission of the Director of Graduate Studies in English and the instructor.

301. Chaucer. A study of his chief literary works, with emphasis on The Canterbury Tales and Troilus and Criseyde.

304. Shakespeare. A study of his complete works.

307. Renaissance Literature. A consideration of the main themes in poetry and prose as expressed by the leading writers of the age. Omitted 1967-68


313. Eighteenth-Century Literature. A study of poetry and prose from the Restoration to the death of Johnson with special emphasis on the literary and social criticism of the Neo-classical movement. Omitted 1967-68

316. Romantic Literature. A study of the major writers.


325. American Literature to the Civil War. A study of authors who have made important contributions to American thought with emphasis on Emerson, Hawthorne, Melville, and Whitman.


331. The English Drama. A study of the drama both as a social force and as artistic form from classical times to the present.


336. The English Novel. Development of English prose fiction from Dede to the present.

Comparative Literature courses 350 Literary Criticism and 352 Tragedy when offered by a member of the Department of English are acceptable as English Seminars.
Carl K. Hersey, Ph.D. (Harvard)... Professor of Fine Arts and Chairman of the Department
Howard S. Merritt, Ph.D. (Princeton)... Professor of Fine Arts and Associate Chairman for Art History
Harris K. Prior, M.A. (Trinity)... Professor of Fine Arts and Director of the Memorial Art Gallery
Elmer G. Suhr, Ph.D. (Johns Hopkins)... Professor of Classical Art and Archaeology

*James Card, A.B. (Western Reserve)... Associate Professor of Photographic Arts
Diran K. Dohanian, Ph.D. (Harvard)... Associate Professor of Fine Arts
Archibald Miller, M.F.A. (Cranbrook)... Associate Professor of Fine Arts and Associate Chairman for Studio Arts
Kenneth Cameron, M.F.A. (Carnegie Tech)... Assistant Professor of English and Fine Arts
Kurt K. Feuerherm, M.F.A. (Cranbrook)... Assistant Professor of Fine Arts
William Giles, A.B. (Rochester)... Assistant Professor of Photographic Arts
Robert J. H. Janson-La Palme, M.F.A. (Princeton)... Assistant Professor of Fine Arts
Joan Sellers, M.A. (Sarah Lawrence)... Assistant Professor of Fine Arts

*William B. Sellers, B.Arch, M.F.A. (Michigan)... Assistant Professor of Fine Arts

*Part-time

The Department of Fine Arts offers courses in the history of the visual arts and in studio arts. Such work may lead to a concentration for the B.A. degree, and, at the graduate level, to the M.A. degree in art history.

**Concentration in Art History:** Fine Arts 101 and 102 are prerequisite to most art history courses and to the concentration program. Students intending to major should have completed these courses by the end of the sophomore year. A program normally consists of eight advanced courses in Art History chosen from the ancient, medieval, Renaissance, modern, and oriental fields. Work in creative art is strongly recommended. Two related courses from allied fields are also required. A concentration in Art History provides basic training for college teaching, museum work, and other professional applications of the discipline.

**Concentration in Studio Arts:** Students interested in concentrating should consult the Associate Chairman for Studio Arts who will direct the arrangement of programs consistent with their interests.

Although the Studio Arts program is not strictly pre-professional, it is intended both to allow the student to explore his own creative abilities and to prepare for further study and professional work.
101. Introduction to Ancient and Medieval Art. This course and its sequel introduce western art through the interpretation of selected works of architecture, sculpture, and painting presented in relation to the historical and cultural forces that influence them. This course is devoted to Egyptian, Greek, Roman, Early Christian and Medieval art.


103. Introduction to the Art of India and the Far East. A selective survey of the art of India, China, and Japan. Examples of architecture, sculpture, painting, and metal work are discussed in their historic sequence and interpreted with regard to form and content. Omitted 1967-68

105. History of Photography. The study of the growth and development of photography from its beginnings to the present day, with special emphasis on the history of the medium as a vital contribution to the visual arts.

107. History and Aesthetics of Motion Pictures. An introduction to the history of cinema as developed in major producing countries: exploration of the aspects of specific films tending to characterize a unique art form. Enrollment limited to seventy-five—Two lectures and one two-hour screening session per week.

108. The Cinema as an Art Form. An advanced course in the nature of the art of motion pictures, including screening and detailed critiques of the most significant films of the master directors. Enrollment limited to seventy-five. Prerequisite: Art History 107 or consent of instructor. —Two lectures and one two-hour screening session per week.

109. History of the Theatre. A study of theatre architecture, scene design, and acting theories as they have been developed in the principal theatres of Greece and Europe.

110. History of Western Dance. A survey of western dance from the ancient Mediterranean origins to the contemporary period.

200. Mythology. Outstanding myths of the ancient Greek world, including their origin and their association with early painting, sculpture, and literature. The relation of Greek myths to those of the Orient and the Germanic peoples is stressed. No graduate credit.

201. The Art of Early Civilizations. Painting, sculpture, and architecture of the Stone Age, the Aztec, Mayan and Incan civilizations of our own hemisphere, and of Egyptian, Mesopotamian, Persian and Minoan peoples. The lectures throw light on the religion, traditions, society, and cultural values of ancient peoples as expressed in their art forms.

202. Greek and Roman Art. Painting, sculpture, and architecture of ancient Greece and Rome. The lectures throw light on the religion, traditions, society, and cultural values of the Greeks and Romans as expressed in their art forms.

203. Ancient Painting. A comprehensive review of ancient painting beginning with that of the Egyptians and the Minoans, and emphasizing Greek vases and Roman mural decoration. The course in Classical Mythology is strongly recommended as a precursor.

204. Medieval Art. Origin and development of Romanesque and Gothic art in France, Italy, Spain, Germany, and England, with emphasis on architecture and sculpture. Omitted 1967-68

206. Renaissance Architecture. The theory and problems of Renaissance architectural design and the development of architecture in Europe from the beginning of the Renaissance to the end of the eighteenth century. Omitted 1967-68

213. Interrelations of Art, Literature, and Philosophy I. The motivating ideals in the viewpoints of the Egyptian, Mesopotamian, Hebrew, Hindu, Chinese, and Greek cultures are sought through an examination of the interplay of the art, literature, and philosophy of these peoples. No graduate credit.

216. Interrelations of Art, Literature, and Philosophy II. The motivating ideals in the viewpoints of the Roman, Medieval and Modern cultures are sought through an examination of the interplay of the art, literature, and philosophy of these peoples. No graduate credit.

218. Modern Sculpture. An examination of the nature of sculptural expression in Europe and America from Daumier to the present. Attention is given to such movements as cubism and constructivism, to the influence of painting on sculpture, and to certain technical considerations which have led to the development of new forms of sculpture.

222. The Painting of China and Japan. Masterpieces of Far Eastern painting are studied in their historic contexts and in their relation to each other. Oriental painting techniques as well as individual, period, and national styles are stressed. Omitted 1967-68

224. The Arts of Japan. A survey of the major arts of Japan in their historical sequence with special emphasis upon the development of a national style.

226. The Arts of Buddhist Asia. The development of Buddhist art is traced from its origins in India to its easternmost manifestations in Japan and Indonesia. Factors of art style as well as those of iconographical and iconological character are considered.
231. Italian Art of the Early Renaissance. A survey of the development of the principal schools of Italian painting and sculpture from the latter half of the 13th century to the middle of the 15th.

232. Italian Art of the Renaissance and Baroque Periods. After discussion of fundamental Renaissance concepts in mid-fifteenth century Florence, the development of Italian painting and sculpture is followed through the classic and mannerist phases to the seventeenth century Baroque, Leonardo da Vinci, Michelangelo, and Bernini are stressed.

233. Venetian Art. The flourishing of the arts—painting, sculpture, and architecture—as they relate to the development of Venetian culture from the fifteenth through the eighteenth centuries.

235. Giotto and his Followers. An analysis of this master's works together with a discussion of painting in Florence during the crucial middle years of the fourteenth century. The study will be integrated with the history of Florentine culture. For upperclassmen and graduate students who have had a course in Italian Renaissance art or history.

236. Five Italian Masters of the High Renaissance. A careful examination of five great figures—Leonardo da Vinci, Raphael, Michelangelo, Giorgione, and Bramante—and their contributions to the art of 1490-1520. For upperclassmen and graduate students who have had a course in Italian Renaissance art or history.

238. Northern European Painting I. A study of the development of painting in the Netherlands, France, and
Germany from about 1400 to 1600. Jan van Eyck, Roger van der Weyden, Bosch, and Bruegel receive special emphasis.

239. Northern European Painting II. Baroque and rococo painting in the North, including Spain, from about 1600 to 1800. El Greco, Velasquez, Rubens, Rembrandt, Poussin, and Watteau are given special consideration.

240. French Painting from Poussin to David. A study of the French school in relation to the artistic milieux of the period; artistic policy and doctrine, taste, and social developments within the Ancien Régime. Omitted 1967-68

241. Modern European Painting to 1885. Rise of modern painting in Europe, especially France, from the late eighteenth century to about 1885. Neo-Classicism, Romanticism, Realism, and Impressionism are the main movements considered. AH 102 prerequisite.

242. Modern European Painting Since 1885. After brief consideration of Impressionism, the anti-academic and experimental nature of modern tendencies in art is brought out by examination of the credos and chief exponents of Post-Impressionism, Expressionism, Fauvism, Cubism, Abstractionism, and Surrealism. AH 102 prerequisite.

243. Ut Pictura Poesis. From Baroque through Cubism, covering topics like beauty, nature, Portrait, Landscape, and the breakdown of the traditional relation between the arts.

245. American Architecture. Colonial, Early Republican, eclectic, and modern styles of American architecture from the seventeenth century to the present. Special attention is given to the English colonial tradition, to the spirit of nationalism underlying the architecture of the Early Republic, and to American contributions to modern architecture.

246. American Painting. A survey of the development of painting in America from the seventeenth century to the twentieth century. Relationships with European art and the problems of amateur and artisan painting are considered.

291. Senior Reading Course. Independent study under faculty guidance of a limited field of art history, or investigation of a problem related to an area of knowledge already familiar to the student. Open ordinarily only to senior concentrators in Fine Arts.

Aesthetics and Art Criticism. See Philosophy 241, 244.

Prize Art. See Anthropology 210.

300. Mythology. Study of the outstanding myths of the ancient Greek world, including their origin and their association with early painting, sculpture, and literature. The relation of Greek myths to those of the Orient and the Germanic peoples. Omitted 1967-68

475. Art Museum Theory and Practice I. A study of the art museum in society, including its history, philosophy, and current functions. Seminars, assigned readings, reports, research projects, and some actual participation, under staff supervision, in the day-to-day activities of the Memorial Art Gallery. Admission by consent of the instructor. One three-hour meeting per week. Memorial Art Gallery. Omitted 1967-68

476. Art Museum Theory and Practice II. Continuation of Art History 475. Omitted 1967-68
PAINTING AND SCULPTURE (SA)

111. Introductory Sculpture I. A studio course intended to familiarize the student with the nature of sculpture. Problems in three dimensional design and sculpture in a variety of media. Admission by consent of the instructor.*

112. Introductory Sculpture II. A continuation of SA 111 which is prerequisite. Class limited to fifteen students. Admission by consent of instructor.*

113. Introductory Drawing I. Basic problems of representation and perspective. Admission by consent of instructor.

114. Introductory Drawing II. Figure drawing. A continuation of SA 113 which is prerequisite. Admission by consent of instructor.

211. Intermediate Sculpture I. The figure, life modeling and composition based on the figure in a variety of media. SA 111, 112 or previous experience prerequisite.* Not for graduate credit.

212. Intermediate Sculpture II. Problems in composition. Students are encouraged to work toward greater technical competence and more personal expression. SA 111, 112 or previous experience prerequisite.* Not for graduate credit.

213. Intermediate Painting I. Problems in oil painting with emphasis on color theory. Prerequisites: SA 111, 113, 114.

214. Intermediate Painting II. A continuation of SA 213 with emphasis on individual expression and independent research. Prerequisite: SA 213.

293. Independent Projects.

THEATRE (SA)

121. Introduction to Acting and Directing. Study of the fundamentals of staging for the actor and the director, with emphasis on character objectives and scene patterns. Most class time will concentrate on scenes and short plays with student actors, staged by student directors. Permission of instructor required.

231. Acting. Study and application of the methods by which the actor externalizes the role. Readings, scene work, and production of a major classic for public performance. Not for graduate credit. Prerequisite: SA 121.

293. Independent Projects.

DANCE (SA)

101. Modern Dance Technique I. Beginning level. This course will be taught for two semesters for one course credit.—Three classes per week plus individual work.

102. Modern Dance Technique IA. Continuation of 101, which is prerequisite. One course credit for the successful completion of 101 and 102.

103. Modern Dance Technique II. Intermediate level. Two semesters carry one course credit.—Three classes per week plus individual work.

104. Modern Dance Technique IIIA. Continuation of 103, which is prerequisite. One course credit for the successful completion of 103 and 104.

105. Dance Composition I. An introductory course designed to develop an awareness of the basic elements of the dance with emphasis on sharpening perception of the environment as a source of stimulation for movement. Readings required. Prerequisite: SA 101 and 102 or 103 and 104. Permission of instructor required.—One three-hour period, three technique classes, plus additional work.

201. Dance Composition II. A study of dance forms, especially as related to music. Reading and reconstructions required. Prerequisites: SA 105, Music 101. Permission of instructor required. Not for graduate credit.—One three-hour supervised period, three technique classes, plus additional work.

202. Dance Composition III. A study of composition for groups. Prerequisites: SA 201, 111. Not for graduate credit.—One three-hour supervised period, three technique classes, plus additional work. Omitted 1967-68

293. Independent Projects.

PHOTOGRAPHIC ARTS (SA)

131. Creative Photography I. A workshop course in which assigned visual problems, readings, and an independent photographic project will be required. Students will need an inexpensive camera and will be responsible for the purchase of their own photographic materials. Prerequisite: AH 105 or permission of the instructor.

132. Creative Photography II. Application in greater depth of the techniques and disciplines learned from Creative Photography I. Emphasis on individual projects and independent work. Prerequisite: SA 131, or consent of instructor.

293. Independent Projects.

ARTS WORKSHOP (SA)

241. Arts Workshop I. Comparison and application of the elements, structures and processes of composition in dance, drama, sculpture, painting, music, poetry as individual and interrelated creative activities. The main concern of the semester will be the use of space. Prerequisites: Two of the following—SA 101 and 102, 111, 113, 121. Not for graduate credit. Omitted 1967-68

242. Arts Workshop II. This course is a continuation of Arts Workshop I and is concerned with sequence and the use of time in art forms. Prerequisite: SA 241. Not for graduate credit. Omitted 1967-68

*Two supervised periods of three hours and one period of independent work.
The Department of Foreign and Comparative Literature offers work in Chinese, Classics, French, German, Russian, and Spanish literature leading to the B.A. degree. The Department also offers the M.A. and Ph.D. degrees in French and German Literature.

REQUIREMENTS AND RECOMMENDATIONS FOR CONCENTRATIONS

**Chinese:** Mr. Compton, adviser

1. A minimum of six literature courses numbered 203 and above.

**Comparative Literature:** Honors Adviser, Mr. Locke

This concentration is available to Honors students wishing to emphasize the study of English, French, or German literature for comparative purposes. The requirements are as follows:

1. At least four courses in related fields to be chosen from among the following: Fine Arts 222, 224, 226; History 281, 282, 286; Japanese 201, 202, 203, 285, 286.

2. A concentration in English, French, or German literature is recommended.

3. Concentrators intending to go on to graduate study are strongly urged to do formal work in the Japanese language, and to develop a sound reading knowledge of French and German.
With emphasis on English Literature. It is recommended that all students entering this program will have taken European Literature in Translation 108 and 109 during their freshman or sophomore year. (1) A course in Shakespeare (English 212), one gentile course (English 131, 132, or 133), and one century or period course at the 200 level. (2) French or German 131, 132 and one other course in French or German literature. (3) Four seminars in Comparative Literature.

With emphasis on French or German literature. It is recommended that all students entering this program will have taken European Literature in Translation 108 and 109 during their freshman or sophomore year. (1) Five courses in one of these literatures including French or German 131, 132. (2) Five seminars in Comparative Literature.

For the above concentrations only the following seminars will be acceptable: 309, 350, 351, 352, 357, 359, 367, 377. In certain exceptional cases the foreign literature prerequisite for entrance into certain of the seminars may be modified at the discretion of the instructor.

NOTE: It should be borne in mind by students intending to do graduate work in Comparative Literature that the requirements stated above are minimal. All of the better graduate programs in Comparative Literature in American universities will presuppose, and often demand, more exhaustive preparation in foreign literatures (read in the original) than is stipulated here. Accordingly, those planning to pursue graduate study in Comparative Literature are strongly urged to do as much additional course work as time will allow in the foreign literature chosen for their concentration. It should be further noted that M.A. and Ph.D. work in Comparative Literature demands a sound reading knowledge of at least one other foreign language in addition to the language of the concentration. Latin, French, and German are almost universally required by the better graduate schools.

Classics: Mr. Geier, adviser

A student must concentrate in either Greek or Latin literature. This concentration will consist of:

1. At least eight courses numbered 109 and above.
2. A minimum of two courses in related fields (e.g., other ancient languages, ancient history, art, archeology, or philosophy, linguistics, literature).
3. Concentrators intending to go on to graduate study are strongly urged to pursue formal work both in Latin and Greek literature, and to develop a sound reading knowledge of at least one other modern language: French, German, or Italian.

French, German, and Spanish

French advisers: Mrs. Dobbs, Mr. Saisselin
German adviser: Mr. Loose
Spanish adviser: Mr. Dunn

1. At least six literature courses numbered 131 and above.
2. Two advanced composition courses: French, German, or Spanish 200 and 220, or equivalent work done during an approved Junior Year Abroad program.
3. A minimum of two courses in related fields (e.g., history, linguistics, literature, philosophy).
4. Concentrators intending to go on to graduate study in French or Spanish are strongly urged to develop a sound reading knowledge of German and Latin; French and Latin are recommended as secondary languages in preparation for graduate work in German.

Russian: Mrs. Kans, adviser

1. At least six literature courses numbered 131 and above; these must include 234, 235 and one course on a major Russian writer.
2. A minimum of four courses in related fields (e.g., advanced Russian language, history, literature).
3. Concentrators intending to go on to graduate study are strongly urged to include in their related work as many as possible of the following: English 231; French 131, 132, 221; German 131, 132; History 265, 266, 267.

THE SENIOR ESSAY

All concentrators in foreign literatures are required to write a Senior Essay during their last year of study. In the Fall of the senior year students must register for the 295 course in the field of concentration. The subject of the Essay will be chosen in cooperation with the professor in charge of that course and, at his recommendation, with appropriate members of the Department. The major part of the research for the Essay will be done during the Fall term; the completed Essay is to be submitted in mid-April. Precise indications as to the scope of the Essay, research, bibliographical and stylistic procedures, will be made known at the first meeting of the 295 course.

STUDENT TEACHING

Concentrators interested in student teaching experience for the purpose of New York State certification should be in touch with Mr. W. H. Clark (327 Hopeman) as well as their adviser.

CHINESE

251. Introduction to Classical Chinese. Reading and analysis of Confucian and Taoist texts. Prerequisite: Chinese 203.

261. Essays of the T'ang and Sung. Selected essays in the k'uang style by such writers as Han Yu, Liu Tsungtuan, and Ouyang Hsiu. Prerequisite: Chinese 253.

262. Poetry of the T'ang and Sung. Selected shih style poems from the works of such poets as Wang Wei, Li Po, Tu Fu, Wang An-shih, and Su Shih. Prerequisite: Chinese 251. Omitted 1967-68

271. Chinese Ideological Texts I. Texts of the Chou, Han, Confucian, Taoist, and Legalist schools. Readings in English; concentrators will be required to read selected portions in the original. Omitted 1967-68
272. Chinese Ideological Texts II. "Neo-Confucian" texts of the Sung, Ming, and Ch'ing periods. Readings in English; concentrators will be required to read selected portions in the original. Omitted 1967-68

273. Chinese Historical Texts. The Standard Histories (ch'eng shih) and other pre-modern historical materials. Readings in English; concentrators will be required to read selected portions in the original. Omitted 1967-68

284. Chinese Literature in Translation. Selected poetry, short stories, essays, and novels, from the classical period to the present.


286. The Confucian Tradition. Chinese traditional thought from Confucius, Mencius, and Hsun Tzu, through Tung Chuang-shu and the "Neo-Confucians" of Sung and Ming, to the re-valuation of Ch'ing and modern times. Readings in English. Omitted 1967-68

287. The Chinese Novel. Dreams of the Red Chamber, Monkey, Shih Hu Chuan, Chin P'ing Mei, and other vernacular masterpieces from Sung to modern times. Readings in English. Omitted 1967-68

291. Reading Course. Study of special literary problems under the direction of a member of the staff.

295. Senior Thesis. A paper based upon independent study; required of concentrators as part of the Senior Comprehensive Examinations. Students should normally register for this course in the fall term of their senior year.

CLASSICS

GREEK


201. Introduction to Greek Literature II. Selections from Plato and other Greek prose writers.


291. Reading Course. Study of special literary problems under the direction of a member of the staff.

295. Senior Thesis. A paper based upon independent study; required of concentrators as part of the Senior Comprehensive Examination. Students should normally register for this course in the fall term of their senior year.

CLASSICS IN TRANSLATION


207. Homer and Hesiod. The Iliad, the Odyssey, the Theogony, and Works and Days, in themselves and as roots of literary and philosophical traditions. Readings in English. Omitted 1967-68

COMPARATIVE LITERATURE

205. Archetypes. Lectures on the psychoanalytical interpretation of recurrent patterns of symbolism in human thought and affairs. Introductory readings in the psychoanalytical, cultural, and literary theory of archetypes, also ancient religious texts.

See Fine Arts 243. UI Pictura Poesis.
291. Reading Course. Intended primarily for advanced students wanting to study specific literary problems across national boundaries. Prerequisites to be set by the instructor.


310. Philosophy and Poetry. The ancient quartet between them, their rival claims, their convergence: the philosophical and didactic poem (Hesiod, the Platonic myths, Lucretius, Dante): philosophy's use of metaphor and imagery (Plato, Aristotle, Descartes, Heidegger, Wittgenstein).


350. Literary Criticism. Studies of major literary critics from the time of Aristotle to the present.

351. Archetypal Analysis. The theory of archetypes (Freud, Frazer, Jane Harrison, J. Campbell, M. Eliade), application of the theory to the analysis of literary texts, classical or in the classical tradition.

352. Tragedy. A study of tragic themes and tragic behavior in drama and fiction with texts chosen from Aeschylus to Mann, Camus, and Brecht. Prerequisite: French or German 131, 132.

355. Dante and Medieval Culture. Emphasis on allegory and structure in the Divine Comedy: introduction, through the poem, to the spirit of the Middle Ages. Readings in English.

387. The Modern European Novel. Studies in French, German and English prose fiction. Prerequisite: French or German 131, 132.

375. Problems in Comparative Literature. Confessional literature; the gradual intrusion of the novelist on his work, the problem of literary sincerity; representative writers from Rousseau to Kafka. Prerequisite: French or German 131, 132.

EUROPEAN LITERATURE IN TRANSLATION


109. European Literature in Translation II. Readings in the major genres of European literature since the Romantic movement. Continuation of 108.

110. Medieval Epic and Romance. Readings in the genres of epic and romance including Beowulf, the Song of Roland, Parzifal, Chrétien de Troyes, the Romance of the Rose, and Mallory; examination of the Grail theme, courtly love, and problems of Medieval narrative. No graduate credit.

FRENCH

NOTE: French 131 and 132 are prerequisite for all 200-level courses in French literature.

131. Introduction to Modern French Literature. Critical reading of representative 19th- and 20th-century poetry and fiction; practice in the explication de texte method. Prerequisite: satisfactory performance on Placement Examination or in French 103, or permission of the instructor.

NOTE: In the fall term only, section 1 of this course will be offered as a Preceptorial with enrollment limited to 15 freshmen.

132. Masterpieces of French Literature to 1800. Survey of chief literary movements and forms from the late Middle Ages through the Enlightenment. Prerequisite: French 131 or consent of the instructor.

200. French Prose Style. Inquiry into the artistic and expressive resources of the French literary idiom through explication de texte, composition, and translation into French of a wide variety of samples of English prose. Not for graduate credit.

211. Medieval Lyric Poetry. Study of the various forms and themes of French Provençal poetry.

220. Literary Phenomenology of the Bourgeois. Representations of, changing attitudes to, and criticism of the Bourgeois and his world, from Molière to Sartre.

221. The French Novel to 1850. Development of the genre from the classical period to its triumph in the first half of the 19th century. Omitted 1967-68

222. The French Novel Since 1850. Evolution of the genre from Realism to the nouveau roman.

223. French Lyric Poetry to 1800. An introduction to the French lyric tradition from the Middle Ages to André Chénier, with emphasis on renaissance poetry.


225. The French Drama to 1800. Survey of the genre from the Renaissance to Beaumarchais; emphasis on Corneille, Racine and Molière.

226. The French Drama Since 1800. Representative plays from romantic melodrama to the "theater of the absurd"; some attention will be paid to the relevant theoretical statement.
GERMAN

NOTE: German 131 and 132 are prerequisite for all 200-level courses in German literature.

231. Introduction to Modern German Literature. Close reading and analysis of representative works of poetry and fiction of the 19th and 20th centuries. Prerequisite: satisfactory performance on Placement Examination or in German 103, or permission of the instructor.

NOTE: In the fall term only, section 1 of this course will be offered as a Preceptorial with enrollment limited to 15 freshmen.

232. Masterpieces of German Literature to 1832. An introduction to selected works of German literature as seen in their historical and stylistic context. Prerequisite: German 131 or consent of the instructor.

200. German Prose Style. Inquiry into the artistic and expressive resources of the German literary idiom through explication de texte, composition, and translation of German of a wide variety of samples of English prose. Not for graduate credit. Omitted 1967-68

210. German Lyric Poetry. Intensive textual analysis of selected poems from the Baroque to the present. Principally: Opitz, Logau, Goethe, Schiller, Hölderlin, Novalis, Heine, Rilke, George, Brecht.

212. Textual Analysis. Close reading of selected authors from the 17th century to the present. Emphasis on imagery, rhetorical devices, evolution of the various styles.

265. Eighteenth-Century Literature I. Development of German literature from 1720 to 1785, with emphasis on Lessing and the young Goethe.

266. Eighteenth-Century Literature II. Works of Goethe and Schiller from 1785 to 1805, in the "Classical" period of German literature.

259. Readings in Goethe.


277. Nietzsche. Ontology, rhetoric, philosophy of language, the theory of tragedy; the Apollonian-Dionysian antithesis in Nietzsche's aesthetics.


286. Modern German Prose. The major prose writers since 1880: Mann, Kafka, Beese.

291. Reading Course. Study of special literary problems under the direction of a member of the staff.

295. Senior Thesis. A paper based upon independent study; required of concentrators as part of the Senior Comprehensive Examinations. Students should normally register for this course in the fall term of their senior year.

INDIAN

231. Theater in India I. History and literature of Indian theater to the medieval period. Analysis of plays and their epic and poetic backgrounds. Aesthetic and dramatic theories and techniques.

232. Theater in India II. Continuation of 231. Traditional drama from the medieval period to the present. The impact of foreign theater. Experimental production of a play during the second half of the semester. Prerequisite: 231 or instructor's permission.

ITALIAN

231. Introduction to Italian Literature. Close reading of selected works: lyric poetry from its origins to the present day with special attention to Petrarch and Leopardi; short stories of Boccaccio, Machiavelli, Moravia, etc.; Verga's I Malavoglia. Discussion and written work mainly in Italian.

225. Dante. Introduction to La Divina Commedia: close reading for structural analysis and lectures on medieval background.
LITERATURE IN TRANSLATION
See: Chinese Literature 271, 272, 273, 284, 285, 286, 287
Classics in Translation 151, 152, 207
Comparative Literature 190, 205
European Literature in Translation 108, 109, 210
Indian Literature 201, 202, 231, 232
Russian Literature 190, 203, 230, 234, 235, 236

RUSSIAN
131. Introduction to Modern Russian Literature I. Readings in 19th-century fiction. Prerequisite: Russian 103.
132. Introduction to Modern Russian Literature II. Analysis of the language and style of the major Russian writers. Prerequisite: Russian 103.
201. Pushkin. His life and times; intensive study of Eugene Onegin and other poems. Prerequisite: Russian 121 or 131. Not for graduate credit. Omitted 1967-68
203. Russian Drama of the 19th Century. The dramatic art of Pushkin, Gogol, Turgenev, Tolstoy, Chekhov, and Gorky. Readings in English. Concentrators will be assigned selected portions in the original language. Omitted 1967-68
204. Turgenev. Analysis of his major works. Conducted in Russian; readings in Russian. Omitted 1967-68
230. The Classic Russian Novel. The beginning, development, and demise of the Great Age from Gogol to Chekhov. Readings in English with special assignments for those who read Russian.
234. Tolstoy and Dostoevsky. The major works of both authors in English translation. Concentrators will be assigned selected portions in the original language. Not for graduate credit. Omitted 1967-68
235. Nineteenth Century Russian Literature. The major writers (excluding Tolstoy and Dostoevsky): Pushkin, Gogol, Turgenev, Goncharov, Chekhov. Readings in English. Concentrators will be assigned selected portions in the original language. Not for graduate credit. Omitted 1967-68
236. Modern Russian Literature. The Symbolist movement; writers from Gorky to Pasternak; the “thaw” period. Readings in English. Concentrators will be assigned selected portions in the original language. Not for graduate credit. Omitted 1967-68
291. Reading Course. Study of special literary problems under the direction of a member of the staff.
295. Senior Thesis. A paper based upon independent study; required of concentrators as part of the Senior Comprehensive Examinations. Students should normally register for this course in the fall term of their senior year.

SPANISH
NOTE: Spanish 131 and 132 are prerequisite for all 200-level courses in Spanish literature.
131. Introduction to Modern Spanish Literature. Close reading and analysis of representative works of poetry, drama, and fiction of the 19th and 20th centuries. Prerequisite: satisfactory performance on Placement Examination or in Spanish 103, or permission of the instructor.
NOTE: In the fall term only, section 1 of this course will be offered as a Preceptorial with enrollment limited to 15 freshmen.
132. Masterpieces of Spanish Literature to 1800. Survey from the late Middle Ages to the beginning of Romanticism; emphasis on the siglo de oro. Prerequisite: Spanish 131 or consent of the instructor.
200. Spanish Prose Style. Inquiry into the artistic and expressive resources of the Spanish literary idiom through explication de texte, composition and translation into Spanish of a wide variety of samples of English prose. Not for graduate credit.
210. Medieval Spanish Literature. Study of representative texts. Poema de mio Cid, Libro de buen amor, and others through the Fifteenth Century. The transmission of medieval literature; relevant linguistic and social history; relations with Latin and Arabic cultures.
235. Spanish Literature of the Renaissance. From late 15th Century to about 1580. Selected poems and popular ballads, early theatre and novel are studied closely for themselves and also within the frame of cultural and historical circumstance.
236. Literature of the Later “Siglo de Oro.” About 1580-1660 Selected works of such authors as Cervantes, Góngora, Quevedo, and the great dramatists are studied closely, and with reference to the changing ideas of literary expression.
257. Contexts of Golden Age Literature. Study, through reading, of such topics as the awareness of Antiquity; literary theory; philosophical and religious thinking; the plastic arts; ‘popular’ and ‘learned’; the limitations and concepts of Renaissance and Baroque.
258. Cervantes. Detailed reading and discussion of Don Quijote and other works in relation to Cervantes’ time and to the development of the novel. Omitted 1967-68
275. Enlightenment and Romantics. The history of a revolution in thought, literary style and expression, with stress on selected authors and works.
276. Modern Spanish Literature Since 1860. Special attention given to the predominance of the novel; the Generation of 1898; Modernism, the writers between the Wars. Close study of texts and evaluation of movements.
277. Galdós. Reading and discussion of a variety of works—novel and drama—by Pérez Galdós. Consideration of his importance in modern European literature.
Omitted 1967-68
281. Spanish-American Literature. A critical study of the literary developments among the independent nations of Hispanic America; the political essay, the Modernist Movement in poetry, and the novel of social protest.
Omitted 1967-68
291. Reading Course. Study of special literary problems under the direction of a member of the staff.
295. Senior Thesis. A paper based upon independent study; required of concentrators as part of the Senior Comprehensive Examinations. Students should normally register for this course in the fall term of their senior year.
The Committee on General Science supervises a program leading to the B.A. degree which gives the student an opportunity to acquire a broad education in the sciences and at the same time to devote approximately half of his time to the study of the humanities and social sciences. The program is especially well suited for the student who wishes to prepare to teach science at the secondary school level. It is also attractive to the premedical student who wishes a broad, general preprofessional education. Students who are planning to enter medical school after only three years of undergraduate work should consider this program.

The program of concentration includes, during the entire four years, sixteen courses chosen from among the offerings in biology, chemistry, geology, mathematics, physics and astronomy, and the work in psychology which is oriented toward the natural sciences (odd-numbered courses). The concentrator in general science must take introductory courses in four or five departments. Four or more courses beyond the introductory level must be taken in one department, and two or more courses beyond the introductory level must be taken in two other departments. At least two courses must be taken in a department in order to count toward the concentration.

Because of the broad, general nature of the general science program, the requirement of the related field is met by the completion of the program described above.

Relevant sections of the Graduate Record Examination are administered as a substitute for the comprehensive examination.
The Department of Geological Sciences offers programs leading to B.A. and B.S. degrees, and at the graduate level, to M.S. and Ph.D. degrees.

The B.S. program in Geology is a rigorous one designed to give students the best preparation for graduate studies and a professional career. The B.A. program is more flexible and offers students the greatest freedom in selecting courses, especially in the social sciences and humanities, while providing them with at least the minimum background for graduate studies. The B.S. in Biology-Geology is for students planning graduate studies in either Biology or Geology and emphasizes the common ground between the two.

B.A. Program in Geology

A concentration should consist of at least six and not more than eight courses in the Department beyond Geology 101. No specific courses are required except for the prerequisites in course descriptions. Students planning a concentration should obtain an adequate background in related sciences, including at least two courses beyond the introductory level. They should consult with the departmental adviser as early as possible.

The courses in geology and related sciences are arranged in such a manner as to carry the student from the introductory levels to the more advanced and highly specialized subjects in the senior year. The senior-year electives are provided to allow the student a choice of courses that can best serve his interests and special needs in graduate school. A summer course in field geology, equivalent to 6-8 credit hours, is required during the summer following the junior year.
B.S. Program

A synopsis of the courses required in the B.S. program, term by term, follows:

FIRST YEAR
1. Geol. 101 Geologic Processes*
2. Math. 161 Analysis I
3. English Requirement
4. Chem. 121 General Chemistry
   or Chem. 123 Inorganic Chemistry
   Physical Education

SECOND YEAR
1. Geol. 201 Evolution of the Earth
2. Math 163 Analysis III
3. Phys. 115 Physics I
   or Phys. 117 Physics 1A
4. Elective
   Physical Education

THIRD YEAR
1. Geol. 227 Optical Mineralogy & Petrology
2. Biol. 101 General Biology I
3. Phys. 125 Physics II
4. Math. 110 Elementary Statistics

FOURTH YEAR
1. Geol. 277 Paleocology
2. Geol. 281 Introduction to Geophysics I
3. Chem. 251 Physical Chemistry I
4. Elective

*201 may be elected with permission of the instructor, if the student has taken at least one course in secondary school earth science.

**Most students can complete the foreign language requirement with one term of college work. Those who need more than one term must take the necessary courses as electives.

1A summer course in field geology, equivalent to 6-8 credit hours, is required during the summer following the junior year.
B.S. Program in Biology-Geology

The program is appropriate for those who are inclined toward either Geology or Biology, but who wish a broader training in the natural sciences than is offered by the programs in either department. Students completing this program may enter graduate school in either biology or geology or do graduate work in such hybrid fields as oceanography, limnology, marine geology, and marine biology.

The suggested sequence of courses for the Biology-Geology program is given below. The actual order of courses may be altered where prerequisites do not interfere. Also, some course substitutions can be made where appropriate and upon approval by the two departments.

**FIRST YEAR**
1. Geol. 101 Geologic Processes*  
2. Biol. 101 General Biology I  
3. English Requirement  
4. Math. 161 Analysis I  
   Physical Education

**SECOND YEAR**
1. Geol. 201 Evolution of the Earth  
2. Biol. Elective  
3. Chem. 121 or 123 Inorganic Chem.  
4. Group I or II  
   Physical Education

**THIRD YEAR**
1. Biol. 131 Plant Kingdom  
2. Biol. 222 Evolution  
3. Physics 101 General Physics  
4. Chemistry 161 Organic Chemistry

**FOURTH YEAR**
1. Geol. 277 Palaeontology  
2. Group I or II  
3. Group I or II  
4. Elective  
   Senior Seminar

1. Biol. Elective  
2. Group I or II  
3. Group I or II  
4. Elective  
   Senior Seminar

*201 may be elected with permission of the instructor, if the student has taken at least one course in secondary school earth science.

**Most students can complete the foreign language requirement with one term of college work. Those who need more than one term must take the necessary courses as electives.**
101. Geologic Processes. The role of field observation, laboratory analysis, and experimentation in the description and analysis of some important geologic processes; economic and ecological implications of these processes. Lectures designed for students having little or no scientific background.—Two lectures, one discussion period, one three-hour laboratory a week.

201. Evolution of the Earth. The composition, origin and age of the earth, the dynamic history of the earth's crust, including mountain building and continental drift, and the origins and evolution of life as revealed in the fossil record. The course is open to students with at least one course in secondary school earth science or with permission of the instructor. The course is not open to students who have taken Geology 101.—Two lectures, one discussion meeting, and one laboratory a week. Field trips.

Omitted 1967-68

211. Introduction of Physical and Chemical Limnology. The distribution, morphology, origin and extinction of lakes. Variation of physical and chemical characteristics of lake waters and sediments with environment. The dynamics of water motion and response to the seasons.

Laboratory will involve investigation of local lakes.

212. Oceanography. A comprehensive survey of the chemistry, physics, physiography, and geology of ocean basins and sea water. Selected topics such as the physical and chemical factors which regulate growth of marine organisms, and also those related to meteorology and water pollution problems will be discussed. Omitted 1967-68

221. Principles of Paleontology. Introduction to the subject by an examination of the principles of Paleontology and by a review of the invertebrate faunas of the past. Field trips. Prerequisite: Geology 101 or 201.—Two lectures, one lab a week.

Omitted 1967-68

222. Introductory Mineralogy. Basic principles involved in the description, classification, and genetic interpretation of minerals. Laboratory work is divided between a study of elementary crystallography and an examination of common minerals and rocks. Prerequisite: Chemistry 121 or 123.—Two lectures, one recitation, 1 lab a week.

227. Optical Mineralogy and Petrology. The first half of the course is concerned with polarizing microscopy and the relationships between the structure and composition of minerals and their optical properties. The second half is concerned with the study of igneous and metamorphic rocks. Prerequisites: Geology 101 or 201 and Chemistry 121 or 123.

Omitted 1967-68

235. Stratigraphy. Principles of stratigraphy, including the application of fundamental principles of physical geology and paleontology to problems of stratigraphy and paleography.—Three lectures and one lab a week.

241. Geochemistry. Discussion will center on the elements and their isotopes, their role in the evolution of the earth, and their use as tools in geological investigations. Prerequisites: Chemistry 121 and 122 or 123 and 124 and Physics or permission of the instructor.

277. Paleocology. Environmental reconstruction based on evidence from fossils and their relations with the enclosing sediment. Emphasis on the paleoecological applications of faunal distributions, adaptive morphology, and biogenic sedimentary structures. Field trips. Prerequisites: Geology 221 and Biology 101.

281. Introduction to Geophysics I. The gravity and magnetic fields of the earth. Survey of observational and theoretical seismology. Introduction to the thermal regime of the earth. Exploration geophysics and the physical properties of rocks. Prerequisites: Math 162 or equivalent and Physics 101-102 or its equivalent.

282. Introduction to Geophysics II. Continuation of Geology 281.

286. Senior Seminar in Geobiology. A required course for all senior students in the Biology-Geology B.S. program. Papers requiring library and/or laboratory research are prepared under supervision of faculty members and presented orally before the seminar group.—One hour per week—no credit.

291. Senior Reading Course in Geology.

Credit to be arranged.
History

Loren Baritz, PH.D. (Wisconsin) ... Professor of History
Marvin B. Becker, PH.D. (Pennsylvania) ... Professor of History
Michael Cherniavsky, PH.D. (Berkeley) ... Professor of History
John Barrett Christopher, PH.D. (Harvard) ... Professor of History
Herbert G. Gutman, PH.D. (Wisconsin) ... Professor of History
Robert B. Hall, Jr., PH.D. (Michigan) ... Professor of History and Geography
Ralph James Kaufmann, PH.D. (Princeton) ... Professor of History and English and Chairman of the Department
Sidney Monas, PH.D. (Harvard) ... Professor of History
A. William Salomone, PH.D. (Pennsylvania) ... Wilson Professor of History
Bernard A. Weisberger, PH.D. (Chicago) ... Professor of History
Hayden V. White, PH.D. (Michigan) ... Professor of History
Perez Zagorin, PH.D. (Harvard) ... Professor of History
Milton Berman, PH.D. (Harvard) ... Associate Professor of History and Associate Chairman of the Department
Harry Harootunian, PH.D. (Michigan) ... Associate Professor of History
Akira Iriye, PH.D. (Harvard) ... Associate Professor of History
Alain Besançon ... Visiting Associate Professor of History
Richard I. Cashman, M.A. (Monash) ... Assistant Professor of History
Ralph C. Croizier, PH.D. (Berkeley) ... Assistant Professor of History
Robert Cuff, PH.D. (Princeton) ... Assistant Professor of History
Paul Forman, PH.D. (Berkeley) ... Assistant Professor of History
James Fruguglietti, PH.D. (Harvard) ... Assistant Professor of History
Dean A. Miller, PH.D. (Rutgers) ... Assistant Professor of History
Arthur Mitzman, PH.D. (Brandeis) ... Assistant Professor of History
John J. Waters, Jr., PH.D. (Columbia) ... Assistant Professor of History
*John Philip Schuyler, A.B. (Brown) ... Instructor in History
Willson Havelock Coates, PH.D. (Cornell) ... Professor Emeritus of History
Arthur James May, PH.D. (Pennsylvania) ... Professor Emeritus of History
Dexter Perkins, PH.D. (Harvard) ... Professor Emeritus of History
Glynond Garlock Van Deusen, PH.D. (Columbia) ... Professor Emeritus of History

1 Part-time
2 Beginning September 1968
3 Term II
The Department of History offers work leading to a concentration for the B.A. degree, to the B.A. degree in the Honors Program, and to the M.A. and Ph.D. degrees.

A program of concentration for the B.A. degree consists of a minimum of ten courses in history and a related field. All students applying for admission to the department must have taken at least two 100 level courses in history; these will not count towards concentration. All history courses are open to Freshmen unless specifically designated otherwise. However, Freshmen are urged to take a pair of 100 level courses (e.g., 103, 104; 111, 112; 131, 132; 151, 152; 181, 182, etc.)

Six to eight of the ten courses should be in history beyond the 104 level. However a student may not count more than two 100 level courses as part of the concentration. Thus, the concentration must include a minimum of four 200 level history courses.

A student will be expected to add to his work in History enough additional courses to bring the total in his concentration to ten. The related field may be chosen from among the following: Anthropology, Economics, English, Fine Arts, Foreign Languages, Philosophy, Political Science. A student interested in a related field not listed above should consult his departmental adviser. All courses in the related field should lie beyond the introductory level, except that a student who elects to study a second foreign language will be permitted to include the first year course in that language.

Qualified History concentrators will be approved by the department for the junior year abroad.

No courses at the 200 level carry credit for graduate students in History.

I. Introductory Courses

103. World Civilization I. A survey of the main traditions of world civilization stressing the extent to which each has contributed to the problems and possible resolution of twentieth century world conflict.

104. World Civilization II. Continuation of History 103.

111. Hellenic Civilization. A study of the main lines of Greek development from Minoan times to the end of the Peloponnesian Wars.

112. Roman Civilization. A study of Roman culture and society from the foundation of the city of Rome to the foundation of Constantinople.

121. British History to 1485. A historical survey of the development of British civilization from its beginnings to 1485 with the emphasis on England. Omitted 1967-68

131. The History of the United States I. A general history of the United States from Colonial times to the Civil War.

132. The History of the United States II. A general history of the United States from the Civil War to the present.

151. Early Modern Europe. A survey of some major features of the development of the Western European states and society during the period from the later 16th to the beginning of the 18th century.

152. The Old Regime and the Enlightenment. A study of the political, economic, social, religious and cultural life of Europe from the death of Louis XIV to the eve of the French Revolution.

II. History and Geography Sequence


182. Historical Geography. A survey of the historical geography of the North American continent. Emphasis will be on changing settlement patterns and the development of urban centers. Omitted 1967-68

183. European Industrialization. A survey of the development of contemporary patterns of land use and population distribution and the changing utilization of resources in Europe. Emphasis will be on the processes of industrialization and urbanization.

186. South and Southeast Asia Modernization. A survey of the development of contemporary patterns of land use, population distribution, and the development of resources in South and Southeast Asia. Emphasis will be on the problems of population growth and the processes of modernization. Omitted 1967-68

III. General Courses

A. Ancient to Renaissance Sequence

201. The Ancient Near East. This course will consider the main lines of cultural development in Egypt, Mesopotamia, and Asia Minor, as well as the islands of the Eastern Mediterranean, from ca. 3,000 B.C. to the Alexandrian conquest. Omitted 1967-68

204. Greek Intellectual History. An exploration of the origin, rationale, course of development, and interrelationship of the fundamental ideas of Greek thought from Homer to Aristotle.

205. Hellenistic and Imperial Civilization. A study of the changing aspects of the world from the early fourth century B.C. to the third century A.D. Omitted 1967-68

207. Byzantine Empire. History of Byzantium from 330 to 1453, including a consideration of the Islamic world and the early medieval Slavic states. Omitted 1967-68


209. The Byzantine Imperial City. Constantinople as a social, economic, administrative phenomenon; the "imperial" city as a type, and its effect on history.

214. Emergence of Western European Civilization. A study of the fusion of Graeco-Roman, Christian and Germanic traditions, and an analysis of the main institutions, artistic trends, and intellectual components of the nascent European culture, from ca. 300 to ca. 1200 A.D.

215. Italy in the Middle Ages. This course will involve a study of Italian culture and institutions from the coronation of Charlemagne to the age of Dante.

216. History of Medieval Religions. A survey of the main forms of religious experience in the period between Augustine and Petrarch, including an examination of the idea of Christian community, the church, the Papacy, the relation between the sacred and the profane worlds, and the nature of heresy.

217. The Medieval Synthesis. A study of Western European civilization from ca. 1200 to ca. 1350.

218. The Italian Renaissance. A study of Italian cultural life from ca. 1300 to ca. 1550.

219. The Northern Renaissance and the Reformation. A study of the cultural history of Northern Europe from the fourteenth to the late sixteenth century.

B. British Sequence


225. England Since Waterloo. Study of the period of England's world supremacy in the mid and late 19th century, and of her complex adjustments to a lesser role in the 20th century.

C. American Sequence

228. Colonial Latin American Culture. A study emphasizing the high cultures of Peru and Mexico in the native and viceregal eras.


233. The Early National Era. A study of the crucial era from Jefferson to the Monroe Doctrine.

234. The Jacksonian Era, 1824-1850. Political and social developments underlying and accompanying westward expansion, sectional conflict, and growing economic sophistication.

235. Civil War and Reconstruction, 1850-1877. The coming of the war, its political and social effects, and the short-run and long-term results of the postwar reshaping of the nation.


241. American Industrialization and American Society I. An examination of the ways in which industrialization has affected traditional American society in the mid 19th century. Political, social, cultural, and even diplomatic history are studied primarily as responses to changes in the American social and economic structure.

242. American Industrialization and American Society II. An extension of the enquiry begun in History 241 up to the beginning of World War I.

243. American Social History I. The development of American society and culture from the seventeenth century to the Civil War.

244. American Social History II. The development of American society and culture from the Civil War to the present.

245. American Intellectual History I. The American mind from colonial times to the end of the Civil War.

246. American Intellectual History II. The American mind from Civil War to the present.

247. Religion in American Society. The impact of religion on life in America, and the adaptation of religion to a changing American society, from the Puritans to the present. The course will deal with religion primarily as a social phenomenon.

248. America's Emergence as a World Power. A survey of United States foreign relations from the eighteenth century to the outbreak of World War I with emphasis on changing American views of the external world and the effect of America's emergence as a great power upon the policies of other governments.
249. The United States in World Politics. America’s foreign relations since World War I. The topics covered will include Wilsonian diplomacy, the Siberian expedition, isolationism of the 20’s and 30’s, changes in the Monroe Doctrine, World War II, the cold war in Europe, and the evolution of a China policy. American policy will be analyzed both in relation to the domestic determinants of policy and to conditions outside the United States.

Omitted 1967-68

250. Culture and Society in Twentieth-Century America. An analysis of the cultures of affluence and poverty in recent and contemporary America, including the growth of technology, aspects of Negro culture, developments in foreign policy, popular culture, and literary responses to social change.

Omitted 1967-68

D. Modern European Sequence

252. The Age of Revolution, 1789-1848. Special attention is given to the role of the Napoleonic and Early French Revolution and to the industrial, political and intellectual revolutions of the mid-nineteenth century.

Omitted 1967-68


Omitted 1967-68

254. France Since 1870. Economic, political, diplomatic, imperial, and cultural developments, concluding with an estimate of changes resulting from World War II.

Omitted 1967-68

255. Europe in the Liberal Era. Analytical studies of European history from the close of the epoch of traditional state making to the opening of the age of world wars and revolutions. Emphasis will be placed on the inter-European character of the larger political, diplomatic, social, economic and cultural problems of the period.

Omitted 1967-68

256. Europe in the Twentieth Century. An historical analysis of Europe’s era of crises, world wars and revolutions. Emphasis will be placed upon the origins and impact of the two great European wars of the twentieth century with a view to elucidating the dual transformation of Europe from hegemony to potential “third force” and from nationalism through totalitarianism to an emergent European Community.

Omitted 1967-68

259. History of Italy from the Renaissance to the Risorgimento. A study of the origins, character, and significance of modern Italian civilization conducted through historical analysis of major expressions during the era of the Renaissance, the Baroque, and the Enlightenment.

Omitted 1967-68

260. History of Italy from the Risorgimento to the Present. A study of Italian history during the nineteenth and twentieth centuries which emphasizes the rise, rule, and decline of the Liberal State.

Omitted 1967-68

261. History of Germany from the Reformation to Bismarck. An analysis of social, political and intellectual currents in Germany.

Omitted 1967-68

262. History of Germany from 1890 to 1945. An examination of the social, political and intellectual trends in Germany from 1890-1945.

264. Comparative Medieval History. Feudalism, Christian modes, architectural styles, legal systems from the 7th through the 12th centuries transculturally considered from England to Kiev and Byzantium.

265. History of Russia I. History of Russia from the earliest times through Peter I. Stress placed on the origins and development of characteristic Russian political, social and economic institutions.

Omitted 1967-68

266. History of Russia II. History of Russia from Peter I to the present.

Omitted 1967-68

267. Russian Intellectual History. A consideration of the main themes of Russian intellectual history in the 19th and 20th centuries.

Omitted 1967-68

268. History of the USSR. The Bolshevik Revolution and its aftermath; emphasis on origins and development of economic, political, social, and cultural institutions.

Omitted 1967-68

269. Totalitarianism. The background and development of totalitarian movements in the twentieth century, with special emphasis on Soviet Russia and Nazi Germany.

Omitted 1967-68

271. Intellectual History of Modern Europe I. A reading course in the history of Western thought from ca. 1300 to 1750.

Omitted 1967-68

272. Intellectual History of Modern Europe II. A continuation of History 271, dealing with the period from ca. 1750 to the present. History 271 is not prerequisite for this course.

Omitted 1967-68

273. Studies in World Intellectual History. Comparative studies of attempts in Asia, Europe, America, Russia, the Near East, and India to deal with the relations between change and innovation in crucial periods of cultural transformation. A study of alternative conceptions of personality, society, state, religion, and the limits of human knowledge and expression, especially in the modern era.

Omitted 1967-68

274. Philosophy of History and Historiography. A survey of the main conceptions of historical change, process, explanation, and representation from Herodotus to Toynbee. Not open to freshmen.

Omitted 1967-68

275. Technology and Society. An analytical course for advanced undergraduate students exploring the social dynamics and practical techniques for organizing the work and leisure of contemporary mass society.

Omitted 1967-68

276. History of Science I. Natural philosophy and the exact sciences from antiquity to Newton.

Omitted 1967-68

277. History of Science II. Physical theory and the structure of matter from Newton to Bohr.
278. Cultural History. A wide-range, comparative investigation of major periods of cultural vitality.

E. The Asian Sequence

279. The Making of Traditional India. A topical survey of cultures and institutions on the sub-continent stressing the essential continuity between ancient and contemporary India.

280. History of Modern India. Contemporary India and Pakistan emphasizing cultural, social, and political changes generated by the coming of Europeans.

281. History of China to 1600. The formation of a distinctively Chinese culture area and its political unification. Disintegration and reunification of the centralized Empire, with the evolution of the political, social, and cultural forms which characterized early modern China.

282. History of China Since 1600. The mature Imperial system in its social and cultural setting. Collapse of the traditional order under the impact of the industrialized West, and the process of China's modern revolution.


Omitted 1967-68

285. Japan Since 1800. An historical analysis of the economic, political, social, and cultural forces which contributed to Japan's emergence as a modern state.

Omitted 1967-68

286. Intellectual History of Modern East Asia. The development of Chinese and Japanese thought from the 18th century to the present. This course is conducted as a discussion group.

287. East Asian Economic History and Demography. A survey of the patterns of contemporary land use, population distribution and the development of resources in East Asia. Emphasis will be on the problems of population growth and processes of modernization.

288. Islamic Culture. A survey of traditional Muslim institutions, stressing art and literature as well as religion, politics, and society, and focused on the medieval caliphates and on Persia and the Ottoman Empire in early modern times.

289. The Middle East in Modern Times. Rapid survey of the background before 1800; emphasis on the growth of Turkish and Arab nationalism, the strategic importance of the Middle East, and the record of attempts to modernize and "Westernize" the Middle Eastern states.


313. European Civilization in the Liberal Period. Historical studies conducted through topical analyses of the political and social foundations and of the intellectual and cultural values of Western Europe during the height of the last classic era of European hegemony, 1880-1910. Omitted 1967-68

314. Empire and Kingdom: The Early Middle Ages. The political and cultural implications of the reformation of the Roman Empire, the rise and significance of the successor kingdoms of the West and the Christian Empire of the East. Reading knowledge of French or German required. Omitted 1967-68

315. Medieval Intellectual History. Study of the central tradition of medieval thought from Augustine and Boethius to the last phases of the medieval synthesis in the late 14th century with special emphasis on close textual analysis. Omitted 1967-68

316. Renaissance and Reformation. Transition of European civilization from the later Middle Ages to modern times.

317. Seventeenth Century. Seventeenth century history, primarily in England; political, economic, social, intellectual, and religious aspects. Omitted 1967-68


320. The South Since 1860. Development of the American South from the rise of the Cotton Kingdom to the present day. Omitted 1967-68

321. Nineteenth Century American Reform Movements. The sources, activities, and achievements of political and religious dissenters and upholders from the Lavoisiers of the 1830’s to the Populists of the 1890’s. Omitted 1967-68

322. American Social History. The development of American society and culture as reflected in the observations of foreign commentators and American social critics. Omitted 1967-68


325. Europe in the 18th and Early 19th Centuries. European history, 1715-1815, with particular stress on the shifting balance of power, the evolution of arts and letters, the Enlightenment, and the era of the French Revolution and Napoleon. Omitted 1967-68

326. The Russian Revolution. The period 1915-1920 from contemporary accounts. Omitted 1967-68

327. Mass Society and Totalitarianism. Totalitarianism and estrangement in the twentieth century as related to changes in industrial society: the confrontation of mass society theories with historical evidence, especially the German case. Reading knowledge of German helpful. Also listed under Sociology 315. Omitted 1967-68

328. Marxism. Its origins, significance, development and tendencies, from Marx to Mao. Omitted 1967-68


331. The Scientific Revolution, 1500-1700. Study of the construction of new principles and methods in natural philosophy and a new world system, looking at such key figures as: Copernicus, Vesalius, Kepler, Galileo, Harvey, Bacon, Descartes, Huygens, and Newton.

332. Comparative History. A study of selected topics in the comparative history of social and governmental institutions, major trends of economy and society, and recurrent phenomena of civilization. Omitted 1967-68

333. History of East Asia in Modern Times (China). Social, political, and intellectual development of China in the last one hundred years. Omitted 1967-68

334. History of East Asia in Modern Times (Japan). Evolution of Japan as a modern state, with special emphasis on those forces which contributed to Japan’s successful response to the West. Omitted 1967-68

335. Urban-Industrial Japan. The evolution of Japan from an agricultural to the first urban-industrial nation in Asia; emphasis on changing patterns of land use and the formation and growth of the metropolitan areas.

336. The Modern Middle East. Rapid survey of the historical background, with stress on the period since 1800. Particular attention is given to the genesis of Turkish and Arab nationalism, to the problems of economic development, and to the changing relations between the Middle Eastern states and the Western powers.
Languages and Linguistics

O. L. Chavarria-Aguilar, Ph.D. (Pennsylvania) ... Professor of Sanskrit and Linguistics and Chairman of the Department
D. Lincoln Canfield, Ph.D. (Columbia) ... Professor of Spanish
Arthur Monroe Hanhardt, Ph.D. (Cornell) ... Professor of German
Stanley M. Sapon, Ph.D. (Columbia) ... Professor of Psycholinguistics
William H. Clark, Jr. Ph.D. (Columbia) ... Associate Professor of German and Education
Antanas Klimas, Ph.D. (Pennsylvania) ... Associate Professor of German
Dean H. Obrecht, Ph.D. (Pennsylvania) ... Associate Professor of Linguistics
Frank R. P. Akehurst, Ph.D. (Colorado) ... Assistant Professor of French
Charles Carlton, Ph.D. (Michigan) ... Assistant Professor of French
Ross D. Hall, M.A. (Princeton) ... Assistant Professor of German
Ronald V. Harrington, Ph.D. (Harvard) ... Assistant Professor of Russian
Richard M. Harris, Ph.D. (Cornell) ... Assistant Professor of Linguistics
Demetrios Moutsos, Ph.D. (Chicago) ... Assistant Professor of Linguistics
Donald G. Reiff, Ph.D. (Michigan) ... Assistant Professor of Linguistics
Guy Richard Welbon, Ph.D. (Chicago) ... Assistant Professor of Sanskrit and Indic Studies
Caroline Wood, B.A. (Tsing Hua) ... Instructor in Chinese

*Piero Braggiotti, A.M. (Rochester) ... Instructor in Italian

*Alex Wieber ... Instructor in German and Russian

*Part-time

The Department of Languages and Linguistics offers courses in Chinese, French, German, Greek, Hindi, Italian, Japanese, Latin, Russian, Sanskrit, and Spanish as well as in Linguistics. It offers concentration toward the B.A. degree in Linguistics, French, German, Russian, and Spanish; toward the M.A. degree in Linguistics, French, German, and Spanish; and toward the Ph.D. degree in General Linguistics.

For the B.A. degree in French, German, Russian, or Spanish, a student's program of concentration will consist of six to eight courses beyond Conversation and Composition 121. In consultation with the departmental adviser for the language in question, the student will plan a program with emphasis on language but including at least the Survey of Literature courses (131 and 132) given by the Department of Foreign and Comparative Literature and at least the Introductory course in Linguistics 201. Allied courses bring the total to ten.

For the B.A. degree in Linguistics, a student's program of concentration will consist of six to eight courses in Linguistics, including 201 (the prerequisite for all other courses in Linguistics), and 202, 203, 204. Courses in Foreign Languages, Literature, Anthropology, Mathematics, Philosophy or Psychology are accepted as allied material to complete the ten-course concentration.

The facilities of four established laboratories are used in the training of students: the Laboratory of Verbal Behavior, the Phonetics Laboratory, the Programmed Learning Studio and the Language Service Center.

The Department encourages the Junior Year Abroad for qualified students of French, German, and Spanish, and has regular exchange agreements with institutions in France, Germany, and Colombia.
CHINESE

201. Elementary Chinese I. Introductory training in the structure of modern Chinese and its basic vocabulary. Practice in speaking; reading of selected graded texts. No graduate credit.—Three class hours and two laboratories a week.


205. Readings in Modern Chinese Prose. Practice in reading selected short prose works as preparation for the use of Chinese as a research tool in the humanities and social sciences. Prerequisite: Chinese 203 or equivalent. No graduate credit.

221. Chinese Conversation I. Practice in understanding and speaking modern mandarin Chinese; attention to Chinese grammar. Prerequisite: Chinese 202 or equivalent. No graduate credit.

222. Chinese Conversation II. Continuation of Chinese 221.

291. Reading Course.

FRENCH

101. Elementary French I. Introductory training in the structure of modern French and its basic vocabulary. Practice in speaking; reading of selected graded texts.—Three class hours and two laboratories a week.


103. Intermediate French. Continuing study of modern French in its spoken and written forms. Prerequisite: French 101 and 102 or equivalent.—Three class hours and one laboratory a week.

121. French Conversation and Composition. Study of current French structure, usage, and vocabulary. Practice in expository writing and in speaking, to increase fluent active command of the language; problems of translation. Required of French majors. Prerequisite: French 103 or equivalent.—Three class hours and two laboratories a week.

211. The Linguistic Structure of French. Synchronic analysis of the phonemic, morphological, syntactic, and semantic systems of present-day French; dialectal variations. Prerequisites: French 123 or equivalent and Linguistics 201, or permission of instructor.

212. French Dialectology. Study of the dialectal variations of the French language both in their geographical and social dimensions. Prerequisites: French 211 or permission of instructor. Omitted 1967-68

213. French in the New World. The sound, form, and lexical systems of French as spoken in the Western Hemisphere (Canada, Haiti, etc.). Offered in French. Prerequisite: French 211 or 235, or permission of instructor.

220. Advanced French Conversation and Composition. Advanced study of structure and usage, examination of problems of translation, expository writing; prepared and extemporaneous speaking. French 121 or equivalent and French 131 and 132. Permission of instructor required. No graduate credit.

221. French Orthoepy and Advanced Conversation. Study of French pronunciation in all its aspects; emphasis on division, effectiveness, levels of speech and style. Prepared and extemporaneous speaking. Prerequisite: permission of instructor. No graduate credit.

235. History of the French Language. Diachronic analysis of French as one of the Romance languages; its formation, development, and present state with emphasis on phonology and morphology. Examination of selected texts from the earliest period to modern times illustrating the development of French. Prerequisites: French 121 or equivalent and Linguistics 201, or permission of instructor. Omitted 1967-68

236. Historical Development of Literary French. Continuation of preceding course (FR 235), but with emphasis on reading and examination of selected texts from the earliest period to modern times to illustrate the syntactical, lexical, and semantic development of French. Prerequisite: French 235, or permission of instructor. Omitted 1967-68

241. Practicum in French. Investigation of special problems in French. Omitted 1967-68

291. Reading Course in French Language.

GERMAN

101. Elementary German I. Introductory training in the structure of modern German and its basic vocabulary. Practice in speaking; reading of selected graded texts.—Three class hours and two laboratories a week.

102. Elementary German II. Continuation of German 101.

103. Intermediate German. Continuing study of modern German in its spoken and written forms. Prerequisite: German 102 or equivalent.—Three class hours, one laboratory a week.
105. German Specialized and Technical Reading. Controlled readings in specialized and technical prose as a preparation for use of the language in fields of the student's interest. Prerequisite: German 102 or equivalent.

121. German Conversation and Composition. Study of current German structure, usage, and vocabulary. Practice in expository writing and in speaking, to increase fluent active command of the language; problems of translation. Required of German majors. Prerequisite: German 103 or equivalent.—Three class hours and two laboratories a week.

211. The Linguistic Structure of German. Synchronic analysis of the phonemic, morphological, syntactic, and semantic systems of present-day German; dialectal variations. Prerequisites: German 121 or equivalent and Linguistics 201, or permission of instructor.

212. German Dialects. An examination of the growth and development of the German language area of Central Europe: Germany, Austria, Switzerland and the bordering regions in which dialect forms of German are spoken. Prerequisite: German 211 or permission of the instructor.

220. Advanced German Conversation and Composition. Advanced study of structure and usage; examination of problems of translation. Expository writing; prepared and extemporaneous speaking. Prerequisites: German 121 or equivalent and German Literature 131 and 132. Permission of instructor required. No graduate credit.

235. History of The German Language to 1500. Diachronic analysis of the German language as one of the Germanic languages; its formation and development to 1500. Examination of selected texts from the earliest period to 1500 illustrating the development of German. Prerequisites: German 121 or equivalent and Linguistics 201, or permission of instructor.

236. History of The German Language from 1500. A continuation of German 235, covering the period from 1500 to the present. Omitted 1967-68

241. Practicum in German. Investigation of special problems in German. Omitted 1967-68

251. Reading Course in German Language.

GREEK

101. Elementary Greek I. Introductory training in the structure of Greek and its basic vocabulary. Reading of selected graded texts.

102. Elementary Greek II. Continuation of Greek 101.

HINDI

201. Hindi I. Intensive study of basic vocabulary and structure of modern Hindi for rapid development of speaking, listening and reading skills. Prerequisite: fulfillment of foreign language requirement.


203. Hindi Composition and Conversation I. Continuing study of current Hindi structure, usage, and vocabulary. Practice in expository writing and in speaking, to increase fluent active command of the language; problems of translation. Prerequisite: Hindi 202 or permission of instructor.

204. Hindi Composition and Conversation II. A continuation of Hindi 203. Prerequisite: Hindi 203 or permission of instructor.

205. Hindi Reading I. Controlled readings in general prose as a preparation for further work with the written language. Prerequisite: Hindi 202, or permission of instructor.

206. Hindi Reading II. A continuation of Hindi 205. Prerequisite: Hindi 205, or permission of instructor.

ITALIAN

101. Elementary Italian I. Introductory training in the structure of modern Italian and its basic vocabulary. Practice in speaking; reading of selected graded texts.—Three class hours and two laboratories a week.

102. Elementary Italian II. Continuation of Italian 101.

103. Intermediate Italian. Continuing study of modern Italian in its spoken and written forms. Prerequisite: Italian 101 and 102 or equivalent.—Three class hours and one laboratory a week.

121. Italian Conversation and Composition. Study of the structure, usage, and vocabulary of modern Italian. Practice in expository writing and in speaking, to increase fluent active command of the language; problems of translation. Prerequisite: Italian 103 or equivalent.—Three class hours and one laboratory a week.

JAPANESE


203. Intermediate Japanese. Reading of a variety of texts with emphasis on comprehension. No graduate credit.

209. Reading Course.

LATIN

101. Elementary Latin I. Introductory training in the structure of Latin and its basic vocabulary. Practice in speaking; reading of selected texts. Three class hours and two laboratories a week.

102. Elementary Latin II. Continuation of Latin 101.

RUSSIAN

101. Elementary Russian I. Introductory training in the structure of Modern Russian and its basic vocabulary. Practice in speaking; reading of selected graded texts.

102. Elementary Russian II. Continuation of Russian 101.

103. Intermediate Russian I. Continuing study of modern Russian in its spoken and written forms. Prerequisite: Russian 102 or equivalent.

104. Intermediate Russian II. Continuation of Intermediate Russian I. Omitted 1967-68

105. Reading and Translation. Controlled readings in fields of the student's interests.

121. Russian Conversation and Composition. Study of current Russian structure, usage and vocabulary. Practice in expository writing and in speaking, to increase fluent active command of the language; problems of translation. Required of Russian majors. Prerequisite: Russian 103 or equivalent.

211. The Linguistic Structure of Russian. Synchronic analysis of the phonemic, morphological, syntactic, and semantic systems of present-day Russian; dialectal variations. Prerequisites: Russian 121 or equivalent and Linguistics 201 or permission of instructor.

220. Advanced Russian Conversation and Composition. Advanced study of structure and usage; examination of problems of translation. Expository writing, prepared and extemporaneous speaking. Emphasis on diction, effectiveness, levels of speech, and style. Prerequisites: Russian 121 or equivalent and Russian 131 and 132. Permission of instructor required. No graduate credit.

233. Old Church Slavic. A descriptive study of the structure of Old Church Slavic. Analysis of texts. Prerequisite: proficiency in one Slavic language, or permission of the instructor. Omitted 1967-68


235. History of the Russian Language. Diachronic analysis of Russian as one of the Slavic languages; its formation, development and present state. Examination of selected texts from the earliest period to modern times illustrating the development of Russian. Prerequisites: Russian 121 or equivalent and Linguistics 201, or permission of instructor.


SANSKRIT

231. Sanskrit I. Elements of the grammar of the classical language. Special attention to sandhi, the devanagari script, and the place of Sanskrit in the civilization of India.

232. Sanskrit II. Further study of Sanskrit grammar. Stress on the analysis of nominal composition and the acquisition of vocabulary. Prerequisite: permission of instructor.

SPANISH

101. Elementary Spanish I. Intensive training in speaking, comprehension, reading, and writing through the use of programmed learning materials, presented on tape and in workbooks. Students work independently under supervision and also participate in periodic meetings with the instructional staff.

102. Elementary Spanish II. Skills acquired in Spanish 101 are maintained in audio-lingual classroom instruction. Reading and writing are emphasized.

103. Intermediate Spanish. Continuing study of modern Spanish in its spoken and written forms. Prerequisite: Spanish 102 or equivalent.

121. Spanish Conversation and Composition. Study of current Spanish structure, usage, and vocabulary. Practice in expository writing and in speaking, to increase fluent active command of the language; problems of translation. Required of Spanish majors. Prerequisite: Spanish 103 or equivalent. Three class hours and two laboratories a week.
211. The Linguistic Structure of Spanish. Synchronic analysis of the phonemic, morphological, syntactic, and semantic systems of present-day Spanish; dialectal variations. Prerequisites: Spanish 121 or equivalent and Linguistics 201, or permission of instructor.  
   Omitted 1967-68

212. American Spanish. A study of the dialectal variations of Latin American Spanish: phonology, syntax, semantics. Prerequisites: Spanish 121 and Linguistics 201, or permission of instructor.

220. Advanced Conversation and Composition. Advanced study of structure and usage; examination of problems in translation. Expository writing; prepared and extemporaneous speaking. Emphasis on diction, effectiveness, levels of speech, and style. Prerequisites: Spanish 121 or equivalent and Spanish 131 and 132. Permission of instructor required. No graduate credit.

235. History of the Spanish Language. Diachronic analysis of Spanish as one of the Romance languages: its formation, development, and present state. Examination of selected texts from the earliest period to modern times illustrating the development of Spanish. Prerequisites: Spanish 121 or equivalent and Linguistics 201, or permission of instructor.


291. Reading Course in Spanish Language.

LINGUISTICS

201. Introduction to Linguistics. Principles of structural analysis of speech phenomena. Examination of material from a wide variety of languages. Prerequisite: fulfillment of the foreign language requirement.

202. Introduction to Historical Linguistics. A diachronic study of the phases and processes of linguistic change: phonological, grammatical and semantic. Prerequisite: Linguistics 201 or permission of instructor.


204. Acoustic Phonetics. Introduction to the structure of the speech wave, problems of acoustical and linguistic speech segmentation, and perceptual relationship between acoustic features and linguistic units. Practical experience in laboratory phonetics. Prerequisite: Linguistics 201 and permission of instructor.

205. Applied Linguistics for Language Teachers. Introduction to principles of linguistic analysis and their effective application in second-language teaching. Prerequisite: fulfillment of the foreign language requirement.  
   Omitted 1967-68

213. Languages in the World I. A survey of the living Indo-European languages of the world, by language families and in terms of their functions in modern society and of their structure; writing systems. Prerequisite: Linguistics 201 or permission of the instructor.  
   Omitted 1967-68

214. Languages in the World II. Survey of the living non-Indo-European languages of the world, by language families and in terms of their functions in modern society; types of linguistic structure; writing systems. Prerequisite: Linguistics 213 or permission of the instructor.  
   Omitted 1967-68

215. Descriptive Analysis I: Phonology. Consideration of the phonemic principle and development of skills in the description of the sound systems of language. Prerequisites: Linguistics 201 and Linguistics 203, or permission of instructor.

216. Descriptive Analysis II: Morphology and Syntax. Procedures of morphemic analysis and syntactic description and development of skills in the description of grammatical systems. Prerequisite: Linguistics 201 or permission of instructor.

217. Informant Work. Intensive practice in the transcription and analysis of an unknown language from speech. Elements of phonological, morphological and syntactical analysis and presentation. Prerequisites: Linguistics 201 and 203 and permission of instructor.

237. Introduction to Romance Linguistics. Comparative study of the development of the principal Romance Languages from their Latin origins. Prerequisite: Concentration in one of the Romance languages or equivalent.

240. Provençal. The linguistic structure of Old Provençal. Extensive readings. Prerequisite: French 235 or Linguistics 237, or permission of instructor.  
   Omitted 1967-68


291. Reading Course.
The Department of Mathematics offers the B.A., M.A., and Ph.D.

Undergraduate majors are limited to students who do well in Mathematics 161-164 or 171-174. The first of these is the standard sequence in analysis; it may be entered with advanced standing. The second is an accelerated sequence covering the standard material more deeply and with additional theoretical work.

A concentration consists of ten courses; six to eight are mathematics courses numbered 200 or higher; the rest are nonintroductory electives in biology, chemistry, economics, philosophy, physics, or psychology.

The B.A. requires Mathematics 236, 237, 265 and 266. To earn Distinction, the student must present additional advanced work of high quality.

There is considerable flexibility in mathematics electives. All students planning graduate work in mathematics are urged to take at least two courses from among Mathematics 247, 267, 268,
and 275; they should also study two of the languages: French, German, Russian. Mathematics majors planning a career in industry are advised to consider Mathematics 200, 207, 263, 267, 268, and 280; those planning to teach in the secondary schools should consider Mathematics 200, 230, 250 or 253.

Mathematics 261, 262, and 263 are recommended for majors in the natural sciences and engineering. Mathematics 100 is appropriate for majors in management and social sciences. Mathematics 140 is intended primarily for students planning to teach in the elementary school or in a non-science area at the secondary school level. Mathematics 100, 130, and 150 are recommended electives for students in the liberal arts.

100. Finite Mathematics. Logic and the algebra of sets; partitions; combinatorial probability; vectors and matrices; linear programming and the theory of games.

120. Mathematical Snapshots. Prime numbers, rationals, complex numbers; traveling salesman problems; memory wheels; algebraic systems; Latin squares; map coloring problems; infinite sets.

140. Topics in Elementary Mathematics. The real number system and its subsystems. Sets and relations. Topics in geometry. Intended primarily for the student planning to teach in the elementary school or in a non-science area at the secondary school level.


161. Analysis I. Equations of the line; sets, functions; limits; derivatives; conic sections; the definite integral.

162. Analysis II. Integration; solid analytic geometry; series; vector analysis. Prerequisite: Math. 161.

163. Analysis III. Multiple integrals; partial derivatives; differential equations. Prerequisite: Math. 162.

164. Analysis IV. Further topics in differential equations; linear algebra. Prerequisite: Math. 163.


172. Analysis IIA. Math. 162 at a deeper theoretical level. Prerequisite: Math. 171.


200. Probability. Random variables, binomial, Poisson, and normal distributions; mathematical expectation, law of large numbers; central limit theorem; Markov chains. Prerequisite: Math. 163.

203. Denumerable Markov Chains. Their definition and classification; properties of transient and recurrent chains, interpretation of potential theory concepts, and derivation of the classical potential principles; applications. Prerequisites: Math. 200 and Math. 265.

207. Linear Programming and the Theory of Games. The basic properties of convex sets. The linear programming problem and its dual. Principal theorems; applications, in particular to finite games. Some infinite games. Prerequisite: Math. 162.

220. Mathematical Logic. Propositional calculus, functional calculus of first and higher order, the decision problem, consistency, completeness. (Philosophy 216 may be substituted for Mathematics 220 whenever the latter is not offered.) Omitted 1967-68.

230. Theory of Numbers. Divisibility, primes; congruences; Euler's $\phi$-function; quadratic residues and quadratic reciprocity; algebraic integers.


236. Introduction to Algebra I. An introduction to basic algebraic structures; groups, rings, fields. Application to specific examples; the integers, the rational numbers, the real numbers, polynomial rings, permutation groups.

237. Introduction to Algebra II. Linear algebra from an algebraic standpoint; field extensions. Prerequisite: Math. 236.

243. Introduction to Algebraic Topology. Classification of surfaces, knot theory, the fundamental group. Prerequisites: Math. 236 and Math. 265.

247. Theory of Sets. Sets, relations, mappings; equivalence, order; cardinals, ordinals, transfinite arithmetic, axiom of choice and equivalents.


250. Higher Geometry. Foundations of geometry; isometry, similarity, inversions; introduction to affine, projective, and various non-Euclidean geometries.


262. Advanced Calculus II. Distributions. Introduction to the calculus of variations and complex analysis. Cauchy's integral theorem, conformal mapping, calculus of residues, etc. Prerequisite: Math. 261.

265. Functions of a Real Variable I. Real number system; uniform continuity; mean value theorems; bounded variation; Riemann-Stieltjes integral; sequences of functions. Prerequisite: Math. 163.

266. Functions of a Real Variable II. Differentials; implicit functions, functional dependence; transformations of multiple integrals; arc length, surface area; differential forms, vector analysis. Prerequisite: Math. 265.


268. Orthogonal Functions and Fourier Series. Orthogonal functions, Sturm-Liouville equations; integral operators, Dirchlet kernel, Fourier series, Gibbs phenomenon; generalized functions; Legendre polynomials, Bessel functions; heat and temperature, harmonic functions, waves and vibrations; Fourier integral. Prerequisite: Math. 265 or 267. Omitted 1967-68


291. Reading Course in Mathematics. Special work, arranged individually. Consent of the department required.

295. Sr. Seminar I. Required of senior concentrators.

296. Sr. Seminar II. Cont. of Math. 295 (prerequisite).

436. Abstract Algebra I. Basic algebraic structures, including semi-groups, groups, rings, fields, vector spaces, modules, linear algebras, lattices.

437. Abstract Algebra II. Rings of endomorphisms of abelian groups, multilinear algebras, exterior algebras, Galois theory. Prerequisite: Math. 436.


A Bachelor of Arts program with a concentration in music is offered by the College of Arts and Science in cooperation with the Eastman School of Music. Students planning to pursue the Bachelor of Arts degree in music must be auditioned and accepted by the Eastman School of Music.

Practice facilities are available on the River Campus to all students who are enrolled in applied music. Practice rooms supplied with pianos are located in the Women's Gymnasium and the Men's Dining Center. Students enrolled in degree courses in music are charged a practice room fee for the opportunity given to them to reserve practice facilities.

In addition to fulfilling the requirements for the Bachelor of Arts degree, students are required to take sixteen courses in music. A synopsis of a typical program is given below.

Students interested in being certified to teach music in New York State in addition to receiving the B.A. degree with a major in music can follow a slightly modified program which will include an overload for four semesters or two extra summers. It is necessary to plan this program during the freshman year with the advice of the Director of Music for the River Campus.

With instructor's permission, music concentrators may enroll in any course listed in the Official Bulletin of The Eastman School of Music.

**FIRST YEAR**
1. Applied Music
2. 101 Theory
3. English Requirement
4. Group III (Lab)  
   Physical Education

**SECOND YEAR**
1. Applied Music
2. 111 Theory
3. Group II
4. Group III  
   Physical Education

**THIRD YEAR**
1. Applied Music
2. Music Elective
3. Group II
4. Elective (College of Arts and Science)

**FOURTH YEAR**
1. Applied Music
2. Music Elective
3. Elective (College of Arts and Science)
4. Elective (College of Arts and Science)
Courses offered by the College of Arts and Science

The courses listed below are not open to students who are concentrating in music.


Music 103. Introduction to the Literature of Music I. This course and its sequel, Music 104, aim to introduce the student to the subject of Western music through analysis of selected masterpieces of that art. It is devoted to the development of music from early Christian times until 1830 with special attention being given to the Renaissance, Baroque and Classical periods in their relationship to the cultural and social forces of the times. A knowledge of the fundamentals of music is prerequisite.

Music 104. Introduction to the Literature of Music II. Development of music during the Romantic and Modern periods. Correlation between music and the other arts is given special consideration. A knowledge of the fundamentals of music is prerequisite.

Courses offered by the Eastman School of Music

The courses listed below are open to all students of the College of Arts and Science as electives with the approval of the Director of Music on the River Campus and the permission of the instructor.

Courses taught at the River Campus

Theory 101. First-Year Theory I. The melodic, harmonic and rhythmic elements of music. The four types of triads; intervals, keys, scales, cadences, notation, rhythmic reading, sight-singing, keyboard harmony, melodic and harmonic dictation.—Five hours a week.

Theory 102. First-Year Theory II. Continuation. Dominant seventh chord, model scales, key relationship, modulations, transposition, four-part writing, and two-part counterpoint. Rhythmic reading, sight-singing, keyboard harmony, melodic and harmonic dictation continuing. Prerequisite: Theory 101.—Five hours a week.

Theory 111. Second-Year Theory I. Two-, three-, and four-part music of J. S. Bach and his contemporaries. Analysis, part-writing, practical application at the piano, and dictation. Harmonic and formal analysis of music by K. P. E. Bach, Haydn, Mozart, and Beethoven. Writing includes chorale harmonization, chorale-preludes, a two-part invention, recitatives, piano accompaniments for folk songs, and three-, and four-part vocal arrangements. Prerequisite: Theory 101, 102.—Five hours a week.

Theory 112. Second-Year Theory II. A continuation of Theory 111. Prerequisite: Theory 111.—Five hours a week.

Theory 131. Styles I. Technical analysis of works of the late eighteenth- and nineteenth-century composers with written assignments in the styles under consideration. Prerequisite: Theory 112.—3 credit hours.

Theory 132. Styles II. Continuation of Theory 131. Styles of twentieth-century American and European composers. Prerequisite: Theory 131.—3 credit hours.

Counterpoint 101. Modal Counterpoint I. Modal counterpoint of the sixteenth century; the motet and the Mass. Writing in up to three voices. Prerequisite: Theory 112. To receive credit, Counterpoint 102 must be completed.—3 credit hours.

Counterpoint 102. Modal Counterpoint II. Continuation of Counterpoint 101. Writing in four and five voices. Prerequisite: Counterpoint 101.—3 credit hours.

Orchestration 201. Fundamentals of Orchestration I. Instruments of the orchestra; practical scoring for individual choirs.—2 credit hours.

Courses taught at the Eastman School of Music

Courses listed below may be taken at the Eastman School of Music. Credit will be awarded according to the system used at the Eastman School of Music (four credit hours being equivalent to one course in the College of Arts and Science). However, for students who are not concentrating in music, the first two 3 credit courses are given full course credit; music concentrators receive full course credit for four 3 credit courses.

Theory 131. Styles I. Technical analysis of works of the late eighteenth- and nineteenth-century composers with written assignments in the styles under consideration. Prerequisite: Theory 112.—3 credit hours.

Theory 132. Styles II. Continuation of Theory 131. Styles of twentieth-century American and European composers. Prerequisite: Theory 131.—3 credit hours.

Counterpoint 101. Modal Counterpoint I. Modal counterpoint of the sixteenth century; the motet and the Mass. Writing in up to three voices. Prerequisite: Theory 112. To receive credit, Counterpoint 102 must be completed.—3 credit hours.

Counterpoint 102. Modal Counterpoint II. Continuation of Counterpoint 101. Writing in four and five voices. Prerequisite: Counterpoint 101.—3 credit hours.

Orchestration 201. Fundamentals of Orchestration I. Instruments of the orchestra; practical scoring for individual choirs.—2 credit hours.
Orchestration 202. Fundamentals of Orchestration II. Continuation of 201. Scoring for chamber and full orchestra. Prerequisite: Orchestration 201.-2 credit hours.

History 101. Historical Survey I. A general consideration of Western civilization from antiquity to the present with special emphasis upon the development of Western musical forms and styles.-3 credit hours.

History 102. Historical Survey II. Continuation of 101.-3 credit hours.

Music Literature 101. Collegium Musicum. Discussion and informal performance of music from the beginning of the Christian era to the time of Bach. Guest artists and lectures presented. Student assignments and projects under supervision. (Meets one evening a week).-2 credit hours.

Music Literature 102. Collegium Musicum. Continuation of 101. From the pre-classic period to the present.-2 credit hours.

Music Literature 211. Piano Literature I. Analysis and performance of keyboard music from the pre-piano period to Beethoven, special attention to the piano sonata and other characteristic forms. Primarily for majors in piano, composition, or history of music.-2 credit hours.

Music Literature 212. Piano Literature II. Continuation of 211. From the Romantic Period to the present.-2 credit hours.

Ensemble 111. Eastman School Chorus. A cappella literature and larger works for chorus and orchestra.

Ensemble 112. Eastman School Chorus. A continuation of Ensemble 111.—No credit.

Composition 101. Fundamentals of Composition. The smaller forms for piano, voice, or solo instruments.—2 credit hours.

Composition 102. Fundamentals of Composition. Continuation of 101. Prerequisite: Composition 101.—2 credit hours.

Composition 221. Composition for Non-majors. Survey of musical forms. Outside written assignments in all forms.—2 credit hours.

Composition 222. Composition for Non-majors. Continuation of 221.—2 credit hours.

Conducting 211. Elective Elementary Conducting. Basic baton technique, score-reading, transpositions, and fundamental conductorial technique as applied to orchestral, vocal and chamber music. To receive credit for Conducting 211, Conducting 212 must be completed satisfactorily.—1 credit hour.

Conducting 212. Elective Elementary Conducting. Continuation of Conducting 211.—1 credit hour.

With the approval of the Director of Music on the River Campus, it is possible for students with adequate musical background to enroll in any other music course offered by the Eastman School of Music.

APPLIED MUSIC

The opportunity exists for students who are non-majors to enroll in applied music at the Eastman School of Music under either of the categories listed below:

1. Credit lessons

A student who has had previous musical training may enroll in instrumental or voice lessons on a collegiate level and have the grade and credit for this work entered on his academic record. A full year’s work (two semesters) must be completed successfully in order to earn the equivalent of one course credit in the College. Credit for no more than two courses may be counted towards a degree by non-music majors. Applied music taken in addition to a normal four-course program is not considered an overload, and there is no extra tuition charge.

Students previously enrolled in applied music are required to list the course by instrument and name of instructor on the Program Approval Form, e.g., Piano—Andal.

Auditions are required for students who are registering for Applied Music as an elective for the first time. Because the Eastman School of Music can accept only a limited number, preference will be given to more advanced students.

Freshmen are given the opportunity to audition during the Summer Orientation Program or during Freshman Week. A music interest card is included in the Summer Orientation mailing. Upperclassmen may obtain Applied Music request forms at the Program Advising Office, Morey Hall.

Audition appointments are made at the Music Office, Todd Union.

2. Non-credit lessons

It is possible for a limited number of students to take lessons without credit. These may be arranged independently by enrolling directly with the Preparatory Department of the Eastman School of Music. Since the cost of this type of instruction is not included in the regular college tuition, student will be billed directly by the Eastman School. College grades will not be allowed for this work under any circumstances, nor will any entry regarding this work be made on the student’s permanent record.
The Naval Science sequence consists of work in each of the eight undergraduate terms. The College of Arts and Science grants three courses of credit for work in Naval Science toward the B.A. and the B.S.

In addition to the requirements for enrollment in the NROTC program and the requirements for commission discussed in the Officer Candidate Programs section of the catalogue, the following specific requirements must be met:

1) By the end of the sophomore year, every regular NROTC student must have satisfactorily completed one year of college physics and one year of college mathematics. Contract students are encouraged but not required to take physics.

2) All Contract students must have completed mathematics through trigonometry by the end of the sophomore year. Contract students who have completed the mathematics requirements in secondary school need not take more mathematics unless it is required by the courses they are pursuing in the University.

3) Every student must achieve proficiency in written and oral expression represented by successful completion of the English requirement of the College.

4) Physical training will be taken by every student.

5) Each student shall take instruction in swimming and qualify as a First Class Swimmer.
101. Naval Orientation. A study of the basic customs and traditions of the Navy and of functions of the Naval Establishment and its components in the defense of the nation; the duties and responsibilities of a line officer in the Naval Service.*

102. Evolution of Sea Power. Influence of sea power upon global history in general, and upon the world balance of power in particular, with especial reference to the role of sea power in maintaining the peace.*

151. Naval Weapons. Fundamentals of naval weapons and weapons systems, stressing basic principles and their application to control of the seas.*

221. Navigation. Theory and techniques of the art of navigation, including dead reckoning, piloting, electronic and celestial navigation.*

222. Naval Operations. Naval operations in general at the junior watch officer level, including rules of the nautical road, OOD and CIC operational duties, and maneuvering board. Capabilities, restrictions, and security of naval communications. Radar navigation, polar operations and operational meteorology.*

232. Principles and Problems of Naval Leadership. Principles and problems of human relations, the principles of management, and the responsibilities of the junior officer in his role as a Division Officer. Topics include: concepts of leadership; principles of interviewing; the functions of management; recent developments in management; concept of command; the Uniform Code of Military Justice; and other similar topics.*

233. Naval Machinery Nuclear Power and Ship Stability. Basic principles relating to the transformation of energy from fuel, including nuclear fuel, to heat and power. Application of steam, internal combustion and other prime movers to propulsion and auxiliary uses in naval vessels and aircraft. Principles of ship stability and buoyancy and their application to the problems of damage control.*


262. Modern Basic Strategy and Tactics. Modern military tactical principles and techniques, especially on the small unit level, and development of a general understanding of strategy. Omitted 1967-68

271. Amphibious Warfare. Concept, history, development and techniques of amphibious warfare; critical analysis of selected amphibious operations.*

272. Amphibious Planning, Naval Justice and Leadership. Planning in the amphibious operation, the administration of naval justice, and principles and techniques of leadership.*

*Three lecture recitations. One two hour practical instruction period a week.
Philosophy

Lewis White Beck, Ph.D. (Duke) . . . Burbank Professor of Moral and Intellectual Philosophy
Henry E. Kyburg, Jr., Ph.D. (Columbia) . . . Professor of Philosophy
Murray Jerome Stolnitz, Ph.D. (Harvard) . . . Professor of Philosophy
Richard Taylor, Ph.D. (Brown) . . . Professor of Philosophy and Chairman of the Department
Colin Murray Turbayne, Ph.D. (Pennsylvania) . . . Professor of Philosophy
Carl Ginet, Ph.D. (Cornell) . . . Associate Professor of Philosophy
Robert Lawrence Holmes, Ph.D. (Michigan) . . . Associate Professor of Philosophy
Keith Lehrer, Ph.D. (Brown) . . . Associate Professor of Philosophy
Rolf A. Eberle, Ph.D. (UCLA) . . . Assistant Professor of Philosophy
Alfred Harrison Jones, Ph.D. (Cornell) . . . Professor Emeritus of Philosophy

The Department of Philosophy offers a program leading to the B.A. degree and, at the graduate level, to the M.A. and Ph.D. degrees.

A program of concentration for the B.A. degree will normally consist of seven courses beyond Philosophy 101. Included in these will be Philosophy 102, 103, 104, and either 107 or 216.

The remaining courses to make up the number of ten for the concentration may be drawn from advanced courses in any other field of the humanities and social sciences and most fields of the natural sciences. (English, Foreign and Comparative Literature, History, Languages and Linguistics, Political Science, Anthropology, Economics, Biology, Physics, Psychology, and Mathematics are the fields most often chosen.)

Colloquia for all seniors concentrating in Philosophy are held throughout the academic year.

They are planned to help students integrate their work in courses and to prepare them for the comprehensive examinations.

The following courses in Philosophy may be taken to meet some of the distribution requirements in the Humanities: 103, 104, and 211. Others may be taken to fulfill the distribution requirements in the Social Sciences.

Students who wish to do advanced work in Philosophy are strongly urged to enter the Honors Program in Philosophy. In their programs, Philosophy 303 may be substituted for Philosophy 103, but they must take Philosophy 104 and Philosophy 107 or Philosophy 216 in addition to four Honors seminars in Philosophy.

Qualified concentrators in Philosophy may be approved by the Department for the Junior year abroad.
101. Introduction to Philosophy. Critical examination of some of the central beliefs and methods of thinking in common sense, science, and religion. Topics include: the existence and nature of God; why is knowledge gained by the scientific method reliable? Can science decide questions of value? Classroom discussion and conference sections.

102. Ethics. Examination of the principles of duty and right conduct which are applied in making moral choices, and of the leading conceptions of the good life in ethical philosophy. The religious, psychological, sociological, and philosophical approaches to morality contrasted. Moral conflict in literature, the drama, and everyday life. Classroom discussion and conference sections.

103. History of Ancient Philosophy. An introduction to ancient philosophy through a study of important philosophers from the sixth century B.C. to the third century B.C. and of their significance for the problems of today. Readings in the Pre-Socratics, Plato, Aristotle, Epicureans and Stoics.

104. History of Modern Philosophy. An introduction to modern philosophy through a study of important philosophers from the seventeenth to the end of the eighteenth century, and of their position in the cultural history of the West.

107. Logic I. An introduction to symbolic logic. Definition of some semantical notions (truth, consequence, etc.) as well as some syntactical notions (provability, derivability, etc.). Formalization of arguments. Theorems of first-order logic with and without identity.

108. Philosophy of Mind. An historical and philosophical study of some problems in the philosophy of mind, including such topics as: the nature of mental phenomena, the relation between body and mind, our knowledge of other minds, the concept of a person, and the privacy of mental states. Prerequisite: Philosophy 101 or permission of the instructor.

204. History of Modern Philosophy II. A continuation of 104, studying the leading philosophers of Europe in the nineteenth and early twentieth centuries. Philosophy 104 is not a prerequisite to 204; but students who can take only one of the two are advised to elect 104.

205. Recent and Contemporary Philosophy. A study of several of the most influential philosophers of the nineteenth and twentieth centuries; an introduction to contemporary views in philosophy. Prerequisite: Philosophy 104 or permission of the instructor.

Interrelations of Art, Literature and Philosophy. (See Fine Arts 215, 216)

211. Philosophy of Religion. A critical and systematic study of the main problems of religious thought today, such as the existence of God, religious knowledge, and the relation of religion and culture.

216. Logic II. Metatheory of first-order logic (Gödel’s completeness theorem, Löwenheim-Skolem theorem, etc.). Further topics to be selected by the instructor. Prerequisite: Philosophy 107 or permission of instructor.

221. Ethics and Society. The application of ethical theory to concrete problems of moral choice in society. The relation between morality and the law, the theory of punishment, the nature of human rights. Moral analysis of specific decisions in government and the law which have been of historic importance. Prerequisite: Philosophy 102

Omitted 1967-68

237. Social and Political Philosophy. A philosophical and historical inquiry into various attempts that have been made to expound and justify the leading social and political theories. The works of philosophers such as Plato, Aristotle, Hobbes, Locke, Hume, and Marx will be examined and critically evaluated. Omitted 1967-68

241. Aesthetics. Examination of the experience of appreciating beauty, both in nature and art; critical analysis of leading theories of the creation of art and the structure and value of works of art, e.g., formalism, expressionism, religious and moral influence; the semantic problem of "meaning" of art, particularly the difference between scientific and poetic uses of language. Concrete reference to specific works of art in the various media—painting, music, poetry, drama, etc.

252. Philosophy of Science. An examination of the general characteristics of scientific formal systems, beginning with the pervasive formal systems of logic and mathematics, and including parts of specialized systems representing geometry, physics, biology, psychology, and the social sciences. Special emphasis will be placed on the role played by theoretical terms in these systems, and on the relation between more abstract and more concrete terms. Prerequisite: Philosophy 107 or permission of instructor.

258. Metaphysics. The nature of a person, the relations of mind and matter, men and machines; goal-directed behavior, voluntarism and self-originated behavior; freedom, determinism and fatalism; problems of time; the existence of God. Prerequisite: Two courses in philosophy or permission of instructor.

Mathematical Logic. (See Mathematics 220).
281. Philosophy of Law. The nature, origins, justification and interrelationships of legal systems; law and morality; natural vs. positive law; the idea of justice, and the requirements of justice and utility. 
Omitted 1967-68

282. The Theory of Knowledge. A study of the character of human knowledge. Main emphasis will be placed on problems such as: sense perception, truth, belief, and necessary knowledge. 
Omitted 1967-68


289. Reading Course. The reading of philosophical literature under guidance. Planned primarily in the interest of seniors majoring in philosophy. Other students may register only with the consent of the chairman of the Department of Philosophy.

There is no prerequisite for Philosophy 303. Before taking any other Philosophy Honors seminars students should have completed Philosophy 101 or 104, except that 303 may be accepted as a prerequisite to 304.

303. Plato. Analysis of the early and middle dialogues, especially the Republic, with attention to the ethical and political doctrines. The influence of Plato upon Western thought and culture, and contemporary criticisms of his philosophy.
Omitted 1967-68

304. Aristotle. Readings in the principal works; philosophical and historical studies. 
Omitted 1967-68

306. Recent Philosophy. Studies of some of the chief philosophical movements and their leading representatives. 
Omitted 1967-68

310. The Structure and Scope of Knowledge. An introduction to theories of knowledge, with special emphasis upon the various views of the criteria and limits of knowledge. 

315. Language and Philosophy. A study and evaluation of the claims of contemporary linguistic philosophers that a careful analysis of language will enable us to either solve or dissolve the classical problems of philosophy.

320. The Theory of Value. Common philosophical problems in the study of values in art, morals, religion, economics; distinction between value and factual judgments, and the possibility of confirming value judgments in these fields. Readings in important recent theorists of value.

330. Existential and Analytical Philosophy. Confrontation of two leading philosophical schools and attitudes, existentialism and analytical (linguistic) philosophy, through intensive study of the philosophical works of Jean-Paul Sartre and A. J. Ayer. 
Omitted 1967-68

340. Philosophy of History. Certain explicit theories of history such as those of Marx, Spengler, Toynbee, Niebuhr and others, with a consideration of problems of historical knowledge and the views implicit in varieties of historical writing. 
Omitted 1967-68

341. Aesthetics. Analysis of the problems of "truth" and "knowledge" in art: in what sense, if any, does art convey "truth" or embody "knowledge"? What is the relation between "artistic truth" and the value or greatness of the work of art? How does artistic discourse differ from scientific discourse? Concrete reference to specific works of art, particularly in literature. 
Omitted 1967-68

350. Concepts of Mind. Metaphysical and psychological problems of the relation of mind and consciousness to bodily conditions; foundations of psychological theory; the concept of human freedom, and philosophical disputes about immortality. The study is based on important works in philosophy and psychology from Aristotle to Gilbert Ryle.

352. Philosophy of Science. A study of the methodology of science, and the nature of scientific proof and reasoning, designed to explain the significance of science in the modern world. No specific knowledge of science is presupposed. 
Omitted 1967-68

360. American Philosophy. European and American cultural influences on American philosophical thought; philosophical tradition and innovation in American culture; the problems of philosophy as dealt with by leading American thinkers of the past two centuries. 
Omitted 1967-68

Omitted 1967-68
Paul E. Bitgood, M.Ed. (Springfield)...Professor of Physical Education
Robert J. Dewey, M.A. (Colgate)...Professor of Physical Education and Chairman of the Department
Clarence L. Aikey, M.S. (Ithaca)...Associate Professor of Physical Education
Lyle D. Brown, M.S. (Ithaca)...Associate Professor of Physical Education
Sylvia Fabricant, M.S. (Wellesley)...Associate Professor of Physical Education and Associate Chairman of the Department
Bertha Daniel Fairbanks, M.S. (Colorado)...Associate Professor of Physical Education
David R. Ocorr, M.A. (Columbia)...Associate Professor of Physical Education
Everett J. Phillips, M.S. (Springfield)...Associate Professor of Physical Education
Donald C. Smith, M.Ed. (Springfield)...Associate Professor of Physical Education
William L. Boomer, M.Ed. (Rochester)...Assistant Professor of Physical Education
Jessie Disston Mason, (Bouvé Boston School)...Assistant Professor of Physical Education
Joanne May Baker, B.S. (Illinois State)...Instructor in Physical Education
Marjorie Jane Medd, B.S. (Tufts)...Instructor in Physical Education
John B. Robertson, B.S. (Springfield)...Instructor in Physical Education
Louis A. Alexander, A.M. (Columbia)...Professor Emeritus of Physical Education
Elmer H. Burnham, B.S.P.E. (Notre Dame)...Professor Emeritus of Physical Education
Roman L. Speegle, M.A. (Columbia)...Professor Emeritus of Physical Education
Merle Spurrier, B.A. (Ohio Wesleyan)...Professor Emeritus of Physical Education
FOR MEN

The aim of the department is to provide physical activity and recreation for the students, to stimulate interest in their general well-being, develop skills in a variety of individual activities, encourage participation in intramural and intercollegiate athletics, and stress in the required program the games and sports that have a high carry-over value for after class hours as well as after college years. Each instructor takes an individual interest in counseling students.

A minimum of one year of required Physical Education must be completed before a student is allowed to substitute Studio Arts Dance—with the permission of the Chairman of the Department.

11. Physical Education I. Required of all freshmen. Instruction is provided in swimming, tennis, handball, basketball, volleyball, squash, golf, wrestling, and weight training.—No credit.

13. Physical Education II. A continuation of Physical Education I.—No credit.

21. Physical Education I. Required of all sophomores. Each student must demonstrate satisfactory ability in handball, tennis, squash racquets, and swimming. More advanced instruction is provided in the above activities as well as the following: basketball, volleyball, golf, wrestling and badminton.—No credit.

23. Physical Education II. A continuation of Physical Education I.—No credit.

FOR WOMEN

The aim of the department is to present a program that will develop an appreciation of the value of intelligent participation in motor activity; to teach skills and encourage interest in these activities; to direct an intramural program, which includes a wide variety of interests; to promote the maintenance of good health habits.

Three hours a week are required during the freshman and sophomore years. The activities are taught for a period of eight weeks during four seasons: Fall, Winter I, Winter II, and Spring. Activities are offered from the following: American Red Cross Life Saving, archery, badminton, basketball, body conditioning, diving, fencing, field hockey, folk dance, golf, lacrosse, modern dance, skiing, softball, squash, swimming, tennis, trampoline, volleyball, water safety instructor's training.

Those students interested in taking a course in Studio Arts Dance in the College of Arts and Science may substitute this for Physical Education providing they have the permission of the Associate Chairman and have completed a semester of required Physical Education.

12. Physical Education I. Each girl is required to take a season of fundamentals of movement or fundamentals of dance. A safety proficiency swimming test is given prior to the start of the fall season. Those who do not qualify are expected to enroll for one season of swimming. Activities for all other students are on an elective basis.—No credit.

14. Physical Education II. A continuation of 12.—No credit.

22. Physical Education I. Election from above list of activities.—No credit.

24. Physical Education II. A continuation of 22.—No credit.
Physics and Astronomy

W. Parker Alford, PH.D. (Princeton) ... Professor of Physics
David L. Dexter, PH.D. (Wisconsin) ... Professor of Physics
Harry W. Fullbright, PH.D. (Washington) ... Professor of Physics
Harry E. Gove, PH.D. (Massachusetts Institute of Technology), Professor of Physics and Director, Nuclear Structure Research Laboratory
Everett M. Hafner, PH.D. (Rochester) ... Professor of Physics
Edward H. Jacobsen, PH.D. (Massachusetts Institute of Technology) ... Professor of Physics
Morton F. Kaplan, PH.D. (Rochester) ... Professor of Physics and Chairman of the Department
Leonard Mandel, PH.D. (London) ... Professor of Physics
Robert E. Marshak, PH.D. (Cornell) ... Distinguished University Professor of Physics
Elliott W. Montroll, PH.D. (Pittsburgh) ... Albert Einstein Professor of Physics
Susumu Okubo, PH.D. (Rochester) ... Professor of Physics
Malcolm P. Savedoff, PH.D. (Princeton) ... Professor of Astronomy
Stewart Sharpless, PH.D. (Chicago) ... Professor of Astronomy and Director, C. E. Kenneth Mees Observatory
John Schiffer, PH.D. (Yale) ... Visiting Professor of Physics
Emil Wolf, PH.D. (Bristol) D.S. (Edinburgh) ... Professor of Physics
Karl H. Bennemann, PH.D. (Illinois) ... Associate Professor of Physics
Theodore G. Castner, PH.D. (Illinois) ... Associate Professor of Physics
J. G. M. Duthie, PH.D. (Bristol) ... Associate Professor of Physics
H. Lawrence Helfer, PH.D. (Chicago) ... Associate Professor of Astronomy
Robert S. Knox, PH.D. (Rochester) ... Associate Professor of Physics
Adrian C. Melissinos, PH.D. (Massachusetts Institute of Technology) ... Associate Professor of Physics
Ronald D. Parks, PH.D. (Stanford) ... Associate Professor of Physics
Jerome L. Rosen, PH.D. (Columbia) ... Associate Professor of Physics
Edward H. Thorndike, PH.D. (Harvard) ... Associate Professor of Physics
T. W. B. Kibble, PH.D. (Edinburgh) ... Visiting Senior Research Associate in Physics
Vishnu Sahai Mathur, PH.D. (Delhi) ... Visiting Senior Research Associate in Physics
K. H. Purser, PH.D. (Canberra) ... Senior Research Associate in Physics
Taiji Yamanouchi, PH.D. (Rochester) ... Senior Research Associate in Physics and Associate Professor of Physics
Robert L. Burman, PH.D. (Illinois) ... Assistant Professor of Physics
Douglas Cline, PH.D. (Manchester) ... Assistant Professor of Physics
Joseph H. Eberly, PH.D. (Stanford) ... Assistant Professor of Physics
Gerard G. Emch, PH.D. (Geneva) ... Assistant Professor of Physics
Thomas Ferbel, PH.D. (Yale) ... Assistant Professor of Physics
Narendra Swarup Goel, PH.D. (Maryland) ... Assistant Professor of Physics
Carl Richard Hagen, Ph.D. (Massachusetts Institute of Technology)...Assistant Professor of Physics
Daniel S. Koltun, Ph.D. (Princeton)...Assistant Professor of Physics
Frederick Lobkowicz, Ph.D. (Edg. Tech. Hochschule Zurich)...Assistant Professor of Physics
M. Emery Nordberg, Ph.D. (California Institute of Technology)...Assistant Professor of Physics
Conrad R. Sturch, Ph.D. (California)...Assistant Professor of Astronomy
Hugh Van Horn, Ph.D. (Cornell)...Assistant Professor of Astronomy
Frank A. Blood, Jr. Ph.D. (Case Institute of Technology)...Research Associate in Physics
Jeremiah H. Cronin, Ph.D. (Chicago)...Research Associate in Physics
Tapaskumar Das, Ph.D. (Pennsylvania)...Research Associate in Physics
Clifford L. Deney, Ph.D. (Louisiana State)...Research Associate in Physics and *Assistant Professor of Physics
Brian R. Dennis, Ph.D. (Leeds)...Research Associate in Physics
Bernard Diu, DOCTORAT d'ETAT (Paris)...Visiting Research Associate in Physics
Richard A. Elliott, Ph.D. (British Columbia)...Research Associate in Physics
George D. Gaspari, Ph.D. (California–Riverside)...Research Associate and *Assistant Professor of Physics
Bruno Gobbi, Ph.D. (Swiss Federal Institute of Technology)...Research Associate in Physics
Richard H. Herman, Ph.D. (Maryland)...Research Associate in Physics
Loke Soo Hsu, Ph.D. (Rochester)...Research Associate in Physics
Koji Ikkawa, Ph.D. (Tokyo)...Research Associate in Physics
Toshitake Kohmura, Ph.D. (Tokyo)...Research Associate in Physics
Katja Lakatos, Ph.D. (Cornell)...Research Associate in Physics
Merlyn Krick, Ph.D. (Pennsylvania)...Research Associate in Physics
James F. Marshall, Ph.D. (Rochester)...Research Associate in Physics
Chandra Lal Mehta, Ph.D. (Rochester)...Research Associate and *Assistant Professor of Physics
R. G. Mills, Ph.D. (Adelaide)...Research Associate in Physics
Yorikyo Nagashima, Ph.D. (Tokyo)...Research Associate in Physics
Poul Oleseikk, Ph.D. (Copenhagen)...Research Associate in Physics
J. C. Parikh, Ph.D. (Chicago)...Research Associate in Physics
David J. Rowe, Ph.D. (Oxford, St. John's College)...Research Associate in Physics
John J. Schwartz, Ph.D. (Rochester)...Research Associate in Physics
Vladimir Shkolnik, Ph.D. (Minnesota)...Research Associate in Physics
Wei-Mei Shyu, Ph.D. (California–Riverside)...Research Associate in Physics
Paul Slattery, Ph.D. (Yale)...Research Associate in Physics
Alan A. Wehmann, Ph.D. (Harvard)...Research Associate in Physics
Haruo Yuta, Ph.D. (Pennsylvania)...Research Associate in Physics
Howard L. Foote, A.B. (Cornell)...Assistant to the Chairman
Alfred L. Green, BBA. (Niagara)...Assistant to the Chairman
Sidney W. Barnes, Ph.D. (Cornell)...Professor Emeritus of Physics
Herbert R. Childs, A.B. (Rochester)...Associate Professor Emeritus of Physics

*Part-time
The Department of Physics and Astronomy offers programs leading to the B.A., B.S., M.S. (Plan A or Plan B) and Ph.D. degrees in the fields of physics and astronomy. The following description of requirements refers particularly to the B.A. and B.S. programs in physics; the corresponding astronomy programs are described on page 130. The B.A. and B.S. degrees provide adequate preparation for most graduate schools; the B.S. program, however, provides a more intensive study of physics, while the B.A. program should be elected only by students desiring a broader academic experience.

Students are not formally accepted as physics (or astronomy) majors until their junior year. Freshman and sophomore students wishing eventually to major in physics (or astronomy) are urged to express their intent to the Department so as to be assigned a departmental adviser. Through his contact with the departmental adviser the student will be advised as to specific deficiencies he should make up, or to concentrate on some topic well suited to his aptitudes; specifically, if the prospects of his acceptance as a physics major in his junior year are weak, he will be informed in due time to seek some other major field. Clearly, however, the choice of majoring in physics (or astronomy) is the student's own responsibility contingent upon departmental approval.

The requirements for the B.S. and B.A. degree are the ones set forth by the College of Arts and Science in addition to specific departmental requirements. A synopsis of the two programs indicating how the general as well as departmental requirements may be met is given below. It will be noticed that the first two years of both programs are identical.

The introductory sequence of physics courses consists of four terms of physics: Physics 115, 116, 125 and 126, or Physics 117, 118, 127 and 128. The last four courses cover the same material as the first four, but at a deeper physical and mathematical level; students can be admitted to these courses at any term, but participation in these courses is only by departmental and instructor's approval. Similarly four terms of mathematics are required in the freshman and sophomore year and they consist of Mathematics 161, 162, 163 and 164 or Mathematics 171, 172, 173 and 174. Two additional introductory courses in the natural sciences (Group III) are required during either the freshman or sophomore year.
B.S. Program

In addition to the general and first two year requirements, the following departmental requirements must be fulfilled. In the junior year, four terms of physics must be taken, Physics 235, 236, 237 and 238, as well as two terms of advanced mathematics. Mathematics 267 and 268 are strongly recommended, but ME 201 and 202 may be substituted, or any mathematics course at the 200 level or higher. A laboratory course in electronics (EE 221) or physical chemistry (Chem. 251) is also required. In the senior year an additional six terms of physics must be taken, including two terms of laboratory work. Physics 243, 244, 245, 246 and 247, 248 are recommended.

The program of study should be planned by the student in consultation with the departmental adviser at the end of his sophomore year and is subject to departmental approval. A synopsis of a typical B.S. program is given below.

**FIRST YEAR**
1. Physics 115 Physics I
   Physics 117 Physics IA
2. Math. 161 Analysis I
3. English Requirement
4. Group III
   Physical Education

**SECOND YEAR**
1. Physics 125 Physics II
   Physics 127 Physics IIA
2. Math. 163 Analysis II
3. Foreign Language (Group I)*
4. Group II
   Physical Education

**THIRD YEAR**
1. Physics 235 Theor. Phys. IA
2. Physics 237 Mod. Phys. IA
3. Math. 267**
4. EE 221 or Chem. 251
5. Elective

**FOURTH YEAR**
1. Physics 245 Theor. Phys. IIA
2. Physics 247 Mod. Phys. IIA
3. Physics 243 Senior Lab I
4. Elective
5. Elective

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*Most students can complete their requirements in foreign languages with one term of college work. Students who need more than one term must take the necessary courses in place of electives.

**ME 201-202 may be substituted**
B.A. Program

Aside from an introductory sequence at least six advanced courses in physics are required for a B.A. concentration. The Department recommends Physics 235, 236, 237, 238 and either Physics 245 and 246 or Physics 247 and 248 as the minimum program. Substitutions can be made with the approval of the departmental adviser.

**FIRST YEAR**
Same as B.S. Program

**SECOND YEAR**
Same as B.S. Program

**THIRD YEAR**

1. Physics 235 Theor. Phys. 1A
2. Physics 237 Mod. Phys. 1A
3. Math. 267 Complex Var.\(^2\)
4. Group I
5. Elective

1. Physics 236 Theor. Phys. 1B
2. Physics 238 Mod. Phys. 1B
3. Math. 268 Part. Diff. Eq.\(^2\)
4. Group II
5. Elective

**FOURTH YEAR**

1. Physics 245 Theor. Phys. IIA
2. Group III (Advanced)\(^3\)
3. Group II
4. Elective
5. Elective

1. Physics 246 Theor. Phys. IIB
2. Group III (Advanced)\(^3\)
3. Elective
4. Elective
5. Elective

\(^1\)Substitutions may be made subject to departmental approval.

\(^2\)ME201 and ME202 may be substituted or any other advanced course in Group III.

A B.A. concentration program must include at least four courses beyond the introductory level in fields related to physics. The Department recommends that two of these courses be mathematics.

All candidates for the B.A. in physics must take a comprehensive examination in the senior year. A synopsis of a typical B.A. program is given below:
ASTROPHYSICS

The description of programs in physics on page 150 generally applies as well to the program in astrophysics. Astronomy 111 and 112 is recommended for those students without an extensive prior knowledge of elementary astronomy. Aside from the introductory four-course sequences in physics and mathematics, the B.A. program must contain at least six courses from Group III related to astrophysics and must include Astronomy 231 and 232. In both the B.A. and B.S. programs, the chosen program of Group III (science) electives must be approved by the Department Chairman or his representative as constituting a coherent degree program. Ordinarily four physics courses above the 200 level are recommended in the B.A. program and three in the B.S. program for these electives.

A synopsis of a typical program leading to the B.S. degree is given below. Students planning to pursue graduate study in astronomy should elect the B.S. program; they are encouraged to take advantage of opportunities for reading or research by taking Astronomy 293 in their senior year. In planning their programs, students should remember that proficiency in French, German, or Russian is usually required by graduate schools.

FIRST YEAR
1. Physics 115 Physics I
   Physics 117 Physics IA
2. Math. 161 Analysis I
3. Astronomy 111*
4. English Requirement
   Physical Education

SECOND YEAR
1. Physics 125 Physics II
   Physics 127 Physics IIA
2. Math. 163 Analysis III
3. Foreign Language (Group I)*
4. Group I
   Physical Education

THIRD YEAR
1. Physics 235 Theor. Phys. IA
2. Physics 237 Mod. Phys. IA
3. Math. 267
4. Astronomy 231
   Elective

FOURTH YEAR
1. Physics 247 Mod. Phys. IIA
2. Group III*
   3. Group III**
   4. Elective
   5. Elective

1Astronomy 111, 112 is recommended for those students without an extensive prior knowledge of astronomy. Students with a prior knowledge may substitute a Group III elective.

**Most students can complete their requirements in foreign languages with one term of college work. Students who need more than one term must take the necessary courses in place of electives.

**The chosen Group III (science) electives must be approved by the Department Chairman or his representative as constituting a coherent degree program. Ordinarily three physics courses above the 200 level are recommended.
Even though it is possible for a student to obtain advanced standing, it has been found by previous experience that all entering students should follow the introductory physics sequence beginning with Physics 115 or Physics 117 depending on his preparation and aptitude.

The Department is currently offering part-time research assistantships to a limited number of qualified undergraduates during the academic year. Full-time summer assistantships are occasionally available.

The Department also offers the two following courses intended for students not concentrating in physics: Physics 101, 102, Physics 203. These courses cannot be counted towards physics or astronomy concentration.

PHYSICS

101. Survey Course in General Physics. I. An introduction to the primary phenomena and fundamental concepts of physics, including demonstrations. The subjects covered in the lectures are mechanics, heat, sound, electricity and magnetism, light, and atomic and nuclear physics. Calculus is not required. Two lectures, one recitation per week.

102. Survey Course in General Physics II. Continuation of Physics 101.

115. Physics I. The first year of a two year sequence. An introductory course covering topics in mechanics, wave motion, kinematic theory, and thermodynamics. Mathematics 161, 162 to be taken concurrently. Two lectures, two recitations a week. Laboratory in alternate weeks.


117. Physics IA. Covers the content of Physics 115 and 116 at a more intensive mathematical and physical level. Consent of the Department required. Three meetings a week. Laboratory in alternate weeks.

118. Physics IA Continuation of Physics 117.

125. Physics II. A continuation of Physics 115 and 116 covering topics in electromagnetism, circuit theory, geometrical and wave optics, and modern physics. Mathematics 163, 164 to be taken concurrently. Satisfactory performance in Physics 115 and 116 or 117 and 118 prerequisite. Two lectures, two recitations a week. Laboratory in alternate weeks.

126. Physics II Continuation of Physics 125.

127. Physics IIA. Continuation of Physics 117 and 118. Covers much of the content of Physics 125 and 126 in greater breadth and depth. Formulation of Maxwell's equations and application to static electric and magnetic fields. The wave equation, plane electromagnetic waves, simple radiating systems, diffraction and interference effects. Consent of the Department required. Three lectures, one recitation per week. Laboratory alternate weeks.

128. Physics IIB. Continuation of Physics 127.


221. Introduction to Quantum Mechanics and Atomic Structure. Includes the special theory of relativity, an introduction to quantum theory and solutions to the Schroedinger equation for simple atomic systems, quantum statistics and atomic spectroscopy. Prerequisite: Math. 164 and Physics 126. Taught by the Institute of Optics. Three lectures and one lab a week.

222. Introduction to the Theory of the Solid State. Includes a study of the energy band theory of solids, conduction in solids, thermal and photoelectric emission, semiconductors, dielectrics, crystalline imperfections, mechanical properties of solids, luminescence, and photoconductivity. Prerequisite: Optics 221. Taught by the Institute of Optics. Three lectures and one three-hour lab a week.

235. Theoretical Physics IA. Advanced Mechanics. Thermodynamics and introduction to statistical mechanics. A survey of thermodynamics, both from the classical and the statistical point of view. Covers the three laws of thermodynamics and some of their consequences, and introduces statistical mechanics. Satisfactory performance in Physics 125 and 126 or Physics 127 and 128 and Mathematics 163 and 164 prerequisite. Advanced Calculus to be taken concurrently.

236. Theoretical Physics IB. Advanced Mechanics. A continuation of Physics 235. Covers theory of small oscillations, the special theory of relativity, mechanics of continuous media, including elasticity and wave motion in solids and fluids. Physics 235 prerequisite. Advanced Calculus to be taken concurrently.

237. Modern Physics IA. Thermodynamics and introduction to statistical mechanics. A survey of thermodynamics, both from the classical and the statistical point of view. Covers the three laws of thermodynamics and some of their consequences, and introduces statistical mechanics. Satisfactory performance in Physics 125 and 126 or Physics 127 and 128 and Mathematics 163 and 164 prerequisite. Advanced Calculus to be taken concurrently.

238. Modern Physics IB. Introduction to wave mechanics. Covers the breakdown of classical theory, the quantum hypothesis of Planck and the Bohr theory of atomic phenomena. The DeBroglie hypothesis and Schroedinger's wave equation are developed and applied to atomic systems. Introductory laboratory in modern experimental methods accompanies the course. Physics 237 prerequisite. Advanced Calculus to be taken concurrently.

243. Senior Laboratory I. An advanced course in experimental physics, using techniques and principles of modern research. Introduces measurement and interpretation of measurements rather than construction of equipment. Experiments in atomic physics, nuclear physics and the solid state physics, including X-ray diffraction, nuclear resonance, beta- and gamma-spectra, nuclear reactions, electron polarization, Hall effect, superconductivity. Lectures cover topics on statistics, detector theory, electronic functional assemblies, scattering theory. Pre-
244. **Senior Laboratory II.** A continuation of Physics 243.—Two lectures and two laboratories each week.

245. **Theoretical Physics IIA. Electromagnetic Theory.** An advanced course emphasizing the field point of view. Electrostatic phenomena including the concepts of microscopic and macroscopic fields, solution of electrostatic boundary value problems, Maxwell’s equations and solutions to the wave equation. Discussion of electromagnetic fields and optical phenomena. Physics 235, 236. Advanced Calculus prerequisite.


261. **Physical Optics I.** (See Optics 261)

291. **Reading or Research in Physics.** Normally open to seniors majoring in Physics.

293. **Special Topics in Physics.** Selected topics offered when justified by sufficient interest.

**ASTRONOMY**

111. **Elementary Astronomy I.** Primarily a course designed to provide a general knowledge of the universe as well as some understanding of the techniques and logical methods by which such knowledge is obtained.—Three lectures, one laboratory each week.

112. **Elementary Astronomy II.** Continuation of 111.

231. **Intermediate Astronomy I.** Basic physical aspects of typically astronomical phenomena: stellar interiors, stellar atmospheres, inter-stellar medium and galactic structure, the solar system, selected topics in celestial mechanics, and vignettes of cosmological problems. Instrumentation and observational techniques used in modern astronomical research are also discussed. Prerequisites: Physics 125 and 126 or 127 and 128; Math 163, 164. Astronomy 111, 112 recommended but not required.

232. **Intermediate Astronomy II.** Continuation of 231.

291. **Reading or Research in Astronomy.** Normally open to seniors majoring in physics or astronomy.

293. **Special Topics in Astronomy.** Selected topics offered when justified by sufficient interest.
The Department of Political Science offers programs leading to the B.A. degree, the B.A. degree with honors and, at the graduate level, the M.A. and Ph.D. degrees.

Political Science 101 and 102 are normally prerequisites to all other courses in Political Science; however, exceptions to this rule may be made by the instructor of each course.

A program of concentration for the B.A. degree consists of seven courses in Political Science beyond 102. Of the seven, at least one must be chosen from each of groups A, B, and C. All students (including Honors) concentrating in Political Science are required to enroll in course 210.

The remaining three courses to make up ten in the concentration may be chosen from among advanced course offerings in one of the following related fields: Anthropology, Economics, History, Mathematics, Philosophy, Psychology, and Sociology. A student interested in a related field not here listed, should consult the department adviser.

Political Science 101 and 102 are required of all students enrolling in Political Science seminars in the Honors Program unless excused by the department adviser.


102. The American Political System. An analysis of the process of political conflict in the United States. Bargaining and coalition formation by power oriented actors are examined, and the student is introduced to a general analytical model as well as to contemporary research findings.

210. Scope and Methodology of Political Science. An examination of political science as a field of study. Emphasis will be placed upon scope, method, bibliography, and the relation of Political Science to allied disciplines. Required of all Political Science concentrators. It is desirable that concentrators take this course in the junior year.

Group A. International Relations and Foreign Political Systems

251. International Politics. An examination of foreign policy and world politics, especially for the period since World War II.

252. International Relations. An examination of processes, techniques, and patterns of behavior characteristic of international politics.

253. National Security Policy. An examination of the problems of war and peace in the nuclear era. Included are considerations of strategic planning, prediction, deterrence, arms control, limited war, military economics and sociology, NATO, guerrilla war, civil defense, the dispersion of nuclear weapons, and other unpleasant subjects.
254. Soviet Politics and Institutions. A survey and analysis of Soviet government, including a general discussion of Marxist-Leninist ideology. The role of the Party and its leadership, the military, the bureaucracy, etc., in institutional development. Case studies of various problems in recent Soviet domestic and foreign policy. Omitted 1967-68

255. International Relations Theory. A survey of approaches to theory-building in international relations with some emphasis on attempts to explain war and its causes. Omitted 1967-68

256. Problems in Comparative Politics. An examination of topics in comparative political analysis. Major emphasis will be on aspects of political affiliation, organization and participation in the major developed areas of the world. Omitted 1967-68

257. Comparative Political Life. A study of the way in which indigenous values, beliefs, and attitudes affect political behavior. Material will be drawn from a variety of systems and cultures, with emphasis on the Western. Prerequisite: Consent of the instructor. Omitted 1967-68


Group B. American Politics and Institutions

261. Party and Pressure Politics in the United States. An analysis of the activity of political parties and pressure groups in the American system of government. Attention will be given to the nature of the two-party system, national, state and local; the social bases of partisanship; electoral behavior; party organization; leadership, and strategy. Parties and pressure groups will be studied as participants in the making of public policy decisions. Omitted 1967-68

262. The Legislative Process. An analysis of decision-making in legislative bodies. Major emphasis on the American Congress, with comparative materials from state legislatures and non-American political systems. Omitted 1967-68

263. The Politics of Administration. A study of the functions of bureaucracies and administrative leadership in political systems in terms of recent theories of organizations, administrative behavior, and decision-making. Omitted 1967-68

264. Urban Government and Politics. An examination of the evolution of city politics in relation to social and economic change and in terms of issues of planning, urban renewal, racial conflict and transportation problems.

266. Public Opinion and Electoral Behavior. The role of public opinion and electoral behavior in political systems, particularly in American politics.

271. Indian Politics. Political parties, elections, voting behavior and leadership; special attention to political consequences of the Government's economic policies. No graduate credit.

281. The Constitutional Power Structure. A study of the constitutional pattern of power distribution between agencies of government and within the federal system as determined by the American judiciary.

282. Civil Rights. An examination of the permissable limits of governmental restraints on private rights and liberties as determined by the American judiciary. Prerequisite: Political Science 281

Group C. Political Theory

285. Classics of Political Thought. Systematic political theories from Plato to Mill. An assessment of the universality of the great political theories and their relevance to the understanding of contemporary political systems. Comparisons with modern political theories.


289. Strategy in Politics. An examination of recent descriptive theories of political behavior (including theories derived from the theory of games and economic models) in order to arrive at a general theory of political strategy.

Group D. Methodology

291. Senior Reading Course in Political Science. By arrangement with the department to permit work beyond regular course offerings.

412. Theories of Decision-Making. Consideration of various qualitative and quantitative theories of decision-making and of their uses in analyzing political behavior. Open to undergraduates with consent of instructor.

413. Theories of Organization. A consideration of theories of systems, roles, and organizations. Omitted 1967-68
Honors Program in Political Science

Students who have demonstrated to the satisfaction of the Department a high level of competence may, at the middle of the junior year, elect to enter the Honors program in Political Science. A faculty member must be willing to guide the student in his Honors work during his junior and senior years. The Honors work includes:

a. Political Science 210. Students are also strongly advised to take at least one Honors seminar in Political Science.

b. Political Science 391. Senior Reading and Research for Honors, which must be taken in the senior year for eight, twelve, or sixteen hours.

c. The presentation of a paper reporting research results before members of the Department and an outside examiner.

300. The Role of War in International Politics. An examination of war as an institution and its relation to the policy-making process.


320. Constitutional Issues. A study in the growth of governmental power as determined by judicial interpretation of the Constitution. Emphasis will be placed upon the economic, social and political background of court cases as well as upon court decisions.

325. Political Behavior. An analysis of public opinion, voting behavior and other forms of political participation. Omitted 1967-68

330. Political Philosophy. An examination of selected classical political philosophies.

350. Government and Politics in Canada. An analysis of the background, institutions, and power structure of the Canadian political system. Special attention will be focused on the role of parties, their organization and the social bases of their support. Comparative aspects will be stressed with reference to British and American experience. Omitted 1967-68

391. Senior Reading and Research for Honors.
Psychology

Robert Merrill Boynton, Ph.D. (Brown) ... Professor of Psychology and Director of the Center for Visual Science
Kenneth Edwin Clark, Ph.D. (Ohio State) ... Professor of Psychology and Dean of the College of Arts and Science
Emory Leland Cowen, Ph.D. (Syracuse) ... Professor of Psychology and Associate Chairman of the Department
Vincent Nowlis, Ph.D. (Yale) ... Professor of Psychology
Sidney Durward Shirley Spragg, Ph.D. (Yale) ... Professor of Psychology
G. Richard Wendt, Ph.D. (Columbia) ... Professor of Psychology
*Helen H. Nowlis, Ph.D. (Yale) ... Professor of Psychology
Jerome Schwartzbaum, Ph.D. (Stanford) ... Professor of Psychology
*Garth Thomas, Ph.D. (Harvard) ... Professor of Psychology
Melvin Zax, Ph.D. (Tennessee) ... Professor of Psychology
David Elkind, Ph.D. (Los Angeles) ... Associate Professor of Psychology
Russel Frank Green, Ph.D. (Southern California) ... Associate Professor of Psychology
Ralph Norman Haber, Ph.D. (Stanford) ... Associate Professor of Psychology and Chairman of the Department
James Ison, Ph.D. (Michigan) ... Associate Professor of Psychology
Forrest L. Vance, Ph.D. (Minnesota) ... Associate Professor of Psychology and Director of University Counseling and Special Services
Elaine C. Walster, Ph.D. (Stanford) ... Associate Professor of Psychology
Ralph Barocas, Ph.D. (Pennsylvania State) ... Assistant Professor of Psychology
Michael L. Davidson, Ph.D. (Berkeley) ... Assistant Professor of Psychology
Jay Steven Efran, Ph.D. (Ohio State) ... Assistant Professor of Psychology
Raymond E. Fancher, Ph.D. (Harvard) ... Assistant Professor of Psychology
Arnold J. Sameroff, Ph.D. (Yale) ... Assistant Professor of Psychology, Pediatrics and Psychiatry
Edward E. Ware, Ph.D. (Illinois) ... Assistant Professor of Psychology
Ronald E. Jackson, Ph.D. (Columbia) ... Assistant Professor of Psychology, Dean of Student Life
Ellis Sage, Ph.D. (Minnesota) ... Assistant Professor of Psychology and Counseling Psychologist, University Counseling and Special Services
*Francis H. Parsons, Ph.D. (Pennsylvania) ... Senior Clinical Associate in Psychology
*Alex Braiman, M.D. (New York State) ... Clinical Associate in Psychology
*Daniel Cecil Broida, Ph.D. (Syracuse) ... Clinical Associate in Psychology
*Howard Friedman, Ph.D. (Clark) ... Clinical Associate in Psychology
*Robert H. Goldstein, Ph.D. (Michigan) ... Clinical Associate in Psychology
*Norman Harway, Ph.D. (Rochester) ... Clinical Associate in Psychology
*Part-time
The Department of Psychology offers programs of study leading to the B.A. degree and, in graduate studies, to the Ph.D. degree.

Psychology 101 is a prerequisite to all other courses in Psychology. All students concentrating in Psychology are required to take Psychology 201 (with its prerequisite Statistics 110), and five to seven further semester courses in Psychology, at least two of which are laboratory courses in Psychology. When possible, concentrators should plan to complete Psychology 101, Statistics 110 and Psychology 201 by the end of the sophomore year. These five to seven courses are to include at least two courses from Group II and at least two courses from Group III, beyond Psychology 101. To complete the total

\[1\text{Psychology courses meeting Group II distribution requirements for the College are even-numbered; those satisfying Group III are odd-numbered.}\]
Concentration requirement of ten courses, from two to four courses in an allied field or fields should be carefully selected. An allied field to Psychology should be chosen to permit the student to apply his knowledge gained in the study of behavior to another discipline concerned with similar problems, or where knowledge of that other discipline will be of some direct benefit to his study of Psychology. Depending on the student's interests, certain courses in Anthropology, Biology, Business Administration, Chemistry, Economics, Linguistics, Mathematics, Optics, Philosophy, Political Science, or Sociology may be approved. They should, in general, be advanced courses and selected so as to best maximize the objectives of an allied field as defined above. Faculty advisers in Psychology have a list of allied field courses that are generally acceptable. Other courses can be substituted by petition to the department, if the student has specialized interests. The selection of the allied field should be given careful thought as it is an integral part of the concentration requirement in psychology. Students planning to pursue graduate studies in Psychology should seek a broad foundation in such closely related disciplines as Biology, Chemistry, Mathematics, or Philosophy.

Concentrators in Psychology may not use any laboratory course in Psychology to satisfy the Group III laboratory science requirement of the College. Typically the department advises concentrators to take the laboratory courses in Biology although others are in principle acceptable.

A student desiring to concentrate in Psychology should apply at the Psychology Department Office where he will be assigned a faculty adviser.

Requirements for admission to concentration include grades of C or better in Psychology 101, Statistics 110, and Psychology 201, and an overall grade point average of 2.0 or better during the student's freshman and sophomore years. A student may be conditionally admitted to concentration if he has not taken each of the three courses listed above, the condition being removed upon their completion with grades of C or better. Otherwise the conditionally admitted student is dropped from concentration in psychology. Sophomores planning to take their junior year abroad should consult with a faculty adviser in psychology to discuss their programs for both their junior and their senior years.

Whereas the lecture courses (Group A, 203-229) are designed for both psychology concentrators and those concentrating in other departments, the laboratory courses (Group B, 233-259) are designed primarily, but not exclusively, for the concentrator in psychology and other behavioral sciences. When the same area is covered both as a lecture course and a laboratory course, a student cannot receive credit for both courses. This rule presently applies to the following: Learning 203 and 253; Physiological Psychology 205 and 235; Social Psychology 220 and 250; and Personality 222 and 252. No such rule is applied to the seminar courses (Group C, 260-289).

All concentrators are required to take both semesters of Experimental Psychology—Psychology 231 and 233. No credit toward concentration will be given for only one semester. It is strongly urged that this be done in the junior year, so that more advanced courses and independent research and study can be pursued in the senior year. Those individual laboratory courses (Psychology 235-253) that will be offered in 1967-68 will each require prior completion of Psychology 231 and 233.

All lecture courses (Psychology 203-229) are open to Freshmen who have completed Psychology 101 or its equivalent.

Students planning to pursue a graduate degree in Psychology should note special opportunities open especially for them. Numerous activities involving independent research are available, including an Undergraduate Research Participation Program supported by the National Science Foundation, under which six to eight awards are made for each academic year, and for each summer; undergraduate departmental assistantships, under which students can become associated with on-going faculty research projects and hopefully grow into a role of junior colleague; and independent research or reading, under which a student can design and carry out a project under the supervision of a faculty member. Course credit is available for these activities if desired. Seniors who are involved in one of these activities may apply to the Department for permission to use their independent research project as evidence of distinction in psychology, and if the project is completed with sufficient merit they may be awarded their B.A. degree with distinction in psychology. Also occasionally available to students planning to go on to graduate school in psychology is an opportunity to register in graduate courses. This always requires permission of both the student's adviser and the course instructor.
101. Introduction to Psychology. A survey of the principles of human behavior and experience. Lectures and class discussions supplemented by demonstrations and participation in psychological research. Prerequisite to all courses in psychology.


Group A. Lecture Courses

203. Psychology of Learning. Inquiry into empirical findings and theoretical viewpoints on conditioning and learning, exemplified by research on both animal and human subjects. Related topics such as retention and transfer of training are also covered. This cannot be taken for credit if Psychology 253 is taken for credit.

205. Physiological Psychology. A basic survey course covering the major areas of physiological psychology. Prerequisite: Biology 101 or concurrent registration. This cannot be taken for credit if Psychology 235 is taken for credit.

213. Psychology of Motivation. A consideration of the variables of human and animal behavior that are motivational in character. Attention will be given to empirical studies and to the theoretical models used to explain motivational principles. This cannot be taken for credit if Psychology 243 is taken for credit. Omitted 1967-68

219. Psychology of Human Differences. An objective and, where possible, quantitative investigation of the nature, extent, organization and cause of individual and group differences.

220. Social Psychology. Individual behavior in relation to a variety of social environments; emphasis on such concepts as social interaction, influence, and control and on such topics as socialization of behavior systems, group processes, leadership, mass media, prejudice, and behavior in various institutional settings. This cannot be taken for credit if Psychology 250 is taken for credit.

222. Psychology of Personality. A survey of the field of personality, emphasizing modern theoretical approaches, basic methods of investigation, and current research findings. This cannot be taken for credit if Psychology 252 is taken for credit.

224. Child Psychology. Development of the child in the periods before and immediately after birth, during infancy, and adolescence. Special attention is given to the development of socialization, personality, emotion, language.

226. Psychology in Business and Industry. Applications of psychological findings and methods to problems encountered in business, industry and the professions. Topics include personnel selection, training and evaluation, motivation and morale; problems of supervision and management; factors in efficient performance; human engineering, problems of safety (industrial and transportation accidents); market, product, advertising and selling research; a brief consideration of applications of psychology to the professions. Cannot be taken for credit if BSI205 is taken for credit.

228. Abnormal Psychology. Etiological factors, clinical description, and treatment of personality aberrations emphasizing the more serious forms of mental disorder. Class lectures are supplemented by demonstrations. Psychology 222 prerequisite.

Group B. Laboratory Courses

All laboratory courses require prior completion of Statistics 110 and either completion of or concurrent registration in Psychology 201. Both Psychology 231 and 233 are required of all psychology concentrators, and both are prerequisites for all further laboratory courses.

231. Experimental Psychology with Laboratory I. A consideration of the major areas of laboratory experimentation in psychology. Three hours of lecture and one three-hour laboratory period per week. Concentrators in psychology are required to complete this and 233, preferably no later than their junior year. Prerequisites: Psychology 101 or co-requisite, Psychology 201.

233. Experimental Psychology with Laboratory II. A continuation of Psychology 231.

235. Physiological Psychology with Laboratory. The basic areas of physiological psychology and the basic laboratory and behavioral techniques employed in psychological research. This cannot be taken for credit if Psychology 205 is taken for credit. Prerequisite: Biology 101. Omitted 1967-68

237. Psychological Measurements with Laboratory. A comprehensive treatment of the problems, statistical techniques, and theoretical concepts basic to psychological measurement. Laboratory work is concerned with test construction, scaling, item analysis, and determination of reliability and validity. Does not meet the laboratory distribution requirements. Omitted 1967-68

239. Sensory Process with Laboratory. Present concepts of how human sensory systems process the energy contained in visual, auditory, and other stimuli will be considered and studied experimentally. Prerequisite: Statistics 110. Omitted 1967-68

241. Perception with Laboratory. Basic perceptual processes, including the psychophysics of sensitivity and detection, color, movement, form, shape, and depth perception, the development of perceptual abilities, and the effects of learning, motivation, and set on perceptual processes. Laboratory demonstrations and experiments. Omitted 1967-68

243. Motivation with Laboratory. Material on conflict, anxiety and guilt, fantasy behavior, and unconscious processes, drawn from research using primarily humans, but also biological studies of primary and secondary drives, punishment and frustration, arousal, exploration, and stress, Laboratory experiments with both animal and human subjects. This cannot be taken for credit if Psychology 213 is taken for credit. Omitted 1967-68

245. Cognition with Laboratory. A survey of theory and research concerning human intellectual functioning, including problem-solving, concept formation, word association, and creativity. Standard laboratory demonstrations and original experimentation. Omitted 1967-68

247. Comparative Psychology with Laboratory. The classification of behavioral processes; the relationships between behaviors, between and within species; the identification of the origins and development of behavior; and the development of theories of behavior. Omitted 1967-68
250. Social Psychology with Laboratory. The study of individual behavior in social contexts, with selected experiments to be conducted which illustrate research methods and techniques of social psychology in a variety of social-psychological problem areas. Cannot be taken for credit if Psychology 220 is taken for credit. Omitted 1967-68

252. Personality with Laboratory. Emphasis on modern theoretical approaches, basic methods of investigation and current research findings with associated laboratory work and demonstrations. Cannot be taken for credit if Psychology 222 is taken for credit. Omitted 1967-68

253. Learning with Laboratory. Topics in learning and conditioning: practice, reinforcement parameters, secondary reinforcement, discrimination learning and generalization, and the role of motivation. Laboratory work includes demonstration and analysis of basic phenomena using techniques and design principles of modern research. This cannot be taken for credit if Psychology 203 is taken for credit. Omitted 1967-68

Group C. Seminar Courses

260. Seminar in Special Topics. Consideration of recent experimental and theoretical contributions in several selected areas of psychology. Students will prepare written reports for presentation and intensive discussion. Open to junior and senior psychology concentrators by permission of the instructor.

263. Seminar in Conditioning and Learning. Examination of the major research findings in the areas of conditioning and learning, and the critical analysis of their theoretical implications. Prerequisites: Psychology 203 or 233 (for their equivalent) and permission of the instructor.


271. Seminar in Perception. Perceptual systems including psychophysics of sensitivity, vision, audition, chemical senses, tactual and kinesthetic senses; emphasis on quantitative and physiological contributions to the understanding of perceptual processes.

273. Seminar in the Psychology of Motivation. Theories of motivation, motivational antecedents, and the consequences of such antecedents on instrumental behavior, learning and perception. Open to advanced undergraduates and to graduate students by permission of instructor.

277. Seminar in Comparative Psychology. The concepts of the science of behavior and the application of scientific method in the study of animal conduct. Evolution of behavior and intelligence, the receptor control of activity, periodicity in behavior and higher mental processes in animals. Prerequisite: Biology 101.

280. Seminar in Social Psychology. Selected areas of current research in social psychology, including attitude change models and experimentation, dissonance theory, small group processes, motivational determinants of social behavior, and simulation models of group processes. Prerequisite: A previous course in Social Psychology and approval of the instructor.

281. Seminar in Psychological Measurement. Theoretical concepts, statistical techniques and problems basic to psychological measurement; material on test construction, scaling, item analysis, reliability and validity. Prerequisite: Psychology 201.


286. Seminar in Developmental Psychology. Selected areas of current research and theory in developmental and child psychology. Special attention will be given to the work of Piaget, the recent research on cognitive processes displayed by newborn humans, and the importance of environmental variation in early life. Prerequisite: A previous course in Child or Developmental Psychology and approval of instructor.

288. Seminar in Abnormal Psychology. Advanced study of the clinical descriptions and treatment of personality aberrations with special emphasis on the etiology of the more serious forms of mental disorder. Seminar discussions supplemented by student reports and demonstrations.

Group D. Special Courses

Each of the following courses may be offered as a Group II or Group III course with the approval of the instructor.

289. Seminar in Current Psychological Research. A discussion of current research undertaken by members of the seminar. Frequent oral reports of their research, with opportunity for mutual criticism and suggestions. Required of all seniors working on a research project to be submitted for Distinction in Psychology, and others by permission of the Department of Psychology.

291. Reading Course in Psychology. Supervised reading on topics not covered by existing courses or on specialized topics. Permission of the instructor required.

293. Special Problems Course in Psychology. The investigation, under guidance, of a special problem in experimental psychology and the presentation of the result of the research in a paper. Permission of the instructor required.

295. Senior Thesis in Psychology. A paper based upon independent study and research, primarily for a degree with distinction. Permission of the department and instructor required.
The interests of sociologists range from the motivations of scientists to the organization of armies and from the leisure patterns of suburbia to the sources of industrialization. Although all of these are also in some degree the concern of other fields, they necessarily involve the ideas of social positions, social relations, and social organization—in short, the sociological perspective. In conveying this perspective the Department aims to give its students the concepts, theories, and methods with which they can learn to understand the social world for themselves. Throughout its courses the Department emphasizes the mutual influence of social theories and social facts.

The Department sees its courses in general, and its concentration in particular, as “pre-professional” only in the sense that a liberal education and a knowledge of society are parts of all pre-professional education. Those students who plan to go on to graduate work in sociology or a related field should take at least one 400-level course in their junior or senior years.

The concentration will ordinarily consist of six to eight courses in the Department; Sociology 101 will not carry credit for the concentration and is not a prerequisite for any other course. The following courses are required:

- Sociology 203 The Social Organization of Industrial Society
- Sociology 204 Major Social Theorists
- Sociology 221 Methods of Empirical Research
- Sociology 270 Principles of Sociology

Concentrators should take Sociology 203 as early as possible, and they must have taken an introductory course in statistics or its equivalent no later than the first semester of the senior year; prospective concentrators who are uncertain about the statistics requirement should see the department adviser. Additional courses for the required total of ten may be taken in related fields with the approval of the departmental adviser.

101. Introduction to Sociology. Elements of social organizations; the nature of society; study of the social group and bureaucracy. Not required for other courses. Intended primarily for freshman and sophomore students.

201. Sociological Inquiry. Examples of sociological analysis; problem formulation, method, and findings. Intended for juniors and seniors concentrating in other fields. May not be taken by sociology majors.

203. Social Organization of Industrial Society. Social class and social stratification; differential class behavior; subgroup organization of modern society; institutional patterns of behavior and the effect of the class structure on these institutional patterns. Intended primarily for concentrators; others admitted with consent of instructor.

204. Major Social Theorists. A comparative study of selected works of Marx, Weber, Durkheim and classic and contemporary theorists. Intended primarily for concentrators; others admitted with consent of the instructor.

206. Deviant Behavior. Formal and informal social control; the development of individual and collective forms of norm violation; theories of criminality. Omitted 1967-68

208. The Sociology of Culture. The social contexts of folk, mass, and high cultures examined through a study of the social organization of the arts and crafts, the artists' roles, the audience, and typical art forms. Admission by consent of instructor.

211. Contemporary Sociological Theories. A rigorous examination of some contemporary theories in the sociological literature. Social interaction, small group behavior, mass phenomena, and crime and delinquency will be among the topics considered. Omitted 1967-68
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>217</td>
<td>Stratification. Major theories and empirical studies of stratification in historical and contemporary settings; correlates of class structure, sources and consequences of social mobility. Admission by consent of instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>218</td>
<td>Social Change. The nature, sources, and consequences of changes in social institutions, both planned and unplanned; special attention will be given to industrialization. Admission by consent of instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>221</td>
<td>Methods of Empirical Research. A critical examination of several major empirical studies, emphasizing such problems as validity, causal inference, the control of error and generalization. Prerequisites: Statistics 110 or its equivalent. Intended primarily for concentrators; others admitted with consent of the instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>223</td>
<td>Society and the Individual. Social influences on the development of the individual, interaction and communication in small groups; attitude formation, role analysis. Omitted 1967-68</td>
</tr>
<tr>
<td>234</td>
<td>The Family and Social Structure. A rigorous examination of the modern family, from demographic, comparative, and structural perspectives. Prerequisite: Sociology 231 or consent of the instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>241</td>
<td>Complex Organizations. Analysis of groups with bureaucratic structures, such as schools, hospitals, factories, and offices; the impact of the organization on the individual; functions of informal groups in organizations. Omitted 1967-68</td>
</tr>
<tr>
<td>244</td>
<td>Political Sociology. The relation of social structure to political organization and participation, with special attention to the implications of empirical research on power, voting, and alienation. Omitted 1967-68</td>
</tr>
<tr>
<td>245</td>
<td>Comparative Social Structure. An examination of selected topics relating to the macrosocial structure of different types of societies, Western and non-Western, industrialized and pre-industrial. Admission by consent of instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>246</td>
<td>Community and Polity. The distribution of power, influence, and authority in urban communities; problems of conceptualization and measurement; the sources and consequences of power in a comparative perspective. Admission by consent of instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>247</td>
<td>Race and Ethnic Minorities. Intergroup relations in industrial society with special attention to Negro-white relations in America. Omitted 1967-68</td>
</tr>
<tr>
<td>254</td>
<td>Urbanization. Patterns of urban and suburban growth; the spatial distribution of buildings and people; urban culture and urban blight. Omitted 1967-68</td>
</tr>
<tr>
<td>266</td>
<td>Medical Sociology. Social organization of the hospital; social and cultural factors in illness; recruitment and socialization of medical personnel. Omitted 1967-68</td>
</tr>
<tr>
<td>270</td>
<td>Principles of Sociology. A critique of current concepts and hypotheses stressing the interplay between social theory and empirical research. Required of senior concentrators, first-year graduate students; open to others only with permission of the instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>291</td>
<td>Reading Course in Sociology. Special work, individually arranged, with the consent of the department. Omitted 1967-68</td>
</tr>
<tr>
<td>293</td>
<td>Senior Problems Course in Sociology. Supervised research and discussion on special topics, primarily for concentrators. Omitted 1967-68</td>
</tr>
<tr>
<td>311</td>
<td>Contemporary Sociological Theories. Rigorous and systematic examination of a few contemporary theories in sociology, with topics selected from small group research, the analysis of complex organizations, the study of social structure and models of mass behavior such as voting. Some of the specific theories which have developed in the study of crime and delinquency, mental illness, industrial behavior and social mobility are examined. With consent of instructor. Omitted 1967-68</td>
</tr>
<tr>
<td>315</td>
<td>Mass Society and Totalitarianism. Totalitarianism and estrangement in the twentieth century as related to changes in industrial society; the confrontation of mass society theories with historical evidence, especially the German case. Reading knowledge of German helpful. Omitted 1967-68</td>
</tr>
<tr>
<td>345</td>
<td>Social Movements. A theoretical and empirical examination of political movements, including Communism and Fascism, with goals of large memberships and major social change; relations between revolutions and mass movements; theories of revolution. Omitted 1967-68</td>
</tr>
</tbody>
</table>
The South Asia Language and Area Center, established in 1965, seeks to encourage and facilitate the study of the languages and cultures of India, Pakistan, and Ceylon. One of eleven such enterprises in the country which are endorsed and assisted by the United States Office of Education (through provisions of the National Defense Education Act), the Center supports faculty, courses, library development, and a variety of extra-classroom activities, including musical and dance performances, films, lectures, and demonstrations.

All courses on South Asia carry full academic credit. Students wishing to plan a program of study should consult Mr. Welbon, Rush Rhees 405.

LANGUAGES

Introductory through advanced instruction is available in three languages of South Asia: Hindi, Sanskrit and Pali. These language courses are offered under the auspices of the Department of Languages and Linguistics and carry both undergraduate and graduate credit.

HINDI: Spoken in North India from Rajasthan to Bihar, Hindi—in one or another of its dialects—is the native language of more than 140 million people and has been designated the official language of the Republic of India. Hindi possesses a rich literature from the medieval period. A command of Hindi will be increasingly important for all students in the humanities and social sciences who pursue Indic Studies.

201. Hindi I. Intensive study of basic vocabulary and structure of modern Hindi for rapid development of speaking, listening and reading skills. Prerequisite: fulfillment of foreign language requirement.

202. Hindi II. Continuation of Hindi 201.

203. Hindi Composition and Conversation I. Continuing study of current Hindi structure, usage, and vocabulary. Practice in expository writing and in speaking, to increase fluent active command of the language; problems of translation. Prerequisite: Hindi 202 or permission of instructor.

204. Hindi Composition and Conversation II. A continuation of Hindi 203. Prerequisite: Hindi 203 or permission of instructor.
FOREIGN AND COMPARATIVE LITERATURE

INDIAN

231. Theatre in India I. History and literature of Indian theatre to the medieval period. Analysis of plays and their epic and poetic backgrounds. Aesthetic and dramatic theories and techniques.

232. Theatre in India II. Continuation of 231. Traditional drama from the medieval period to the present. The impact of foreign theatre. Experimental production of a play during the second half of the semester. Prerequisite: 231 or consent of instructor.

ANTHROPOLOGY

249. Peoples of India. Ethnology of South Asia with emphasis upon the relationship between tribal and village cultures and the high civilizations of the area.

FINE ARTS

103. Introduction to the Art of India and the Far East. A selective survey of the art of India, China, and Japan. Examples of architecture, sculpture, painting, and metal work are discussed in their historic sequence and interpreted with regard to form and content.

190. Preceptorial: The Art of East and West. A comparative study of masterworks of painting and sculpture. Selected works are analyzed in detail and interpreted with reference to the aesthetic ideals of the civilization which produced them. This course is an introduction to the great traditions of world art.

226. The Arts of Buddhist Asia. The development of Buddhist art is traced from its origins in India to its easternmost manifestations in Japan and Indonesia. Factors of art style as well as those of iconographical and iconological character are considered.

HISTORY

186. South and Southeast Asia Modernization. A survey of the development of contemporary patterns of land use, population distribution, and the development of resources in South and Southeast Asia. Emphasis will be on the problems of population growth and the processes of modernization.

279. The Making of Traditional India. A topical survey of cultures and institutions on the subcontinent stressing the essential continuity between ancient and contemporary India.

280. History of Modern India. Contemporary India and Pakistan emphasizing cultural, social, and political changes generated by the coming of Europeans.

POLITICAL SCIENCE

271. Indian Politics. Political parties, elections, voting behavior and leadership; special attention to political consequences of the Government's economic policies.

RELIGION

103. History of Religion. An introductory comparative survey of the major religions in the world today in terms of their basic ideas and practices. Special attention will be given to Hinduism, Buddhism, Taoism, Confucianism, Judaism and Christianity.

190. Preceptorial: The Elements of Buddhism. Examination of Buddhist thought and practices from their Indian origins to the present-day.
In 1967-68 the department will offer a limited number of courses. The following year it plans to offer degree programs at the undergraduate and graduate levels. Students interested in pursuing concentration in statistics should consult a faculty member in the department. The faculty members listed above, will teach courses in the department next year.

The following courses are offered. Related courses in probability and linear programming are offered in the Department of Mathematics. Courses in applied statistics may be found in the offerings of the relevant departments.


200. **Theory of Probability and Applications.** (See Math. 200.) Random variables; binomial, Poisson, and normal distributions. Mathematical expectation, law of large numbers; central limit theorem; Markov chains. Prerequisite: Math. 163.

203. **Denumerable Markov Chains.** (See Math. 203.)

207. **Linear Programming and the Theory of Games.** (See Math. 207.) The basic properties of convex sets. The linear programming problem and its dual. Principal theorems; applications, in particular to finite games. Some infinite games. Prerequisite: Math. 162.

210. **Introduction to Statistical Inference.** Introduction to probability theory, fixed sample and sequential solutions to the problems of estimation and testing of hypotheses in parametric and nonparametric setups. Prerequisite: Math. 163 and Statistics 200.

248. **Theory of Graphs.** (See Math. 248.)

280. **Numerical Methods.** (See Math. 280.) Numerical approximations to solutions of linear, transcendental, differential, and partial differential equations. Some time may be spent at the Computing Center. Prerequisite: Math. 163.

291. **Reading Course in Statistics.** Special work arranged individually. Consent of the department required.


451. **Nonparametric Methods in Statistics.** Probability and statistical decision theoretic preliminaries, nonparametric problems associated with categorical and noncategorical data, procedures based on ranks, runs, signs, percentiles, etc. and their evaluation. U-statistics, large sample distributions in the analysis of contingency tables. Prerequisite: an intermediate level course in statistics.

561. **Error-correcting Codes.** Algebraic and information theoretic preliminaries; relation between experimental designs and error-correcting codes; necessary and sufficient conditions for the existence and efficiency of error-correcting codes; the codes due to Hamming, Bose-Chakravarti, Abramson, Golay, Gross and others, and their construction; p-ary linear burst-error-correcting codes, problems involving multiple-bursts. Prerequisite: Probability and/or information theory and/or undergraduate algebra.
Courses of instruction offered in fields where there are no departments

Religion

*Vinjamuri Everett Devadutt, TH.D. (Toronto)...Professor of Religion

*Robert Haddow Beaven, PH.D. (Chicago)...Assistant Professor of Religion

*Grace Harris, PH.D. (Cambridge)...Assistant Professor of Religion

*Part-time.

101. Introduction to Biblical Thought. A study of the major elements in the thought of the Hebrew-Christian tradition with emphasis on careful analysis of Biblical material, and on the contemporary significance of this tradition. Lecture and discussion.

103. History of Religion. An introductory comparative survey of the major religions in the world today in terms of their basic ideas and practices. Special attention will be given to Hinduism, Buddhism, Taoism, Confucianism, Judaism and Christianity. Not open to Freshmen.


121. Problems in Religious Thought. An advanced course, open to any student who has completed one of the two introductory religion courses, dealing with selected subjects in the development of and in the rebellion against the Hebrew-Christian religious tradition. Among the works discussed will be those of Augustine, Aquinas, Luther, Shakespeare, Bach, Pascal, Dostoevsky, Tolstoy, Freud, and Camus. Prerequisite: Religion 101 or 103. Omitted 1967-68

300. Belief and Unbelief. An Honors seminar which will examine in some detail some issues in the thought of the Western religious tradition, The tension between belief and unbelief will be a dominant theme, and the readings will be both theological and literary. Not open to graduate students. Prerequisite: consent of instructor. Omitted 1967-68
The objectives of the College of Business Administration are threefold:

1. To improve understanding of the role of business in society, the function of the administrator in business, and the forces and relationships conditioning administrative performance; further to foster the development of those values, insights, and skills required to analyze, decide, and act effectively in the presence of new business experience.

2. To encourage and support research and publication.

3. To provide, in cooperation with the business and industrial community, special non-degree programs and services designed for employed managers wishing to improve their present performance or to increase their potential.

Admission Requirements

Students are admitted to the College of Business Administration at the beginning of their junior year or its equivalent in credit hours. Due to limited housing facilities on campus, students with two or more full years of college work elsewhere are encouraged to apply as early as possible for the purpose of arranging appropriate living accommodations.

Applications for admission to the College are directed to the College's Committee on Admissions for formal action by the faculty.
Distribution requirements for majors in Accounting are as follows:

I. Preprofessional Study in Business Administration ...................................... 2 courses
   ACC153, Principles of Accounting ............................................. 1 course
   QNT205, Business Statistics ............................................. 1 course

II. Minimum Study in Liberal Arts and Science ...................................... 13 courses
   English .............................................................................. 1 course
   ENG102, Continental Masterpieces ..................................... 1 course
   ENG103, Eng. & Amer. Masterpieces .................................. 1 course
   ECO101, Principles of Economics ....................................... 1 course
   Laboratory Science ............................................................. 2 courses
   Mathematics (Two of the following: Math. 100, 150, 161, 162) .... 2 courses
   History and Political Science Electives ................................ 2 courses
   Humanities Elective ............................................................ 1 course
   Liberal Arts and Science Electives ........................................ 2 courses

III. General Elective ........................................................................ 1 course

TOTAL .................................................................................. 16 courses

Distribution requirements for majors in Management Science:

I. Preprofessional Study in Business Administration ...................................... 2 courses
   ACC153, Principles of Accounting ............................................. 1 course
   QNT205, Business Statistics ............................................. 1 course

II. Minimum Study in Liberal Arts and Science ...................................... 13 courses
   English .............................................................................. 1 course
   ECO101, Principles of Economics ....................................... 1 course
   MATH161, Analysis I ............................................................ 1 course
   MATH162, Analysis II ............................................................. 1 course
   MATH163, Analysis III ............................................................ 1 course
   PHY101, 102, General Physics ............................................. 2 courses
   Group I Electives (Humanities) ............................................ 2 courses
   Group II Electives (Social Sciences) ...................................... 2 courses
   Laboratory Science ............................................................. 2 courses

III. General Elective ........................................................................ 1 course

TOTAL .................................................................................. 16 courses

Distribution requirements for majors in Business Economics:

Minimum Study in Liberal Arts and Sciences ...................................... 16 courses
   English .............................................................................. 1 course
   ECO101, Principles of Economics ....................................... 1 course
   MATH100, Finite Mathematics ............................................. 1 course
   MATH150, Analytic Geometry & Calculus or
     MATH161, Analysis I ............................................................ 1 course
   Foreign Language (unless exempted) ..................................... 3 courses
   Laboratory Science ............................................................. 2 courses
   Literature Electives .............................................................. 2 courses
   Group I Electives (Humanities) ............................................ 2 courses
   Group II Electives (Social Sciences, excepting Economics) .... 3 courses

TOTAL .................................................................................. 16 courses

Any English course at the 100 level except courses numbered 115-129 satisfy the English requirement in all three degree programs. Students participating in Officer Candidate programs should consult with their ROTC Unit for program planning. Naval Science or Aerospace Studies courses may be credited toward the requirements for the B.S. degree to the extent of three courses.
Deviation from this distribution of courses, particularly in evening session programs, may be permitted if a student can meet all the distribution requirements for the Bachelor of Science degree in two years or less of full-time study (or the equivalent in part-time study).

Students from the College of Arts and Science and transfer students from other institutions normally complete admission requirements in a period of two years of full-time study. A minimum cumulative grade average of 2.0 must be achieved to be considered for admission.

Satisfactory-Fail Option

Freshmen and sophomores intending to major in the College of Business Administration may elect to receive a grade of Satisfactory (S) or Fail (F) in one course per semester except in courses in business or economics. Juniors or seniors in the College of Business Administration are not eligible to take courses on a Satisfactory-Fail basis. Students of other Colleges of the University may elect to take courses offered by the College of Business Administration on a Satisfactory-Fail basis when it is acceptable to the College in which they are registered.

Degree Programs Offered

The College administers programs of study leading to the Bachelor of Science degree, with majors in Accounting, Business Economics or Management Science. The College also offers the Master of Science with a major in Business Administration, the professional degree, Master of Business Administration, and the Doctor of Philosophy degree with a major in Business Administration.

Although the undergraduate student is not formally admitted to the College until the beginning of his junior year, the requirements for the Bachelor's degrees are stated in terms of four years of full-time study (or the equivalent in part-time study).

Students who wish to complete an undergraduate degree elsewhere in the University and a graduate degree in Business Administration within a five year period by combining electives and advanced business administration courses should consult the Director of the Academic Office in the College of Business Administration.

The University of Rochester is a member of the American Association of Collegiate Schools of Business. Its programs at the Master's level have been accredited by the Association.

Requirements for Bachelor's Degree with Distinction

The Bachelor degrees are awarded in three grades of distinction: with distinction, with high distinction, and with highest distinction.

This award is based primarily on a point-hour ratio of at least 3.25 for distinction, 3.60 for high distinction, and 3.85 for highest distinction. However, a piece of creative work or a paper (critical or creative, or a report of the results of original research) may be offered in support of a recommendation for a distinction award not more than one level higher than would be indicated by the point-hour ratio.
Except in unusual cases, no student is considered for a degree with distinction without at least two years of academic work at the University of Rochester. Ordinarily nothing higher than a degree with distinction is given in such cases.

**Bachelor of Science with a Major in Accounting**

The degree program in Accounting is designed for students interested in careers in accounting and related areas in which a strong accounting background is appropriate. Intensive professional study combined with a core of other courses in Business Administration, builds upon a base of two or more years of study in the arts, sciences, and humanities.

Completion of this program also provides a desirable preparation for Public Accounting and meets the educational requirements for admission to the Uniform Certified Public Accounting Examination used by all states. Experience requirements vary from state to state, and interested students should write the appropriate state board for specific requirements.

The Accounting curriculum has been registered with and unconditionally approved by the Division of Professional Education, New York State Education Department. Graduates may be certified to the New York Board of Examiners as having completed the Registered Curriculum necessary for admission to the examination. Students who wish only to establish equivalency with the College's Registered Accounting Curriculum and who have completed the basic degree in another institution should obtain counseling from the College of Business Administration at the earliest opportunity and register with the Office of Admissions as special students.

A synopsis of the general distribution requirements for the degree *Bachelor of Science with a Major in Accounting* follows:

1. Study in Business Administration:* 14 1/2-15 1/2 courses.
2. Study in Economics: 3-4 courses.
3. Minimum study in Liberal Arts and Science: 12 courses.
4. General Electives: 3 courses.**
5. Physical Education.

Total minimum requirement is 33 1/2 courses. Specific courses required for the degree *Bachelor of Science with a Major in Accounting* are listed on the typical program which follows.

*See Admission Requirements, page 147.

**Work in Aerospace Studies or Naval Science courses may be credited toward the fulfillment of the requirements of the B.S. degree to the maximum extent of three academic courses.*
TYPICAL PROGRAM

B.S. in Accounting

FIRST YEAR

English
Mathematics†
Laboratory Science
History or Political Science Elective

SECOND YEAR

ENG 102 Continental Masterpieces
Mathematics†
Laboratory Science
History or Political Science Elective

THIRD YEAR

ENG 103 English & American Masterpieces
ACC 153 Principles of Accounting
General Elective
Liberal Arts & Science Elective

FOURTH YEAR

ACC 233 Intermediate Accounting
FIN 205 Financial Management
LAW 236 Legal Constraints on Business
QNT 235 Computers & Numerical Analysis
ECO 211 Money & Banking; BEC 236
Financial Institutions & Markets;
or Finance Elective

Bachelor of Science with a Major in Management Science

The Management Science program meets the growing need for managers and staff with ability to use the quantitative techniques of mathematics, statistics, accounting, and operations research to identify, analyze and solve problems in management decisions.

The curriculum for a B.S. degree with a major in Management Science is broadly based; about one-half of the required courses are in arts and sciences, including the humanities, economics, and basic mathematics. The remaining half includes quantitative techniques and behavioral science as tools, plus courses in the functional areas of marketing, accounting-finance, and production. Six electives are to be distributed in the humanities, social sciences, and natural sciences; two electives may be in either business administration or economics, and finally, there are four unrestricted electives.

A synopsis of distribution requirements for the degree Bachelor of Science with a Major in Management Science follows:

†The two-course mathematics requirement may be satisfied by Math. 100 and 150, 100 and 161, or 161 and 162.
1. Minimum study in Business Administration: 13 1/2 courses.
2. Business or Economics Electives: 2 courses.
3. Minimum Study in Liberal Arts and Science: 13 courses.
4. General Electives: 4 courses.*
5. Physical Education.

Total minimum requirement is 32 1/2 courses. Specific courses required for the degree Bachelor of Science with a Major in Management Science are listed in the typical program which follows.

Completion of this program provides a solid background in the rapidly developing field of management science including the theory and application of conventional and quantitative methods to the solution of a wide variety of business problems. Additional specialization is available through graduate study. Most important, the inclusion of a broad spectrum of the arts and science precludes the development of narrow specialization at the undergraduate level.

**TYPICAL PROGRAM\**

**B.S. in Management Science**

**FIRST YEAR**

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**FOURTH YEAR**

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*Work in Aerospace Studies or Naval Science courses may be credited toward the fulfillment of the requirements of the B.S. degree to the maximum extent of three academic courses.

**Advanced courses in Marketing, Finance, Production or Accounting selected with approval of faculty advisor.*
Bachelor of Science with a Major in Business Economics

This four-year program, leading to the degree Bachelor of Science with a Major in Business Economics, provides approximately three years of study in the liberal arts and sciences and one year of intensive study in business administration.

A unique feature of the program is that in his senior year the student completes the first half of the two-year graduate program leading to the degree Master of Business Administration. Thus he acquires an advantageous foundation either for immediate employment or for entering an M.B.A. program with advanced standing at the University or at most other institutions offering a broad M.B.A. program.

Formal admission to the College of Business Administration to pursue this program is granted at the end of sophomore year to assure adequate control over completion of liberal arts requirements as well as the mandatory junior year courses in economics. Transfer students may be admitted at the beginning of their senior year if their previous academic achievement is considered the equivalent, in quality and course coverage, to that of those students in the program who completed their first three years of study at the University of Rochester.

Because most, if not all, of the student’s senior-year study is in first-year-graduate-level courses, admission to the program is limited to students who can be expected to complete the program with a B average or better. Upon completion of the four-year program, the student receives the B.S. degree.

Students who complete the program with at least a B average are admitted to advanced standing in the University's M.B.A. program, and ordinarily complete the M.B.A. program in one year of additional study.

The synopsis of the distribution requirements for the degree Bachelor of Science with a Major in Business Economics follows:

2. Economics, including Business Economics: 5-8 courses.
3. Other Liberal Arts and Sciences: 19 courses.
4. Physical Education.
Total: 32½ courses.

TYPICAL PROGRAM

B.S. in Business Economics

Since the program has been designed to afford the student maximum flexibility, the requirements for the first two years closely parallel those of a program leading to a Bachelor of Arts degree. (See p. 35.)

The following requirements apply for the first two years of the program:
English
Foreign Language (3 courses, unless exempted)
Eco. 101: Principles of Economics (in sophomore year)
Group I Electives: 4 courses, including at least 2 in literature
Group II Electives: 3 courses, other than economics
Group III Electives: 4 courses, including 2 laboratory science courses,
Math. 100, and either Math. 150 or Math. 161

THIRD YEAR
ECO 209: National Income Analysis
ECO 211: Money, Credit & Banking
Arts & Science Elective*
Arts & Science Elective*

FOURTH YEAR
BEC 403: Managerial Economics
ACC 403: Management Use of Accounting Information
BSL 418: Survey of Behavioral Sciences in Management
Business or Economics Elective
LAW 236: Legal Constraints on Business (½ course)

ECO 207: Intermediate Economic Theory
Arts & Science Elective*
Arts & Science Elective*
QNT 205 or ECO 211, Statistics
PRD 408: Production Management
FIN 405: Financial Management
MKT 403: Introduction to Marketing
Business or Economics Elective

The Business Administration Library
The Business Administration Library shares its quarters with the Education Library in the lower level of the Rush Rhees Library. It comprises a collection of reserve and reference books, current periodicals, pamphlets, research reports, business and financial services, and recent corporation annual reports. The back issues of corporation annual reports are gradually being supplemented with reports on microcards. Except for reference books, all materials are circulated. The core of the business books, approximately 30,000 volumes and back issues of periodicals, is part of the main library collection which contains over 931,000 volumes.

The University of Rochester Library is a depository for United States Government publications and New York State documents. Non-depository documents are received on microcards.

International Association of Students in Economics and Commerce
(Association Internationale des Etudiants en Sciences Economiques et Commerciales)
A.I.E.S.E.C. is an international exchange program for juniors, seniors and graduate students who intend to pursue a career in business or economics. Participants can gain practical business experience with a firm in one of 50 foreign countries. Exchanges are usually made in the summer of the junior or senior year. Freshmen and sophomores are encouraged to participate in AIESEC's campus activities.

*Other than economics and sufficient to complete requirement of 19 courses in Arts and Sciences. Work in Aerospace Studies or Naval Science courses may be credited toward the fulfillment of the B.S. degree to the maximum extent of three academic courses.
Special Non-Credit Programs

The course listings do not include non-credit courses which are planned and conducted in cooperation with individuals, firms, trade and professional associations and governmental agencies. Attendance at these clinics, short-courses, institutes and seminars typically is sponsored by an employer concerned with keeping managers abreast of changing technological, economic, legal, social and political aspects of business. Courses may be either residential or nonresidential and organized for varying lengths of time.

Certified Public Accountant (C.P.A.): Requirements and courses in this area are listed on pages 153 and 158. To complete these courses a student need not be registered for a degree in the College. Students who wish only to establish equivalency with the College's Registered Accounting Curriculum and who have completed their basic degree in another institution should obtain counseling from the College of Business Administration at the earliest opportunity and register with the Office of Admissions as special students. Non-degree candidates should obtain guidance either from the College or the Professional Education Division, The State Education Department (Albany, New York) prior to beginning study to qualify for admission to the Certified Public Accountant Examination.
ACCOUNTING

153. Principles of Accounting. (Fall and Spring) An introduction to the principles and procedures employed in analyzing business transactions, recording their financial effects, summarizing them in financial statements, and interpreting these statements.

221. Cost Accounting I. (Fall and Spring) Study of the accounting problems involved in determining, analyzing and controlling production and distribution costs, and income determination for financial statements. Budgetary control, standard costs and other topics are discussed from the viewpoint of management use in planning and control. Prerequisite: ACC153.

222. Cost Accounting II. (Spring) Special topics in cost accounting and the use of cost information for managerial decision-making. Prerequisites: ACC221, QNT205.

233. Intermediate Accounting. (Fall) An analysis of the accounting theory underlying the preparation of financial statements. Topics include: the form and content of corporate financial statements; accounting for assets, liabilities and net worth; problems of income determination; and analysis of financial statements and flow of funds. Prerequisite: ACC153.

236. Advanced Topics in Accounting Theory. (Spring) Research on problems in key areas of financial and managerial accounting. Topics include asset valuation and income determination, price-level adjustments and responsibility accounting. The influence of the American Institute of C.P.A.'s, the American Accounting Association, the S.E.C., and others on the definition of generally accepted accounting principles is considered. Prerequisite: ACC233.

261. Auditing I. (Spring) While emphasis is placed upon the work of the professional accountant, due consideration is given internal auditing procedure. Includes: purpose of audits, types of audits, methods of auditing procedure, the auditor's report and the legal and professional responsibility of the auditor. Prerequisite: ACC233 or corequisite.

275. Income Tax Accounting I. (Fall) After brief attention to the development of the income tax law since 1913, a careful study of the present Federal Income Tax law is made supplemented by numerous problems in income tax accounting. Prerequisite: ACC233 or corequisite.

276. Income Tax Accounting II. (Spring) A continuation of ACC275 with special emphasis on tax planning.

BEHAVIORAL SCIENCES IN INDUSTRY

205. Behavioral Science in Management. (Spring) Survey course of those aspects of management which involve dealing with people. Behavioral science bases of the following topics are approached through lecture, case studies, class discussion, and original readings: Selection, Training, Human Engineering, Performance Evaluation, Supervision - Leadership, Motivation - Morale - Attitudes; Consumer Behavior, Labor Relations, and Organization Theory.

211. Fundamentals of Personnel Administration. (Fall) A study of organized approaches to employing, developing, compensating and servicing a workforce so as to assure optimum return to the employing organization, the cooperative effort of individuals and groups involved, and maximum satisfaction consistent with the need for coordination and control. Personnel Administration as a staff function is given special attention together with research bearing on the validity of personnel concepts, requirements, and practices. Emphasis is on administrative considerations rather than application of refined technique. Prerequisite: BSI205.

251. Organization, Theory and Administration. (Fall) An analysis based on theoretical concepts and related research of the human factors in business and industrial organizations which influence administrative decision-making. Cases and lectures focus on mechanisms used in functioning organizations to influence and develop decisions, and to assure uniformity in interpretation, consistency in application, and compatibility with organization goals. The topics of authority, communication, and leadership are given special attention. Prerequisite BSI205.

262. Management-Union Relationships and Public Control. (Spring) Relationships between management, unions and government at the plant and industry level as they influence managerial decision-making. Topics include a comparative analysis of union-company philosophies, structures, and functions; issues and conditions leading to cooperation and conflict; sources of power; alternatives to force, the character and effect of agreements and settlements; administration of agreements; and conditions influencing governmental participation and control. Prerequisites: ECO101 and BSI205 or consent of instructor.
BUSINESS ECONOMICS

203. Managerial Economics. (Spring) Business problems are analyzed in this course in terms of economic principles and methods. The theory of demand, supply, market equilibrium, and types of competition are established. Economic reasoning is then applied to managerial decisions in the analysis and forecasting of demand, production methods and costs, price and marketing policy, and profitability measurements. Measurement and forecasting as aids to managerial decision-making under uncertainty are emphasized. Prerequisite: QNT205.

236. Financial Institutions and Markets. (Fall) Functions and theories of money and credit, principles of commercial banking and international finance, structure and operations of the Federal Reserve system; description and functions of other financial institutions and their role in the economy. Structure of the market for short-term and long-term funds; description of money and capital market instruments. Monetary and credit policy. Prerequisites: ACC153 and ECO101.

BUSINESS LAW

203. Business Contracts I. (Fall) Basic principles of contract law, including the doctrines of offer and acceptance, consideration, effect of mistakes, fraud and undue influence, the necessity of a writing, and rights of enforcement where there has been failure of performance. Case material from factual situations faced in everyday business, with special reference to laws of New York State. Half course.


233. Law of Sales and Negotiable Instruments. (Fall) Law of sales under the Uniform Sales Act and the law of negotiable instruments, including promissory notes, drafts, bills of exchange, warehouse and trust receipts. Half course.

236. Agency, Partnerships, and Corporations. (Spring) Legal aspects of agencies, partnerships, and corporations as a means of carrying on business. Creation and incidents of the agency relationship; rights of partners as between themselves and third parties; formation and powers of corporations; rights of stockholders and problems arising from business liquidation. Half course.

236. Legal Constraints on Business. (Fall) A survey of the principles and philosophy necessary to comprehend the legal concepts constraining a business environment. Objectives are: acquiring skills to enable the businessman to foresee legal problems involved in various circumstances through a process of analytical reasoning and the ability to make, alter, and justify related conclusions; recognizing the legal consequences involved in acts relating to business ventures and the need for professional counselling in this area; reviewing the informal judicial process, e.g. negotiation and settlement, and the formal judicial procedures, e.g. commencement of suit to final judgment. Half course.

FINANCE

205. Financial Management. (Fall and Spring) Financial policies and practices essential to business administration. Major emphasis is on corporation finance. Topics include: corporation securities, capital budgeting, long-term financing, short-term financing, administration of funds, administration of income, expansion, and reorganization. Adaptation of financial principles to specific business situations. Prerequisite: ACC153.

246. Investment Management. (Spring) General principles of successful investment, as applied to the management of individual and institutional investors' funds. Topics include: determining investment objectives, formulating general investment policies, classifying investment media, interpreting and forecasting general market trends, analyzing leading industries, and developing criteria for the selection of individual security issues. Prerequisite: ECO101.

GENERAL BUSINESS ADMINISTRATION

157. Fundamentals of Business Administration. (Fall and Spring) An introduction to the principal activities, types of policy problems, and interrelationships of the main phases of business, including procurement, production, marketing and finance. Frequent use is made of business cases for illustrative purposes and to introduce the student to the methods of business problem analysis.

282. Business Policy. (Spring) Integrates the student's previous studies and further develops his ability to deal more effectively with business problems. Series of cases on policy formulation and administration, involving the functions of purchasing, production, personnel marketing, finance and accounting. These deal with such problems as promotion, expansion, reorganization, and adjustment to changing economic conditions and social forces. During the term, business executives are invited to present and discuss cases developed from their own experience. Prerequisites: FIN205, MKT203, PRD208, and QNT205.
PRODUCTION

208. Production Management. (Fall and Spring) Issues, concepts and practices encountered in effectively managing the production function. Topics include: analysis of facilities, research and product development; production planning; organizing and controlling characteristics of the manufacturing process; control of quality, quantity and cost; and consideration of increased automation. Case analysis is emphasized, and field studies of industrial plants may be included. Prerequisite: QNT 205.

220. Design of Production Facilities. (Spring) Concepts and techniques involved in the design of production systems. Topics include translation of product or service specifications into production requirements, design of operations and processes, and location of facilities. Emphasis is placed on the use of mathematical and simulation models for the evaluation of alternative designs. Prerequisite: PRD 208.

225. Production Planning and Control (Fall) Concepts and techniques of production quantity planning and control. Topics include production scheduling, aggregate planning of employment, inventory and production levels; inventory models, scheduling and dispatching decision rules, and the design of general control systems. Prerequisite: PRD 208.

QUANTITATIVE METHODS


231. Electronic Data Processing. (Fall) General principles of computer processing and commercial information systems. Includes: nature and use of input, output, communications and processing equipment; principles and limited practice in programming; analysis of data processing systems; principles of computer systems design; problem areas in the implementation and operation of computer systems, procurement of equipment, and the structure and operation of the data processing organization.

235. Computers and Numerical Analysis. (Fall and Spring) Introduction to mathematical and numerical techniques used in the solution of various business problems. Typical topics include: solution of linear and nonlinear equations and systems, characteristic values of matrices, interpolation and approximation, numerical integration and differentiation, computer simulation methods. FORTRAN programming will be used to apply these methods. Prerequisites: Two courses in college mathematics.

241. Operations Research I. (Fall) An introduction to mathematical programming. Topics include: constrained optimization; convexity; Lagrange multipliers and duality; linear, quadratic and integer programming; game theory. Prerequisite: Math. 163.

Faculty

John M. Brophy, PH.D. (Cornell) ... Professor of Behavioral Science
Donald F. Gordon, PH.D. (Cornell) ... Professor of Business Economics
Myron J. Gordon, PH.D. (Harvard) ... Professor of Accounting and Finance
Edwin R. Henry, PH.D. (Ohio State) ... Professor of Behavioral Science
Julian Keilson, PH.D. (Harvard) ... Professor of Mathematical Statistics and Professor of Statistics, College of Arts and Science
Melvin R. Marks, PH.D. (Tulane) ... Professor of Behavioral Science
William H. Meckling, M.B.A. (Denver) ... Professor of Business Economics
Walter Y. Oh, PH.D. (Chicago) ... Professor of Business Economics
Eric C. Vance, M.A. (Columbia) ... Professor of Finance
H. Martin Weingartner, PH.D. (Carnegie Institute of Technology) ... Professor of Finance and Quantitative Methods
William C. Wichman, B.S. (Iowa State) ... Professor of Business Policy
Marcus Alexis, PH.D. (Minnesota) ... Associate Professor of Marketing
George J. Benston, PH.D. (Chicago) C.P.A. North Carolina ... Associate Professor of Accounting and Finance
James M. Ferguson, PH.D. (Chicago) ... Associate Professor of Business Economics
Marshall Freimer, PH.D. (Harvard) ... Associate Professor of Quantitative Methods
Joseph W. Gavett, PH.D. (Cornell) ... Associate Professor of Production
Harry J. Gilman, PH.D. (Chicago) ... Associate Professor of Economics and Statistics
Vernon G. Lippitt, PH.D. (Harvard) ... Associate Professor of Business Economics
Jack H. Matthews, D.B.A. (Indiana) ... C.P.A. Kansas, New York ... Associate Professor of Accounting
Philip T. Meyers, M.S. (Oklahoma State) C.P.A. Oklahoma ... Associate Professor of Accounting
Patrick J. Parker, M.B.A. (Chicago) ... Associate Professor of Statistics and Economics
Daniel N. Braunstein, PH.D. (Purdue) ... Assistant Professor of Industrial Psychology
Patricia J. Eberlein, PH.D. (Michigan) ... Assistant Professor of Quantitative Methods
George H. Haines, Jr., PH.D. (Carnegie Institute of Technology) ... Assistant Professor of Marketing and Computer Science
Bertrand N. Horwitz, PH.D. (Minnesota) ... Assistant Professor of Accounting and Economics
Michael C. Jensen, PH.D. (Chicago) ... Assistant Professor of Finance and Accounting
Leonard S. Simon, Ph.D. (Columbia) ... Assistant Professor of Marketing

Allan Wolk, LL.B. (Syracuse) ... Assistant Professor of Business Law and Accounting

Charles C. Ying, Ph.D. (Harvard) ... Assistant Professor of Quantitative Methods and Economics

Kenneth F. Gordon, S.M. (Massachusetts Institute of Technology) ... Instructor in Production and Economics

*N. Joseph Houghton, M.B.A. (Harvard) ... Senior Lecturer in Computer Science

*Leslie J. Knox, M.B.A. (Syracuse) ... Senior Lecturer in Accounting

*Richard K. Schalk, B.S. (Iowa State) ... Senior Lecturer in Accounting

*Charles H. Schwartz, B.A. (Niagara) ... Senior Lecturer in General Business

*Laurance G. Locke, A.B. (George Washington) ... Lecturer in Statistics

*Richard R. Schulz, M.B.A. (Syracuse) ... Lecturer in Marketing

*Vincent H. Swoyer, Ed.D. (Harvard) ... Lecturer in Computer Science

*Jerry H. Curnutt, Ph.D. (Illinois) ... Associate Lecturer in Business Economics

*William J. Stolze, S.M. (Massachusetts Institute of Technology) ... Associate Lecturer in Business Policy

*Robert M. Tyle, LL.B. (Syracuse) C.P.A. New York ... Associate Lecturer in Business Law

*Nathan B. Winstead, Ph.D. (Purdue) ... Associate Lecturer in Industrial Psychology

*Edward J. Carstens, B.S.T.E. (Oklahoma) ... Assistant Lecturer in Production

*Part-time
At no other time in the life of this nation have excellent teachers been more needed than now. Although the College of Education offers study leading to a wide range of careers in education, its undergraduate programs are aimed specifically at producing quality teachers for elementary and secondary schools.

The College of Education believes that superior teaching requires a broad background in general education. Any student who wishes to become a teacher must first complete two years of study in the College of Arts and Science. During these two years, the student should complete as many distribution requirements as possible.

Students preparing for elementary school teaching take all of their course work in the College of Education during the senior year. This professional study includes courses on the campus and direct experience with children in elementary schools. Upon the successful completion of the program, the prospective teacher receives the degree of Bachelor of Science in Education.

A student planning to teach in secondary school follows a program which provides a solid foundation in subject matter and professional courses. He enrolls in a course of study outlined by his major department in the College of Arts and Science which leads to a Bachelor of Arts degree. He begins his professional course work in the College
of Education during the junior year and completes it the fall semester of the senior year.

The College of Education also offers a Bachelor of Science in Education degree in certain subject areas. To enter this program, a student must complete the sophomore year and be admitted to the College.

To explore opportunities in education, a student should meet with the Director of Academic Advising in the College of Education as early as possible in his college career. No student may enroll in the programs of the College of Education without such a conference.

All public school teachers must meet state certification requirements, which are not identical with degree requirements at this university. The Director of Academic Advising can furnish information concerning teaching requirements in the public schools of each state. Any student expecting to teach should incorporate these certification requirements into his program early enough so that they may be completed by graduation.

The Committee on Teacher Education evaluates all applications to the undergraduate programs of the College, and subsequently notifies students of acceptance or rejection. The following steps must be followed by all students seeking admission:

1. Report to the Office of the Director of Academic Advising for an interview during the freshman or sophomore year.

2. Obtain instruction and application forms for College of Education programs from the Director of Academic Advising during the semester prior to the one in which entrance to a program of the College of Education is anticipated. Admission cannot proceed further until these forms are received by the Director’s office.

3. Meet with assigned faculty adviser for interview and preliminary program planning.

4. Enroll, at the next regular registration, in the courses outlined in conference with a faculty member of the College of Education.

Students from other institutions seeking admission with advanced standing to programs of the College of Education must first apply to the Director of Admissions of the University, who confers with the Director of Academic Advising of the College of Education to evaluate the student’s previous courses and to provide required application forms.

The College of Education accepts a limited number of well-qualified part-time students who wish to pursue a degree in Education on the condition that they complete the approved program without interruption. The Director of Academic Advising and the Committee on Teacher Education determine the conditions under which each part-time student is to be admitted.

Program in Elementary Education

After completing the first two years of college, a qualified student may follow a program of study leading to the degree of Bachelor of
Science in Education and certification in New York State for teaching the elementary school grades, Kindergarten through 6. A student who plans to concentrate in elementary education should report to the Office of the Director of Academic Advising for instructions and forms by March 1 of the sophomore year.

To meet admission requirements of the College of Education a student, by the close of his sophomore year, must complete at least 64 semester hours of selected courses and achieve a cumulative point hour average of at least 2.0.

During his junior year a student takes no courses in the College of Education. Instead he completes all liberal arts requirements, including an area of concentration. This program of academic work, however, must be approved by a College of Education adviser. Also, during the junior year, each student accepted by the College works with children in appropriate community agencies and participates in occasional activities sponsored by the College. These junior year activities are prerequisites for participation in the senior year professional program in elementary education.

Outlined below are the courses which comprise the senior year program in the College of Education and which meet the New York State certification requirements for elementary school teachers:

**Bachelor of Science in Education (Elementary)**

**GENERAL REQUIREMENTS**

1. English 111 (unless excused)
2. Foreign language (proficiency required)
3. Physical Education (four semesters, non-credit)

**DISTRIBUTION REQUIREMENTS**

1. Humanities (English, Fine Arts, Religion, etc.)
2. Social Sciences
   - Three courses in an approved combination of American History and Geography
   - Two courses selected from other social sciences
3. Natural Sciences
   - Psychology 101
   - Two laboratory sciences
   - One mathematics course (Mathematics 140 recommended)

**GROUP CONCENTRATION**

Four or five courses in one group or related courses from more than one group beyond the distribution requirements, and including at least two courses at the upper division level. The group concentration must be approved by the College of Education, and must constitute a minimum of nine courses, including those that are part of the distribution requirements.

**EDUCATION REQUIREMENTS**

1. One course in social foundations
2. Two courses in educational psychology and child development
3. Three courses in curriculum and instruction
4. Student teaching (two course credits)

**ADDITIONAL ELECTIVES**
Program in Secondary Education

An undergraduate student preparing to teach an academic subject in the secondary schools, grades 7 through 12, pursues one of two degree programs. The normal preparatory course for secondary school teaching requires the completion of a B.A. program, with a departmental concentration in the College of Arts and Science, as well as the Teacher Education sequence (Education 200, Ed. 210, Ed. 231, 232, 234, 235 or 236, and Ed. 239) in the College of Education.

A student should reserve the fall semester of the senior year for courses required in this sequence. Students should not register for additional course work during this semester.

A student who completes degree requirements in the College of Arts and Science follows a program established by the department of his major subject interest. Since degree and certification requirements vary, a student often finds it necessary to take courses not required in his departmental concentration. A student should contact the Office of the Director of Academic Advising in the College of Education to be certain that his program meets the certification requirements of the State of New York or any other state in which he plans to teach.

The College of Education offers programs leading to a Bachelor of Science degree which are available to those students who have completed the sophomore year, and who, in consultation with College advisers, find it advisable to take a B.S. degree. A student interested in applying for this program must meet distribution requirements similar to those in effect for bachelor's degrees in the College of Arts and Science. Such a student plans his subject concentration with an adviser from the College of Education.

A student who is enrolled in a program of preparation for secondary school teaching should apply for admission to the Teacher Education Sequence between February 1 and March 25 of his junior year. Applications and instructions may be obtained from the Director of Academic Advising.

The requirements for admission to the Teacher Education Sequence are as follows:

1. Classification as a senior during the academic year the sequence is to be completed and evidence that certification requirements in a subject field will be completed by the end of that year.

2. A cumulative point average of 2.5 or higher in the field selected for student teaching.

3. A satisfactory health record.

4. A satisfactory interview with the appropriate faculty member.

5. Favorable action upon the student's application by the Committee on Teacher Education.
COURSES OF INSTRUCTION

Educational Foundations

Ed. 200. Education in the American Social Order. A survey of the historical background of modern education; the purposes and organization of education in the United States, the status of contemporary educational problems and the proposals for their solution.

Ed. 210. Educational Psychology. A general survey of concepts and data covering growth, learning, psychological measurement, personality, and problems of adjustment as they relate to the school.

Ed. 211. Child Development. A study of the patterns of development of children from birth to adolescence with special emphasis on school age children. Techniques and methods of child study are reviewed.

Curriculum and Instruction

ELEMENTARY EDUCATION

Ed. 220, 221. The Elementary School Curriculum I and II (three courses). Examines principles, methods and materials of teaching appropriate to the elementary school curriculum (reading and the language arts, mathematics and science, social studies, arts and crafts, music, creative dramatics, health and recreation). Planning of instructional activities, the measurement and evaluation of pupil progress, and the use of audiovisual methods and materials of instruction. Observation and participation in classroom activities of area elementary schools.

Ed. 229. Student Teaching in the Elementary School (two courses). Each student is provided the opportunity to assume gradually increasing responsibility for the total instructional program in a classroom of an elementary school in the Rochester area. Through regular seminar meetings, the students critically analyze problems, principles, and techniques of teaching with special reference to their student teaching experiences and children's behavior problems.

SECONDARY EDUCATION


Ed. 231. The Teaching of English in the Secondary School. A study of recognized methods of teaching English in the secondary schools. The selection and examination of materials for the teaching of language, literature and composition, the means of providing for individual differences, interests and capacities; ways of developing proper habits of reading and study, lesson planning, the construction of objective tests, and evaluation of teaching materials.

Ed. 232. The Teaching of Social Studies in the Secondary School. The aims, present trends, and suggested programs in the social studies in relation to the general aims of instruction. Opportunities provided for the examination of textbooks, collateral readings, professional periodicals, visual aids, standard reference works, and other materials. Construction of lesson plans and objective tests.


Ed. 235. The Teaching of Modern Foreign Languages in the Secondary School. A study of approaches to and techniques for teaching a modern foreign language. Language considered as communication skill and vehicle for cultural values. Contributions of linguistic science; organization of the curriculum, testing, use of mechanical aids.


Ed. 239. Student Teaching in the Secondary School (two courses). Observation, participation and classroom teaching are done in the public high schools of Rochester and vicinity.

GENERAL COURSE

Ed. 248. Programming for Automated Teaching. The development, use and analysis of sequences of items designed for automated teaching devices. All participants will receive a portion of the course material from a programmed sequence and will engage in preparing programs in an area of their own interest. In addition, methods of analyzing programmed experiences of students will be developed.
Faculty

William A. Fullagar, Ed.D. (Columbia) ... Professor of Education
Norman G. Gunderson, Ph.D. (Cornell) ... Professor of Education and Mathematics
Thomas J. Hill, Ed.D. (Florida) ... Professor of Education
Frances L. Horler, Ph.D. (Chicago) ... Professor of Education
James V. Mitchell, Ph.D. (Chicago) ... Professor of Education
Harold L. Munson, Ed.D. (New York) ... Professor of Education
Byron B. Williams, Ph.D. (Ohio State) ... Professor of Education
Arthur L. Assum, A.M. (Ohio State) ... Associate Professor of Education
Irene J. Athey, Ph.D. (California) ... Associate Professor of Education
Henry E. Butler, Jr., Ph.D. (California) ... Associate Professor of Education
William H. Clark, Ph.D. (Columbia) ... Associate Professor of Education and German
Joseph W. Cole, Ed.D. (Harvard) ... Associate Professor of Education
Dean Corrigan, Ed.D. (Columbia) ... Associate Professor of Education
Gerald A. Gladstein, Ph.D. (Chicago) ... Associate Professor of Education
Elizabeth Z. Howard, Ph.D. (Chicago) ... Associate Professor of Education
Glenn L. Immegart, Ph.D. (Ohio State) ... Associate Professor of Education
Clarence J. Karier, Ph.D. (Wisconsin) ... Associate Professor of Education
Thomas R. Knapp, Ed.D. (Harvard) ... Associate Professor of Education
Eleanor E. Larson, Ed.D. (Illinois) ... Associate Professor of Education
Jerome P. Lysaught, Ed.D. (Rochester) ... Associate Professor of Education and Research Associate in Medical Education
John J. Montean, Ph.D. (Syracuse) ... Associate Professor of Education
Robert L. Osborn, Ed.D. (Indiana) ... Associate Professor of Education
Milton V. Pullen, Ed.M. (Rochester) Associate Professor of Education
Catherine J. Sullivan, A.M. (Columbia) ... Associate Professor of Education
Clarence M. Williams, Ed.D. (Michigan State) ... Associate Professor of Education
Ellsworth S. Woestehoff, Ph.D. (Minnesota) ... Associate Professor of Education
Paul H. Joslin, Ed.M. (Rochester) M.A. (South) ... Assistant Professor of Education
Barry L. Kaufman, M.A. (Brooklyn) ... Assistant Professor of Education
Richard McLaughlin, M.S. (Syracuse) ... Assistant Professor of Education
Mitchell Salim, Ed.D. (Wyoming) ... Assistant Professor of Education
George C. Tramontin, M.A. (Michigan) ... Assistant Professor of Education
Francis M. Trusty, Ed.D. (Stanford) ... Assistant Professor of Education
Thomas Vetter, M.A. (Michigan) ... Assistant Professor of Education
David G. Zimpfer, Ed.D. (Buffalo) ... Assistant Professor of Education
Society is demanding more and more of its educated men and women, especially those educated in the engineering disciplines, for it is they who will compress the time scale between scientific discovery—in physics, chemistry, biology, mathematics, psychology—and the practical application of this new knowledge. As the world of the engineer becomes more stimulating and more challenging, the College is demanding more and more of its faculty and of its students. There can be no compromise in the pursuit of the College's four objectives:

1. To prepare undergraduate students with the fundamental knowledge of engineering and the related sciences and to develop their ability to apply the principles of these sciences to ever-new situations.

2. To educate especially qualified students at the graduate level to fill the continuing need in teaching, research and advanced positions in industry. As a corollary, a strong graduate program adds vigor to the academic environment in which to educate undergraduate engineers and applied scientists.
3. To foster active research programs designed to teach graduate students the aims and methods of research, to provide a stimulating and challenging environment for both students and faculty, and to add to the store of human knowledge.

4. To be of service to its community both local and national. To meet this objective, opportunity is provided the individual for part-time study in the College; the consulting and research resources of the College are available to help solve special problems which are appropriate to these resources.

To fulfill these aims, the College is committed to a rigorous study of the basic scientific principles of engineering backed by a solid base of the humanities. The College accepts students only at the junior level after a minimum of two years of a strong liberal arts education. This philosophy of an engineering-science education built on a liberal arts base is carried through the junior and senior years.

UNDERGRADUATE PROGRAMS

Four-Year Programs

Four-year courses of study are offered in Chemical Engineering, Electrical Engineering, Mechanical and Aerospace Sciences, and in Optics. These curricula, all of which lead to the Bachelor of Science degree, provide thorough training in the basic and applied sciences and in specialized studies in engineering and optics.

Because education for leadership in engineering calls for more than knowledge of science and applied science, over one-fifth of the curriculum time is devoted to work in the humanities, social sciences, and free electives.

In each curriculum emphasis is placed on a thorough understanding of the fundamental principles of science and engineering, rather than on a detailed knowledge of specific engineering and industrial practice. The aim is to motivate and prepare the graduate for continued learning, either in industrial employment or other professional engineering service or in study beyond the Bachelor's degree.

Full accreditation of the programs in electrical, chemical, and mechanical engineering has been given by the Engineers' Council for Professional Development.

Enriched Five-Year Program

Although undergraduate programs are normally completed in four academic years, a student may extend his undergraduate work over a five-year period. The additional time may be used to broaden his formal education by including courses in the liberal arts or in the sciences. A student wishing to follow such a program should consult with his Faculty Adviser toward the end of his freshman year. The proposed program must meet the normal minimum load requirements.

By properly choosing the electives in a five-year program the requirements for both the B.S. degree in the College of Engineering
Two-College Program

The Two-College Program or 3-2 Program offers a broad training in the humanities and social sciences combined with professional training in engineering. In this five-year program the student attends the College of Arts and Science at the University of Rochester, or a participating liberal arts college, for three years.

After satisfactorily completing the liberal arts phase of study, he then transfers to the College of Engineering and Applied Science for his professional training. This program is especially valuable as an educational preparation for those who wish to prepare for careers which combine knowledge of the precise world of scientific engineering along with the ability of understanding people, their needs and how to serve them.

Application for admission into the Two-College Program is made to the liberal arts college of the student's choice, and is subject to the admission procedures of that institution. After three years of successful study, acceptance into the College of Engineering and Applied Science at Rochester is guaranteed upon the recommendation of the participating college. Satisfactory completion of the planned sequence of courses and the maintenance of an acceptable academic average are essential for admission to the University of Rochester.

Entrance requirements vary between the College's four departments, but each insists that all transferring students complete the science and mathematics courses listed in the first two years of the four-year curriculum. Students then take the usual junior and senior courses with the following exceptions:

Chemical Engineering: ChE100 and ChE102 replace electives in the fall and spring of the junior year.

Electrical Engineering: EE110 is a prerequisite and must be taken at the liberal arts college or during the summer session preceding entrance. A special session EE111 replaces an elective in the humanities or social sciences during the first semester of the junior year.

Mechanical and Aerospace Sciences: Students without demonstrated competence in computer programming are required to attend the part of MAS120 dealing with that subject, although the course is not required. MAS121 replaces the second elective in the junior year.

Optics: Optics 121 and 122 are taken in place of the liberal arts elective in the junior year. Upon completion of the program, the Bachelor of Science degree is awarded by the College of Engineering and Applied Science and the Bachelor of Arts degree by the participating college.

*A list of participating colleges may be secured by writing to the Office of the Dean, College of Engineering and Applied Science, University of Rochester.*
Specialized Course Work

Flexibility is provided in each of the curricula, both four-year and five-year, so that a student may incorporate in his Bachelor's program certain specialized courses of particular interest to him. For instance, by planning his program early an engineering student may pursue a sequence of elective work in such fields as materials science, or in other selected areas in which the University has special competencies.

Graduate Programs

All of the departments in the College of Engineering and Applied Science offer programs leading to the award of Master of Science degree. The Ph.D. degree is offered in a wide variety of specializations. These graduate programs are described in the separate Bulletin of Graduate Studies.

Degree Requirements

In addition to the specific courses stipulated in the degree programs listed by each of the four departments, the student must satisfactorily complete the following requisites:

1. English: Any course at the 100 level (excluding those numbered 115-129).

2. Foreign Language: There is no language requirement for the undergraduate programs in the College of Engineering and Applied Science. First year courses in a foreign language are considered as humanities courses. (Similarly, Psychology 101 is accepted as a social science subject.)

3. Physical Education: All students are required to take physical education during each of their first four terms. Physically handicapped students may be excused or given modified programs on recommendation of the University health service.

4. Distribution Requirement: Students following the mechanical, electrical, or optics programs must complete six courses in the humanities and social sciences. At least two courses must be taken in humanities and at least two in the social sciences. Students in chemical engineering programs must complete at least five courses in the humanities and social sciences representing at least 20 hours. At least two courses must be taken in humanities and at least two in the social sciences.

5. A minimum of one year's academic course work must be completed in the College.

6. ROTC students majoring in engineering or optics must take certain Aerospace Studies or Naval Science courses in addition to the regular courses listed. Two ROTC courses (eight hours) may be used as allowable electives. Other ROTC courses must be taken as overloads.
Requirements for Bachelor's Degree with Distinction

The Bachelor degrees are awarded in three grades of distinction: with distinction, with high distinction, and with highest distinction in departmental major.

This award is based primarily on a point-hour ratio: at least 3.25 for distinction, 3.60 for high distinction, and 3.85 for highest distinction. However, a piece of creative work or a paper (critical or creative, or a report of the results of original research) may be offered in support of a recommendation for a distinction award not more than one level higher than would be indicated by the point-hour ratio. Students interested in submitting such a project should consult their departmental advisers not later than February 1 of the year in which they plan to graduate.

Except in unusual cases, no student is considered for a degree with distinction without at least two years of academic work at the University of Rochester. Ordinarily nothing higher than a degree with distinction is given in such cases.

Preceptorials

The College offers Preceptorials to freshmen each fall. These courses are designed to introduce selected students to a particular field of engineering and are open to all qualified freshmen, including liberal arts, business administration, and education majors.

Satisfactory-Fail Option

Engineering students are allowed to use the Satisfactory-Fail system in courses other than engineering, mathematics, physics, and chemistry.

Work-Study Program

The work-study program was established in cooperation with a wide variety of industrial and research organizations to offer a planned program of summer employment to the student. The work is aimed at achieving specific objectives: to have each work period contribute in a significant way to a better understanding of engineering, to develop enthusiasm for the profession, and to provide the satisfaction of being a productive employee.

The College cannot guarantee that all students will be placed in meaningful summer jobs, although efforts are made to aid all who are interested. The advantages of participating in the work-study program are apparent. The student who integrates three summers of significant work experience with four years of superior quality academics should have a head start toward being a truly professional engineer.

Admission Policy

Applicants may seek admission to the College of Engineering and Applied Science through intramural or extramural transfer. Students enrolled in the College of Arts and Science of the University of Rochester...
ester apply for intramural transfer upon satisfactory completion of the pre-engineering work prescribed in one of the engineering departmental synopses. Students from two-year colleges or other institutions who wish to transfer to the College of Engineering and Applied Science apply to the University Admission Office (for more details see page 19). To be admitted to the College, a student must satisfy the following requirements:

1. Completion of the freshman and sophomore courses of the appropriate departmental four-year synopsis, or equivalent work acceptable to the College.

2. A cumulative grade average of at least 2.0.

3. Acceptability by the appropriate department with regard to professional promise, interest, and character.

Under certain circumstances, applicants not meeting all of the above requirements may be admitted as special or probationary students. Their status is subject to review at the end of the first semester in the College.

**Common Freshman Year**

Students following the Bachelor of Science programs in chemistry, physics, optics, and all branches of engineering take substantially the same courses during their freshman year, and may change among these curricula with relative ease until the end of the first year.
Chemical Engineering

Shelby Alexander Miller, Ph.D. (Minnesota) ... Professor and Chairman of the Department of Chemical Engineering
Robert Howard Perry, Ph.D. (Delaware) ... Professor of Chemical Engineering (on leave)
Gouq-Jen Su, Sc.D. (M.I.T.) ... Professor of Chemical Engineering
James Merrill Douglas, Ph.D. (Delaware) ... Associate Professor of Chemical Engineering
Richard Frederick Eisenberg, M.S. (Rochester) ... Associate Professor of Metallurgy
*Richard Reist Kraybill, Ph.D. (Michigan) ... Associate Professor of Chemical Engineering
Stanley Middleman, D.Eng. (Johns Hopkins) ... Associate Professor of Chemical Engineering
John Wesley Bartlett, Ph.D. (Rhodes) ... Assistant Professor of Chemical Engineering
Charles Harry Byers, Ph.D. (California, Berkeley) ... Assistant Professor of Chemical Engineering
Martin Robert Feinberg, Ph.D. (Princeton) ... Assistant Professor of Chemical Engineering
William David Smith, Jr., D.Eng. (Yale) ... Assistant Professor of Chemical Engineering
Irwin Andrew Wiebe, D.Sc. (Washington University, St. Louis) ... Assistant Professor of Chemical Engineering
*Ronald Edward Glegg, Ph.D. (McGill) ... Associate Lecturer in Chemical Engineering
*Burton Cosden Gibbons, B.S.C.E. (Carnegie Institute of Technology) ... Assistant Lecturer in Chemical Engineering
*Part-time

The major mission of the Department of Chemical Engineering is the development of competent chemical engineers, adequately prepared to contribute effectively in all phases of the profession from process industry to research. The curriculum is designed to provide a balanced experience of education and training in the humanities and social sciences, in science and mathematics, and in applied science and engineering. Chemical engineering involves at once applications of rigorous theory and methods that are largely empirical. Both require sound engineering judgment and professional standards in their successful practice, and both are dealt with in the curriculum. The Department faculty endeavors to induce in its students attitudes of scientific curiosity, engineering objectivity, and professional dedication.
# Four-Year Degree Program

## FRESHMAN YEAR

**First Term**
- Chem. 123 General Inorganic Chemistry
- Math. 161 Analysis I
- Phys. 115 Physics I
- English Requirement
- Ph. Ed. 11 or 12 Physical Education

## SOPHOMORE YEAR

**First Term**
- Chem. 163 Organic Chemistry I
- *Math. 163 Analysis III*
- Phys. 125 Physics II
- *Ch.E. 100 Introduction to Chemical Engineering*
- Ph. Ed. 21 or 22 Physical Education

**Second Term**
- Math. 162 Analysis II
- Phys. 116 Physics I
- Elective (Humanities or Social Science)
- Ph. Ed. 13 or 14 Physical Education

## JUNIOR YEAR

**First Term**
- Chem. 251 Physical Chemistry I
- Ch.E. 180 Eng. Materials I
- Ch.E. 243 Transport Phenomena I
- Elective

**Second Term**
- Chem. 252 Physical Chemistry II
- Ch.E. 280 Eng. Materials II
- Ch.E. 244 Transport Phenomena II
- Ch.E. 225 Chemical Engineering Thermodynamics
- Ch.E. 294 Plant Visits
- Elective

- *Intersession (3 weeks)*
- Ch.E. 245 Chemical Engineering Laboratory

**Second Term**
- Ch.E. 231 Applied Kinetics, Reactor Design
- Ch.E. 250 Unit Operations
- Elective

## SENIOR YEAR

**First Term**
- Ch.E. 231 Applied Kinetics, Reactor Design
- Ch.E. 250 Unit Operations
- Elective

## Second Term
- Chem. 273 Chemical Engineering Process Design
- Elective

- Ch.E. 294 Plant Visits

*Students with a passing grade less than C may be required to repeat the course.*

*An alternate approved sequence is Mathematics 171, 172, 173, 174 for those considered eligible by the Mathematics Department.*

*An alternate approved sequence is Physics 117, 118, 127, 128 for those considered eligible by the Physics Department.*

*The Chemical Engineering curriculum contains eight electives, including one in the freshman year. Of these, at least five must be selected from Humanities and Social Science courses in the College of Arts and Science, with the following stipulations and exceptions: at least two Humanities courses; at least two Social Science courses; a fifth course that must be in either Humanities or Social Science. For the purpose of electives distribution in this program, Psychology 101 may be considered a Social Science. The remaining three courses (12 credits) may be satisfied by any courses offered by the U. of R. for which the student is eligible, provided that their content is not already included in the Chemical Engineering curriculum. Students planning graduate study in Chemical Engineering or Chemistry are encouraged to include one or more years of German or Russian among their Humanities or free electives.*

*Conducted during a period of 18 full working days (consecutive except for Sundays), usually during the first three weeks of June.*

*This course carries a credit value of eight semester hours or two courses.*
ROTC Credit

Students enrolled in Naval or Air Force ROTC programs may apply two ROTC courses (eight hours) toward their degree as electives in their Chemical Engineering curriculum. Other ROTC courses required must be taken as an overload. Consult Faculty and Departmental Advisers for a synopsis specially applicable to ROTC students.

The student who wishes to complete both his Chemical Engineering degree and his commission in four years may find it necessary to take at least one summer session course. A more reasonable workload results if the ROTC student plans his degree-commission program for nine or 10 semesters.

*The Metallurgical and Materials Concentration* in Chemical Engineering consists of the use of the three free electives for courses in metallurgy or materials which, when properly selected, form with ChE280 a four-course composite representing a “minor” in materials engineering. Courses which may be selected as part of this option are:

- Ch.E. 283 The Structure and Properties of Solids
- Ch.E. 284 Applied Physical Metallurgy
- Ch.E. 285 Contemporary Problems in Materials Engineering
- Ch.E. 295 Metallurgical Engineering Projects
- Ch.E. 481 Corrosion
- Opt. 221 Introduction to Quantum Mechanics and Atomic Structure
- Opt. 222 Introduction to the Theory of the Solid State
- Ch.E. 263 The Chemistry of Plastic Materials
- Ch.E. 482 Colloidal and Amorphous Materials
- Ch.E. 483 Physics and Chemistry of Vitreous Materials
- Geol. 227 Intermediate Mineralogy
- Geol. 241 Introductory Petrology

Students interested in the Metallurgical and Materials Concentration should plan their sequence of courses by the beginning of their junior year. They are invited to discuss the option with their adviser or with the director of the option program.
100. Introduction to Chemical Engineering. An introduction to the profession of chemical engineering; techniques and fundamental methods of problem formulation and solution.—Three lectures and one recitation or laboratory a week.

102. Material and Energy Balances. First law of thermodynamics and the principles of equilibrium. Combined with the principle of conservation of matter, they are used to solve a variety of chemical engineering problems involving physical and chemical changes of material and accompanying heat effects.—Three lectures and one recitation or laboratory a week.

145, 146. Elements of Chemical Engineering. Analysis of chemical engineering problems and techniques for their solution. The principles of conservation, equilibrium, transport behavior, and economics applied to problems of stoichiometry, unit operations, and reactor design. Intended as an engineering supplement for chemists and a theoretical background for technicians employed in the process industries. Prerequisites: general chemistry, general physics, and calculus.—Credit—three hours each term.

180. Engineering Materials I. A review of statics followed by a study of the principles of strength of materials with application to engineering structures. Topics include: properties of materials, simple and combined stresses, theories of failure and design of engineering structures. The laboratories will be devoted to training in engineering graphics and shop practice, and will include experiments and demonstrations in testing and evaluation of material properties. Prerequisites: Math. 163 and Physics 115, 116. Three lectures and two laboratories a week.

200. Process Control and Instrumentation. Review of the principles of measurement, followed by a survey of established techniques for measuring and controlling process variables. Selection and engineering of instruments for the chemical process industries.—Credit—three hours. Two lectures and one recitation or laboratory a week.

211. Chemical Engineering Computer Calculations. An introduction to digital and analog computers with emphasis on programming techniques and their application in the solution of chemical engineering problems.—Credit—three hours. Two lectures and one recitation or laboratory a week.

212. Analysis of Chemical Engineering Data. Graphical and statistical methods of analyzing, correlating, and interpreting both laboratory and industrial data are developed. A brief study of the important economic and statistical factors underlying the optimal design of experimental programs.—Credit—three hours. Three lectures—recitations a week.

225. Chemical Engineering Thermodynamics. A study of the fundamental laws and principles of classical thermodynamics with special emphasis on their application to problems in chemistry and chemical engineering. Main topics covered are: PVT relationships for real gases and liquids; the Second Law; thermodynamic properties of fluids; production of work from heat; refrigeration; and phase and chemical equilibria. Prerequisite: ChE 102.—Three lectures and one recitation or laboratory a week.

231. Applied Kinetics and Reactor Design. Review of chemical kinetics, followed by a study of the methods of kinetic data collection, analysis, and interpretation. Simple reactor designs are calculated. Emphasis is on homogeneous uncatalyzed reactions, but heterogeneous and catalyzed reactions are considered. ChE 244 prerequisite. Illustration of principles in the laboratory and by means of an analog computer.—Three lectures and one or two laboratories a week.

243. Transport Phenomena I. Rigorous treatment of the theory of fluid flow; application of the theory to problems of laminar and turbulent flow through pipes, flow through particulate beds, and mixing processes. Theory and application of heat transfer.—Three lectures and one recitation or laboratory a week.

244. Transport Phenomena II. A continuation of ChE 243. Formulation of the theory of mass transfer with reference to diffusive and convective transport of material in static and flowing systems.—Three lectures and one recitation or laboratory a week.

245. Chemical Engineering Laboratory. Demonstration of certain of the unit operations and of the physical principles of chemical engineering. Data taking, equipment operation, and methods of data calculation and correlation. Experience in writing effective technical reports is an important part of the course. ChE 244 prerequisite.—Credit—three to four hours. Equivalent of nine to twelve hours a week.

250. Unit Operations. Selected problems for such basic unit operations as distillation, absorption, extraction, drying, humidification, filtration, sedimentation and evaporation.—Three lectures and one laboratory a week.

261. Introduction to Nuclear Engineering. An introductory course dealing briefly with a number of problems in the nuclear field. Draws extensively on the engineering student's earlier educational background. Topics studied: introduction to nuclear physics; reactor components and analysis; materials of construction; power systems and controls; waste disposal and safety.—Three lectures and one laboratory a week.
263. The Chemistry of Plastic Materials. Discussion of sources of chemical raw materials and conversion of these materials to resins. General principles of polymer formation. Description of each important class of plastic materials, with reference to methods of manufacture, compounding and molding. Emphasis will be placed on the physical properties of materials and the variation of these properties with plastic composition. Credit: two hours. Two lectures a week.

265. Process Laboratory. Simple process development campaigns in which kinetic data are obtained and process conditions are investigated and established. Each campaign culminates in a reactor design. The approach to the multivariable experiment is demonstrated. Credit: one or two hours. One or two three-hour laboratories a week.

268. Analysis of Industrial Chemical Processes. Critical examination of selected industrial chemical processes that illustrate the successful applications of mass and energy balances, thermodynamics, reaction kinetics, and engineering economics. Credit: two hours. Two lectures a week.

273. Chemical Engineering Process Design. An intensive course for seniors. Fundamental material in transport phenomena, thermodynamics, reaction kinetics, unit operations, and materials science, inter-related and applied to the design of complete chemical plants. Advanced optimization techniques, process control theory, and manufacturing and capital cost estimation applied to design. Emphasis on fundamental and advanced techniques with decision among process alternatives based on economic considerations. The entire staff cooperates in the teaching of the course so as to offer the student the most recent knowledge in a number of specialties. ChE 231 and 250 are prerequisites.

278. The Chemical Industry and Its Operation. Review of the history of chemical technology and the emergence of the modern chemical industry. Study of the organization, financing and economic profile of the process industries. Interplay between technical and economic factors. Exercise of the managerial function with respect to them, particularly in the organization and management of research and development. The current status of patent practice. Credit: two hours. Two lectures a week.

280. Engineering Materials II. Structure and properties of materials including metals, glass and polymers. Major emphasis is on metal systems involving solidification, alloying, equilibrium phase diagrams, non-equilibrium phase transformation, corrosion, and high temperature behavior. Prerequisites: Chem. 251, ChE 180, Phys. 125, 126. Credit: three hours. Three lectures and one laboratory a week.

283. The Structure and Properties of Solids. A treatment of the principles underlying the behavior and use of engineering materials. Topics covered: structure of matter, X-ray diffraction, phase diagrams, rate processes, mechanical and other physical properties of solids. Prerequisites: ChE 280, sophomore physics and math. Credit: three hours. Three lectures and one three-hour laboratory a week.

284. Applied Physical Metallurgy. A study of alloy systems, relating phase diagrams, heat treatments, and microstructure to mechanical and other physical properties. Credit: three lectures and one three-hour laboratory a week.

285. Contemporary Problems in Materials Engineering. A study of current literature relating to materials research and development. Class periods will be devoted to discussion and critiques of the assigned reading. Prerequisites: ChE 283 or Optics 222. Credit: three lectures a week.

290. Special Topics. A senior seminar course. Current practices and current research developments in chemical engineering. Students of particular technical aptitude concentrate on advanced topics of theoretical character; others concentrate on design practice, engineering economics and cost considerations, and plant practice. ChE 244 prerequisite. Credit: three hours. Two 75-minute meetings a week.

292. Chemical Engineering Projects. The student is placed on his own initiative in the pursuit of an original problem related to chemical engineering. The work may be experimental, theoretical, or computational. Only highly qualified students may enroll. ChE 244 is prerequisite and consent of the Department is required. Credit: one to four hours.

294. Plant Visits. Appropriate industrial plants that illustrate chemical engineering in practice are visited. The visits are preceded by explanation and followed by discussion. No credit.

295. Metallurgical Engineering Projects. The student will be placed on his own initiative and responsibility in the study of an original problem in some field of metallurgical engineering, involving library or laboratory work. A complete engineering report is required. Permission of the instructor and the department required. Credit: two to four hours.

401. Dynamics and Control of Chemical Processes. Credit: three hours.

411, 412. Analysis of Chemical Engineering Problems. Credit: three hours each term.

421. Advanced Chemical Engineering Thermodynamics. Credit: three hours.

431. Chemical Engineering Kinetics and Catalysis. Credit: three hours.

441. Advanced Transport Phenomena. Credit: three hours.

450. Advanced Unit Operations. Credit: three hours.


452. Agitation. Credit: three hours.

481. Corrosion. Credit: three hours.

482. Amorphous and Colloidal Materials. Credit: three hours.

The Department of Electrical Engineering seeks to give students the background for entrance into the profession of engineering directly from the completion of the baccalaureate degree as well as to prepare students for further study at the graduate level. The curriculum is therefore based on a firm foundation of fundamental sciences, particularly physics and mathematics. Students study these subjects during the first three years of their program at Rochester.

Courses in electrical engineering, which are given from the sophomore year on, are selected from a large number of possible alternatives on the basis of their potential for broad application to electrical engineering. The normal academic load of four courses per term reduces the time spent in formal instruction compared to many engineering curricula. This reduction in class time permits a greater amount of time to be spent on individual assignments and projects, and stresses the responsibility of the student to learn on his own.
Four-Year Degree Program

FRESHMAN YEAR
First Term
Math. 161 Analysis I
Phys. 115 Physics I
Chem. 121 General Chemistry I
English Requirement
Phys. Ed. 11 or 12 Physical Education I

Second Term
Math. 162 Analysis II
Phys. 116 Physics II
Chem. 122 General Chemistry II
Elective** (Humanities or Social Science)
Phys. Ed. 13 or 14 Physical Education II

SOPHOMORE YEAR
First Term
Math. 163 Analysis III
Phys. 125 Physics II
E.E. 110 Network Analysis I
Elective** (Humanities or Social Science)
Phys. Ed. 21 or 22 Physical Education I

Second Term
Math. 164 Analysis IV
Phys. 126 Physics II
E.E. 111 Network Analysis II
Elective** (Humanities or Social Science)
Phys. Ed. 23 or 24 Physical Education II

JUNIOR YEAR
First Term
E.E. 202 Engineering Analysis II
E.E. 221 Electronics
Opt. 221 Introduction to Quantum Mechanics and Atomic Structure
Elective** (Humanities or Social Science)

Second Term
E.E. 201 Engineering Analysis I
E.E. 222 Systems Analysis
Opt. 222 Introduction to the Theory of the Solid State
Elective** (Humanities or Social Science)

SENIOR YEAR
First Term
E.E. 231 Electricity and Magnetism
E.E. 241 Communications Systems I
Elective† (Technical)
Elective** (Humanities or Social Science)

Second Term
E.E. 232 Wave Motion
Elective† (Technical)
Elective† (Technical)
Elective (Open)

1An alternate approved sequence is Mathematics 171, 172, 173, 174 for those considered eligible by the Mathematics Department.
2An alternate approved sequence is Physics 117, 118; 127, 128 for those considered eligible by the Physics Department.
3An alternate course is Chemistry 123, 124 for students considered eligible by the Chemistry Department.
**To satisfy the distribution requirements, a student must elect three Humanities courses and three Social Science courses.
*Especially selected students may be permitted to carry one additional elective during each term for a maximum of 36 courses total.
Technical Electives available to Electrical Engineering students include:

EE243 Communication Systems II
EE206 Transistor Characteristics and Circuits
EE264 Electronic Circuit Analysis II

and, upon the approval of the department, courses selected from the 400-numbered series. In addition, students are invited to consider, with the guidance of their adviser, suitable courses in Mathematics, Physics, and the other Engineering Sciences. Students interested in the Biomedical Engineering field are urged to choose as electives courses in Biology, as well as Organic Chemistry.
110, 111. Network Analysis I, II. An introductory course in circuit analysis considering both passive LRC elements and active elements as defined by their terminal characteristics. Topics include steady-state and transient analyses, equivalence theorems, harmonic waveform analysis, and problem solutions using the Laplace transform. A laboratory introduces instruments and techniques of electrical measurements, methods for solving network problems on a digital computer, Fortran programming language and basic operating skills for an IBM 1620 computer.

201. Engineering Analysis I. A course divided between topics in theory of probability and statistics and the theory and application of vectors and tensors.

202. Engineering Analysis II. An introduction to the theory of functions of a complex variable with emphasis on the background leading to an understanding of Fourier analysis and Laplace Transform Theory.

206. Transistor Characteristics and Circuits. A study of the physical characteristics of semiconductor devices, particularly junction transistors, and the analysis and design of transistor circuits emphasizing the unique properties of the transistor. EE221 prerequisite.

207. Solid State Electronics Laboratory. A laboratory providing training in certain techniques of solid state electronics component fabrication. These involve semiconductor crystals and junctions, magnetic cores and thin films, superconducting films, and passive element films and structures. Two project-type experiments will be required per semester. This course may be taken for credit more than once. Admission by permission of the instructor. —Credit—three hours.

221. Electronics. An analysis of the basic active devices and circuits which are the building blocks of electronic systems, i.e., rectifiers, amplifiers, oscillators, and trigger or pulse circuits. —Laboratory.

222. Systems Analysis. Theory of lumped parameter system analysis. Topics include parameter and energy definitions, system equations, analogs, graphs, matrix characterization, Lagrangian formulation, electro-mechanical devices, state concepts and feedback control. Use is made of the theory of functions of a complex variable developed in EE202, and matrix and vector techniques developed in a companion course, EE201. EE201, EE111, is also prerequisite. —Laboratory.

231. Electricity and Magnetism. Foundations of electromagnetic field theory; boundary value problems of time-invariant electric and magnetic fields, multipole description of stationary distributions, quasi-stationary fields and solution of Maxwell's equations for special cases.

232. Wave Motion. A general treatment of wave phenomena. Topics studied include characteristics of partial differential equations; fundamental solutions of the one-dimensional wave equation, transient and steady-state behavior of physical systems that may be represented as transmission lines, and boundary-value problems for rectangular, spherical, and cylindrical geometries. Examples are drawn from a variety of fields, such as electromagnetic theory, mechanics, acoustics, hydrodynamics, elasticity, and so on. Laboratory instruction is included.

241. Principles of Communication I. An introduction to theoretical and practical communication engineering, including studies of signal analysis and linear filtering, sampling theory, amplitude, frequency, and pulse modulation, simple noise phenomena, comparative system analysis, elements of information theory. —Laboratory.

243. Principles of Communication II. A continuation of EE241 offered as a senior elective or preparatory course for new graduate students. After a review of elementary probability and statistics, topics such as stochastic processes and physical origins of noise will be discussed as the background and interests of the class warrant.

263. Electronic Circuit Analysis I. A study of electronic circuits, including power supplies, ac amplifiers, dc amplifiers, sinusoidal waveform generators, modulators and demodulators. A course primarily offered for other than electrical engineers and not normally acceptable for credit in Electrical Engineering. —Laboratory.

264. Electronic Circuit Analysis II. A continuation of EE263. Pulse circuitry and transient analysis are emphasized. This course may, with permission, be taken for credit in Electrical Engineering.

290. Special Problems in Electrical Engineering. A reading or research course open to electrical engineering seniors by special permission.

401. Computer Electronics.

405. Electronic Physics.

409. Acoustics of Liquids and Solids I.

451. Linear Systems.

452. Advanced Network Analysis.
Mechanical and Aerospace Sciences

Martin Lessen, Sc.D. (M.I.T.)...Professor and Chairman of the Department of Mechanical and Aerospace Sciences
Lewis Dalcin Contra, Ph.D. (Cornell)...Professor of Mechanical and Aerospace Sciences
Robert Gustav Loewy, Ph.D. (Pennsylvania)...Professor of Mechanical and Aerospace Sciences and Dean of the College of Engineering and Applied Science
Albert Simon, Ph.D. (Rochester)...Professor of Mechanical and Aerospace Sciences
Helmut Dietrich Weymann, D.Sc. (Aachen)...Professor of Mechanical and Aerospace Sciences
Harold Searl Dunn, Ph.D. (Brown)...Associate Professor of Mechanical and Aerospace Sciences
Alfred Clark, Jr., Ph.D. (M.I.T.)...Assistant Professor of Mechanical and Aerospace Sciences
Moshe Lubin, Ph.D. (Cornell)...Assistant Professor of Mechanical and Aerospace Sciences
John E. Molyneux, Ph.D. (Pennsylvania)...Assistant Professor of Mechanical and Aerospace Sciences
John Howard Thomas, Ph.D. (Purdue)...Assistant Professor of Mechanical and Aerospace Sciences

A Bachelor of Science Degree in Mechanical Engineering has been offered for more than fifty years at the University of Rochester. In accordance with recently re-oriented and broadened objectives of both the undergraduate and graduate programs, the department name was recently changed to the Department of Mechanical and Aerospace Sciences. The change also reflects the desire of the University to participate more effectively in meeting the nation's growing need for well-prepared, creative engineers capable of assuming leadership roles in their profession. It is to be noted, however, that the undergraduate program continues to be a program in Mechanical Engineering, stressing the more basic aspects of the field.

The program of the Department of Mechanical and Aerospace Sciences might best be described as a program in the applied sciences with emphasis in the direction of energetics, material science, and solid and fluid mechanics. It is felt that one of the principal interests of mechanical engineering remains in the broad field of energy conversion. Recent developments have indicated possibilities of converting energy in new and exotic ways such as magnetohydrodynamic energy conversion, thermionic and thermoelectric direct energy conversion, fuel cell energy conversion, and fusion and fission nuclear energy conversion. Since progress in energy conversion methods depends heavily on advances in other areas, great emphasis in the mechanical engineering program is laid upon the mechanics and physics of plasmas, fluids and solids, particularly as they relate to the field of energetics. Related fields making use of advances in energetics, such as vehicle technology and transportation, are also concerns of the mechanical engineer.

Although the mechanical and aerospace sciences program provides a particularly good foundation for moving into graduate work, it is at the same time equally effective as a basic preparation for the graduate who plans to enter industry immediately upon graduation. It is essential for him to have the type of education which will allow him to keep up with the rapid advances in science and technology.
Four-Year Degree Program

FRESHMAN YEAR
First Term
Math. 161 Analysis I
Phys. 115 Physics I
Chem. 121 General Chemistry I
English Requirement
Ph. Ed. 11 or 12 Physical Education I

SOPHOMORE YEAR*
First Term
Math. 163 Analysis III
Phys. 125 Physics II
M.A.S. 120 Introduction to Mechanical Engineering
Elective 4 (Humanities or Social Science)
Ph. Ed. 21 or 22 Physical Education I

JUNIOR YEAR*
First Term
M.A.S. 201 Engineering Analysis I
M.A.S. 221 Analytical Mechanics
M.A.S. 223 Thermodynamics
Elective 4 (Humanities or Social Science)

SENIOR YEAR*
First Term
Opt. 221 Introduction to Quantum Mechanics and Atomic Structure
M.A.S. 203 Mechanical Engineering Systems Design I
Elective (Technical)
Elective 4 (Humanities or Social Science)

Second Term
Math. 162 Analysis II
Phys. 116 Physics I
Chem. 122 General Chemistry II
Elective 4 (Humanities or Social Science)
Ph. Ed. 13 or 14 Physical Education I

Second Term
Math. 164 Analysis IV
Phys. 126 Physics II
M.A.S. 121 Introduction to Mechanical Engineering
Elective 4 (Humanities or Social Science)
Ph. Ed. 23 or 24 Physical Education II

Second Term
M.A.S. 202 Engineering Analysis II
M.A.S. 222 Continuum Mechanics
M.A.S. 224 Transport Phenomena
Elective 4 (Humanities or Social Science)

Second Term
Opt. 222 Introduction to the Theory of the Solid State
M.A.S. 204 Mechanical Engineering Systems Design II
Elective (Technical)
Elective (Open)

1An alternate approved sequence is Mathematics 171, 172, 173, 174 for those considered eligible by the Mathematics Department. Students so approved are encouraged to elect this sequence.

2An alternate approved sequence is Physics 117, 118, 127, 128 for those considered eligible by the Physics Department. Students so approved are encouraged to elect this sequence.

3An alternate course is Chemistry 123, 124 for students considered eligible by the Chemistry Department.

4To satisfy the distribution requirements, a student must elect three Humanities courses and three Social Science courses.

*Especially selected students may be permitted to carry one additional elective during each term to a maximum of 36 courses.
201, 202. Engineering Analysis I, II. An introduction to the mathematical analysis of continuous physical systems. Vector analysis and Cartesian tensor analysis. Matrices, with emphasis on eigenvalue problems. Power series solutions of linear differential equations. Sturm-Liouville systems, with emphasis on Fourier series. Partial differential equations and physical processes, including Laplace's equation and equilibrium, the diffusion equation and irreversibility, the wave equation and propagation. Elements of analytic function theory and applications. The theory developed is applied to problems in fluid flow, elasticity, heat conduction, electromagnetic theory, diffusion theory, quantum mechanics, and magnetohydrodynamics.

203. Mechanical Engineering Systems Design I. Development and application of matrix and integral transform techniques to solution of natural modes and frequencies of transients in lumped and distributed mechanical, electrical, thermal and mixed linear systems.

204. Mechanical Engineering Systems Design II. Analysis, synthesis and design of closed loop control systems, including steady state and transient operation, stability criteria and performance design factors. Illustrations from various fields with emphasis on electromechanical and hydraulic systems.


221. Continuum Mechanics. Stresses and strains in a continuum, principal stresses and strains, stress-strain and stress-rate of strain relations for elastic solids and fluids, Kelvin's theorem, potential flow, Bernoulli's theorem, parallel viscous flow, compressible flow, compressibility, compressibility effects, supersonic and viscous flow phenomena.

222. Thermodynamics. The basic laws of thermodynamics and some of their consequences as applied to ideal and real gases. Thermodynamic potential functions, equilibrium considerations, reactive mixtures. Applications to engineering problems.

224. Transport Phenomena. Transport properties will be developed from kinetic theory, and then used to solve classical problems in heat and mass transfer.


238, 239. Mechanical Design I, II. Fundamentals underlying modern mechanical design. Topics include translational and torsional vibrations (including multiple degrees of freedom); advanced mechanics of materials, including analysis of curved beams, disks, thick cylinders, etc.; mechanical properties of materials and theories of failure; model studies using photelastic and other techniques.

252, 253. Modern Energy Conversion. A study of the conversion of chemical and nuclear energy into mechanical or electrical energy. The course will range from steam and gas turbine plants through fuel cell thermoelectric and magnetohydrodynamic conversion methods. Subjects such as combustion, heat transfer, and gas dynamics covered as needed.

290. Project Course for Mechanical Engineers. A project course for qualified seniors in which a specific investigation is carried out under the supervision of a member of the faculty. The work may involve the analysis, adaptation or modification of equipment or it may be the development of equipment for a specific function.

401, 402. Engineering Analysis III, IV.

412. Laboratory Experiments in Mechanical and Aerospace Sciences.

423. Introduction to Advanced Flight Dynamics.

424. Introduction to Space Vehicle Design.

430. Introduction to Elasticity and Plasticity I.

431. Introduction to Elasticity and Plasticity II.

433. Statistical Mechanics.


The Institute of Optics prepares students for industrial and research positions in optical physics or applied optics. The course of study offers extensive training in geometrical, physical, and physiological optics, with an opportunity for specialization in such subjects as photography, spectroscopy, polarized light, optical and mechanical design of instruments (including lasers), colorimetry, spectrophotometry, and optical properties of thin films.

The curriculum includes basic courses in mathematics, chemistry, and physics, and electives in other fields. By suitable choices of electives in his senior year, the student may prepare himself to go directly into industry or to enter research through graduate work in optics and related areas of physics and engineering. Graduate programs leading to the M.S. and Ph.D. degrees in optics are available.
### Four-Year Degree Program

#### FRESHMAN YEAR

**First Term**
- Math. 161\(^a\) Analysis I
- Phys. 115\(^a\) Physics I
- Chem. 121\(^a\) General Chemistry I
- English requirement
- Phys. Ed. 11 or 12 Physical Education I

**Second Term**
- Math. 162\(^b\) Analysis II
- Phys. 116\(^a\) Physics I
- Chem. 122\(^a\) General Chemistry II
- Elective** (Humanities or Social Science)
- Ph. Ed. 13 or 14 Physical Education II

#### SOPHOMORE YEAR\(^f\)

**First Term**
- Math. 163\(^f\) Analysis III
- Phys. 125\(^f\) Physics II
- Opt. 121 Fundamentals of Optics I
- Elective** (Humanities or Social Science)
- Ph. Ed. 21 or 22 Physical Education I

**Second Term**
- Math. 164\(^f\) Analysis IV
- Phys. 126\(^f\) Physics II
- Opt. 122 Fundamentals of Optics II
- Elective** (Humanities or Social Science)
- Ph. Ed. 23 or 24 Physical Education II

#### JUNIOR YEAR\(^f\)

**First Term**
- Opt. 221 Introduction to Quantum Mechanics and Atomic Structure
- E.E. 221 Electronics
- E.E. 202 Engineering Analysis II
- Elective** (Humanities or Social Science)

**Second Term**
- Opt. 222\(^f\) Introduction to the Theory of the Solid State
- E.E. 201 Engineering Analysis I
- Opt. 224 Atomic and Molecular Spectroscopy
- Elective** (Humanities or Social Science)

#### SENIOR YEAR\(^f\)

**First Term**
- Opt. 255 Optics Laboratory I
- Opt. 261 Physical Optics I
- Elective (Technical)
- Elective (Open)

**Second Term**
- Opt. 256 Optics Laboratory II
- Opt. 262 Physical Optics II
- Elective** (Humanities or Social Science)
- Elective (Open)

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\(^a\) An alternate approved sequence is Mathematics 171, 172, 173, 174 for those considered eligible by the Mathematics Department.

\(^b\) An alternate approved sequence is Physics 117, 118; 127, 128 for those considered eligible by the Physics Department.

\(^c\) A student may substitute a technical elective with approval of his faculty adviser.

**To satisfy the distribution requirements, a student must elect three Humanities courses and three Social Science courses.

\(^f\) Especially selected students may be permitted to carry one additional elective during each term for a maximum of 36 courses.
121, 122. **Fundamentals of Optics I, II.** An introductory survey course in optics. The general aims of the course are to provide a foundation for further studies in optics and to familiarize the student with the scope of the field of optics. Subject matter to be covered includes first order optics, Fermat’s principle, thin and thick lenses, mirror optics, basic types of optical instrumentation, sources of optical radiation, photometry, radiation detectors, spectroscopic instrumentation, and photography. During the second semester the emphasis will be on physical optics, interference and diffraction, lasers, and selected topics in areas of current research. Prerequisites: Physics 115, 116 or equivalent; Mathematics 161, 162 or equivalent.—Laboratory.

152. **Physiological Optics.** A survey of the fundamentals of the visual process, including light as the visual stimulus, the eye as the optical system, photoreception, transmission of information through the visual system, visual sensation, and resulting behavior. The characteristics of the total visual system as a light-sensing device will be stressed. Prerequisites: Physics 115-116 and Mathematics 161, 162.

221. **Introduction to Quantum Mechanics and Atomic Structure.** An introduction to quantum theory and solutions to the Schroedinger equation for simple atomic systems, quantum statistics, and atomic spectroscopy. Prerequisites: Mathematics 164 and Physics 126.—Laboratory.

222. **Introduction to the Theory of the Solid State.** The energy band theory of solids, conduction in solids, thermionic and photoelectric emission, semiconductors, dielectrics, crystalline imperfections, mechanical properties of solids, luminescence, and photoconductivity. Prerequisite: Optics 221.—Laboratory.

224. **Atomic and Molecular Spectroscopy.** Topics in semiclassical radiation theory, electric dipole selection rules for one electron atom, Russell-Saunders coupling, J-J coupling, vector model of the atom, energy level diagrams of complex atoms and simple molecules. Optical pumping and stimulated emission will be discussed and applied to the theory of lasers. Prerequisite: Optics 221.

241, 242. **Optical Instruments I, II.** The rudiments of geometrical optics, ray tracing, aberrations of imaging systems; design of telescopes, microscopes, projection systems; testing of instruments by the knife edge test, Ronchi test, interferometer.

251. **Advanced Physiological Optics.** A detailed discussion of selected topics pertaining to the visual process. Ordinarily given in alternate years. Prerequisite: Optics 152 or permission of the instructor.

252. **Colorimetry.** A course dealing with the chromatic sensations, color theory, the measurement and specification of color, and the quantitative consideration of color vision. Physics 125, 126 is prerequisite.—Laboratory.

253. **Radiometry.** The generation, detection, and measurement of optical radiation. Topics include: elementary quantum theory of radiation, generation of coherent and incoherent radiation, propagation of radiation through optical systems, photometry, optical radiation detectors, electrical measurements, photographic measurements, noise limitations in optical measurements, radiometric instruments. Prerequisite: Optics 221.

255, 256. **Optics Laboratory I, II.** An intensive laboratory course with experiments on optical imaging systems, testing of optical instruments, diffraction, interference, blackbody radiation, lasers, detectors, spectroscopic instruments, the use of digital computers in data reduction. Prerequisite or to be taken concurrently: Optics 253 and 261.

257. **Technical Photography.** Technical and scientific aspects of photography, photographic equipment and materials; photographic sensitometry; exposure and exposure devices, light sources; characteristics of developers and other processing solutions; tone reproduction, methods of color photography. Prerequisite: two years of college physics.—Laboratory.

258. **Physics of Photography.** Latent image theory, mechanism of development; special exposure and development phenomena; physics of the developed photographic image; photographic photometry; photography with ultraviolet, infrared, X-ray radiation; special topics in image structure. Prerequisite: Optics 257.


263. **Polarized Light.** Theoretical and applied aspects of polarized light including: the production and detection of plane polarized light; propagation of light in anisotropic media; birefringence, pleochroism and optical activity; the detection, measurement and application of elliptical polarization of light.
265. **Spectrographs and Interferometers.** The design, calibration, and use of grating and prism spectrographs and interference spectrometers. The design and use of interferometers; interference microscopes; interferometers in metrology.

293. **Special Problems in Optics.** A reading or research course open to seniors in optics by special permission.

471, 472. **The Design of Lenses and Optical Systems I, II.**

474. **Methods of Image Evaluation and Optical Systems Analysis.**
The Department of Nursing
of the School of Medicine and Dentistry

Administrative Officers

J. Lowell Orbison, M.D. (Northwestern)... Acting Dean of the School of Medicine
Eleanor A. Hall, R.N., M.A. (Columbia)... Chairman of the Department of Nursing
Ruby Hendryx, R.N., M.Ed. (Rochester)... Assistant Chairman
Esther Thompson, R.N., M.A. (Columbia)... Director of Graduate Studies

Preparation for professional nursing requires a foundation in the physical, biological and social sciences and in the humanities. Upon this base are built educational experiences which help the nursing student acquire the knowledge, skills and understanding to function as a member of the health team.

The Nursing curriculum comprises two academic years in the College of Arts and Science or another accredited college, followed by two years and one summer session in the Department of Nursing. Upon successful completion of the program, graduates receive the Bachelor of Science Degree with a major in Nursing, the prerequisite for professional practice or graduate study.

Graduate education in Nursing extends the education process, enabling students to explore more deeply a selected area of Nursing and its supporting disciplines as a basis for the expert practice of nursing. Inherent in graduate study is the continuing development of the powers of critical analysis, scientific inquiry and professional leadership.

Programs of the Department of Nursing are registered with the State Education Department of the University of the State of New York. The undergraduate program is accredited by the National League for Nursing. The hospital at the University Medical Center is approved by the Joint Commission on Accreditation of Hospitals.

Graduates are eligible to take the licensing examination for Registered Nurse in New York State. Information concerning licensure in other states can be obtained by writing to the appropriate state board.
FACILITIES FOR INSTRUCTION

Medical Center

The University of Rochester Medical Center consists of the School of Medicine and Dentistry, the Atomic Energy Project and Strong Memorial Hospital. The hospital has accommodations for more than 775 patients and the out-patient services have a daily attendance of approximately 400 patients.

The administrative offices, classrooms, conference rooms, a nursing laboratory and some faculty offices are located in Helen Wood Hall. The amphitheaters, classrooms, conference rooms and laboratories of the School of Medicine and Dentistry and facilities of the River Campus schools are used for instruction. Official and voluntary agencies in Rochester and Monroe County provide instructional opportunities.

ADMISSION

Students who plan to major in nursing should apply for transfer to the Department of Nursing during the last semester of the sophomore year. During their first two years of study, students from other institutions applying for junior standing should seek information about courses which meet admission requirements. They may secure application forms and information concerning admission from the Office of Registrar, Department of Nursing.

Requirements for admission include the successful completion of two years of college study (16 courses at the University of Rochester or 60 or more semester hours at another approved institution), including introductory courses in the following subjects:

- English Composition
- Biology (including laboratory)
- Microbiology (including laboratory)
- Psychology
- Chemistry (2 semesters, including laboratory)
- Sociology (2 semesters)

The program should include at least three additional courses in the humanities, two additional courses in the social sciences, and remaining electives distributed among the humanities, social sciences and natural sciences. Vocational courses and physical education courses required in the college attended are not accepted as fulfilling admission requirements.

The Department also requires a minimum grade average of "C" for all course work taken prior to admission, a satisfactory health record and a strong desire to make nursing a career, together with evidence of aptitude for such a career.

Registered nurses who wish to work toward the baccalaureate degree must have achieved junior standing. The opportunity to achieve advanced placement in the Department of Nursing through examination is available and must be arranged during the year prior to enrollment in the Department of Nursing. If achievement on a test
does not meet the standard set by the faculty, the student is required to enroll in the course and complete it satisfactorily.

Students, especially those taking part-time work over a period of time, are advised to check periodically regarding degree requirements and the acceptability of courses to be offered for admission to the nursing major.

THE BASIC PROGRAM

The program offered in the Department of Nursing consists of the following courses:

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<thead>
<tr>
<th>JUNIOR YEAR</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
<td>Summer</td>
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<tr>
<td>NUR 200</td>
<td>Fundamentals of Nursing Practice</td>
<td>5</td>
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<tr>
<td>NUR 209</td>
<td>Human Development and Behavior</td>
<td>4</td>
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<tr>
<td>NUR 210</td>
<td>Nutrition</td>
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<tr>
<td>NUR 211</td>
<td>Human Anatomy and Physiology I</td>
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<tr>
<td>NUR 212</td>
<td>Human Anatomy and Physiology II</td>
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<tr>
<td>NUR 214</td>
<td>Pharmacology</td>
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<tr>
<td>NUR 249</td>
<td>Nursing Care of Adults and Children I</td>
<td>9</td>
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<td>NUR 250</td>
<td>Nursing Care of Adults and Children II</td>
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<td>NUR 251</td>
<td>Maternity Nursing</td>
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<td>NUR 252</td>
<td>Public Health Nursing</td>
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<td>NUR 253</td>
<td>Basic Concepts of Psychiatric Nursing</td>
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<td>NUR 254</td>
<td>Nursing Leadership</td>
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The degree is granted on recommendation of the faculty in nursing, upon completion of general University requirements and a minimum of 132 semester hours of course work with at least a “C” average in all work taken as well as an average grade of “C” in the nursing major.
Requirement for Bachelor’s Degree with Distinction

The Bachelor’s degree is awarded in three grades of distinction: with distinction, with high distinction and with highest distinction. This award is based primarily on a cumulative average of at least 3.25 for distinction, 3.60 for high distinction and 3.85 for highest distinction.

Except in unusual cases no student is considered for a degree with distinction without at least two years of academic work at the University of Rochester.

TUITION AND FEES (1967-1968)

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<tr>
<th>JUNIOR YEAR</th>
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<tr>
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<tr>
<td>Meals</td>
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<td>Health Fee</td>
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OTHER EXPENSES

Students transferring from another University must pay an application fee of $15. Uniforms cost approximately $100 at the beginning of the junior year. Books, field trips and miscellaneous expenses associated with community experiences including cost of transportation and meals are approximately $100 a year. The insurance premium for Extended Medical Care is $17 a year.
FINANCIAL AID

The University’s Financial Aid Program is described elsewhere in this bulletin. Applications may be secured from the Office of the Registrar, Department of Nursing, or from the Office of the Director of Admissions and Student Aid, River Campus.

Federal Assistance Programs

The United States Army and Navy Nurse Corps sponsor programs through which financial assistance is provided for the last year or two of the undergraduate program. A student who participates 12 months or less serves on active duty in the respective service for 24 months. If two years support is given, she serves 36 months. Information may be obtained from the recruitment office of each service.

The University of Rochester is one of 23 colleges and universities selected to participate in the Navy Enlisted Nursing Education Program. Under this arrangement, enlisted corpsmen are chosen by the Navy to study nursing and are directed to apply for admission. If admitted, these students participate in the NENEP throughout the course of study.

Training stipends are available through the National Institute of Mental Health for undergraduate students at the junior or senior year. Students must have special aptitude for psychiatric nursing and plan to pursue graduate study in this field.

Tuition Benefits

Registered nurses employed full-time at the University Medical Center are entitled to tuition aid for part-time study (up to 8 credit hours per semester). Inquiries concerning employment opportunities should be addressed to Director of Nursing Service, University of Rochester Medical Center.

STUDENT RESIDENCE

Full-time students in the Department of Nursing, except local students who live at home, live in Helen Wood Hall at the Medical Center.

Helen Wood Hall is a four-story building connected by tunnel with other parts of the Medical Center. This building has a large living room, several small reception rooms, lounges for informal gatherings, kitchenettes, sun porches, laundry and sewing room. All rooms are furnished; the majority are single. The spacious grounds, gardens and adjoining tennis courts add to the pleasant and homelike atmosphere in this residence. Bus lines provide quick transportation to the center of the city.

Undergraduate students in the Department of Nursing are governed by a Student Association made up of student-elected officers, class representatives, faculty advisers, Residence Director and assistants and the Chairman of the Department of Nursing, ex officio. Numerous activities are sponsored by the Association, and students are encouraged to take advantage of the social and cultural resources of the University and of the community.
200. Fundamentals of Nursing Practice. An introduction to the functions and responsibilities of the professional nurse. Application of theories and skills to the identification and solution of patient care problems.—Credit—five hours. Fall term. Miss Wemet and Associates.

209. Human Development and Behavior. The study of physical and psycho-social factors from birth to senescence which influence behavior, with particular application to the practice of nursing.—Credit—four hours. Fall term. Miss Svejda and Associates.

210. Nutrition. A study of the fundamentals of nutrition based on current scientific knowledge. Biochemistry is an integral part, as it relates to the utilization of nutrients by the human organism.—Credit—three hours. Fall term. Mrs. Hopkins.

211. Human Anatomy and Physiology I. The normal gross and microscopic structure and the function of the human body are presented through lectures, laboratories, demonstrations and conferences. Included are basic concepts of pathology necessary for the understanding of human disease.—Credit—four hours. Fall term. Dr. Hoffmann and Associates.


214. Pharmacology. The origin, preparation, dosage, action, therapeutic use and toxic effects of drugs commonly used with emphasis on the nurse’s responsibilities in relation to drugs.—Credit—three hours. Spring term. Dr. Morgan.

249. Nursing Care of Adults and Children I. In the classroom and in the clinical area students learn to identify the nursing needs of adults and children with acute and long term conditions and to develop, implement, and evaluate a plan of nursing care compatible with the medical regimen. Credit—nine hours. Spring term. Miss Kennedy and Associates.

250. Nursing Care of Adults and Children II. A continuation of Nursing Care of Adults and Children I with emphasis on long term and chronic conditions. Students explore in depth selected nursing care problems.—Credit—eight hours. Summer term. Miss Kennedy and Associates.
251. Maternity Nursing. The identification of individuals' and families' needs throughout the maternity cycle; the development, implementation and evaluation of plans for nursing care. Knowledge and skills are gained in the classroom and the clinical setting.—Credit—eight hours. Fall and Spring terms. Faculty in Maternity Nursing.

252. Public Health Nursing. The basic principles underlying public health and public health nursing are explored with emphasis on the prevention of disease and disability and the promotion of health among families and in communities. Community public health nursing programs provide the laboratory experiences in this course.—Credit—eight hours. Fall and Spring terms. Miss Chisholm and Associates.

253. Basic Concepts of Psychiatric Nursing. Mental illness as an individual, family, and community problem is examined and the student provided with experiences in selected settings which enable her to develop skills and understandings pertinent to the nursing care of patients. Emphasis is placed on the relationships between the nurse, the individual patient, and groups of patients. Nursing roles and trends in psychiatric nursing are explored.—Credit—eight hours. Fall and Spring terms. Miss Thoren and Associates.

254. Nursing Leadership. A study of leadership theory and practice that considers problems within or related to clinical nursing and the nursing profession. Students are involved in leadership roles in providing nursing care to groups of patients. They investigate and analyze issues and trends in the provision and delivery of nursing care to people in institutions and the wider community.—Credit—eight hours. Fall and Spring terms. Miss Wandover, Mrs. Hendryx and Associates.
Faculty

Eleanor Hall, R.N., M.A. (Columbia) ... Professor of Nursing
Esther Thompson, R.N., M.A. (Columbia) ... Professor of Nursing Education
Rita Chisholm, R.N., M.A. (Columbia) ... Associate Professor of Nursing (Public Health)
Josephine Craytor, R.N., M.S. (Rochester) ... Associate Professor of Nursing (Medical-Surgical)
Florence Dunn, R.N., M.A. (Columbia) ... Associate Professor of Nursing Education
Ruby Hendryx, R.N., M.Ed. (Rochester) ... Associate Professor of Nursing
Madeline Kennedy, R.N., M.A. (Columbia) ... Associate Professor of Nursing (Medical-Surgical)
Eleanor Thoren, R.N., M.A. (Columbia) ... Associate Professor of Nursing (Mental Health-Psychiatric)
Sylvia Ajemian, R.N., M.S. (Colorado) ... Assistant Professor of Nursing (Medical-Surgical)
Joan C. Hoffmann, R.N., Ph.D. (Illinois) ... Assistant Professor of Nursing and Physiology (Anatomy-Physiology)

*Leila Hopkins, M.S. (Iowa) ... Assistant Professor of Nursing (Nutrition)
Marjorie Pfauled, R.N., M.A. (Columbia) ... Assistant Professor of Nursing (Rehabilitation)
Marilyn Svejda, R.N., M.S. (Indiana) ... Assistant Professor of Nursing (Pediatric)
Virginia Wandover, R.N., M.S. (Western Reserve) ... Assistant Professor of Nursing (Medical-Surgical)
Mary Wemett, R.N., M.S. (Rochester) ... Assistant Professor of Nursing (Fundamentals, Medical-Surgical)
Kirstan Burke, R.N., M.S. (Catholic University) ... Instructor in Nursing (Psychiatric)
Ann Fenton, R.N., M.S. (Pennsylvania) ... Instructor in Nursing (Medical-Surgical)
Elizabeth Fraser, R.N., M.S. (Rochester) ... Instructor in Nursing (Pediatric)
M. Dolores Gonzales, R.N., M.A. (New York) ... Instructor in Nursing (Public Health)
LaVerne Guldin, R.N., M.A. (Columbia) ... Instructor in Nursing (Maternity)
Eileen Howard, R.N., M.A. (Rochester) ... Instructor in Nursing (Anatomy-Physiology)
Helen Mcnerney, R.N., M.S. (Rochester) ... Instructor in Nursing (Public Health)
Shirley Oscarson, R.N., M.N.Ed. (Pittsburgh) ... Instructor in Nursing (Maternity)
Cornelia Porter, R.N., M.N.Ed. (Pittsburgh) ... Instructor in Nursing (Pediatric)

*Part-time
ADVISING PROGRAM

All aspects of the student’s academic program planning and review are the concern of the academic Deans of the Colleges. During the freshman and sophomore years, each student has an assigned faculty adviser who is available to help him work out a suitable academic program and evaluate various possibilities for an area of concentration. Candidates for the B.A. degree will normally have an adviser whose interests match the expressed preference of the student. Candidates for the Bachelor of Science degree are assigned to advisers from areas of instruction offering that degree. All students are urged to consult their advisers prior to scheduled pre-registration periods. The adviser’s signature is required on all registration forms and on all requests for changes in registration and for exceptions to the College regulations.

During the Summer Orientation Program each freshman meets with a member of the faculty to plan and pre-register for a fall program of courses. Early in the fall semester each freshman will have the opportunity to meet with his assigned faculty adviser.

At the end of the sophomore year, once the student has been accepted by the department or college in which he chooses to major, he is assigned an adviser from that area of concentration. Students who transfer from the College of Arts and Science to other River Campus Colleges and the Department of Nursing will be assigned an adviser in those areas.

REGISTRATION

In May and December, the Registrar distributes forms and materials essential for registration and payment of fees for the following semester. Each freshman is given the opportunity to plan his program with a member of the faculty during the on-campus Summer Orientation Program. Registration dates are noted on the University calendar.

Course programs, approved by advisers, are filed with the Registrar each term. Completed course schedules are mailed to students. Registration is considered to be completed only when the semester bill has been paid.
The Registrar also advises students on matters relating to Selective Service. As a part of the registration procedure, students are required by Selective Service to complete a deferment request which is verified and transmitted to the local Draft Boards.

The Registrar will send a Selective Service Form 109 (a report on the student’s standing in class) to local draft boards, at the request of the student.

**Honors Seminars:** Students wishing to take an Honors Seminar without applying for admission to the program may obtain request forms at the Honors Office.

**Applied Music:** Students registering for courses in Applied Music should consult the special requirements described in the Music Section of the Bulletin.

**Audit:** Full-time students may audit a course without credit at no extra cost. Permission of the instructor is necessary.

**ROTC Credit:** A maximum of three courses in Aerospace Studies and in Naval Science may be counted toward the degree.

**EXCEPTIONS TO THE RULES: STUDENT PETITIONS**

The faculty of each College establishes the requirements for degrees. The faculty recognizes that there are instances in which interpretations are required and exceptions should be made. An elected committee of the faculty, the Administrative Committee, serves to review requests for exceptions to faculty regulations.

Students seeking exceptions to regulations must submit a written petition to the College office, for review by the Administrative Committee of the College. The petition should include a recommendation from the student’s adviser. The student will be informed in writing of the Committee’s action.

**COLLEGE OFFICES**

(where Academic Information may be obtained)

College of Arts and Science—Program Advising Office, Morey Hall
College of Engineering—Office of Assistant Dean, Gavett Hall
College of Education—Office of Director of Academic Advising, Taylor Hall
College of Business Administration—Academic Office, Dewey Hall
Department of Nursing—Office of Registrar, Helen Wood Hall

**SUMMER SCHOOL APPROVAL**

To assure credit for summer work, prior approval is required from the department offering comparable work in the College in which the student is enrolled. Approval forms are available at the appropriate college office (see College Offices). Approved summer work completed at institutions other than the University of Rochester with a grade of “C” or better is recorded in terms of course credit; no letter grade is recorded or used in computing the student’s cumulative average.
UNIVERSITY SCHOOL COURSE APPROVAL

A student may elect only those University School courses that are comparable to those offered in the college in which the student is registered and only when the desired course is otherwise unavailable. Prior approval of the department and the Dean of the College is required. Approval forms are available at the appropriate college office (see College Offices).

COURSE CHANGES

In the College of Arts and Science and College of Education during the first four weeks of a semester, a student may change his course registration (drop, add, or both) without penalty providing he has the approval of the relevant instructors and his adviser. If such a change results in a total registration of fewer or more than four credit courses, it is subject to the provisions governing Underloads and Overloads.

After the fourth week of each semester, no changes in registration shall normally be permitted. Exceptions to this rule may be made only with the approval of the instructor involved, the faculty adviser, and the Dean of the College.

The allowable time interval for course changes in the other River Campus Colleges is seven weeks.

Forms necessary for authorizing change of courses (drop-add) are available at the appropriate college office (see College Offices).

OVERLOAD—UNDERLOAD

Normally, a semester's program consists of four courses. Except for degree programs which specifically require it, programs of more or fewer than four courses must be approved by the Dean of the College before pre-registration. Such approval must be requested in a written petition, formally endorsed by the faculty adviser. Forms are available at the appropriate college office (see College Offices). Permission is not required to enroll in an additional course which carries half credit or for courses which are a normal part of the Naval or Air Force ROTC programs.

Permission for a fifth course is granted only to superior students, normally those with a grade average of 3.0 and higher. Unless specified as part of an academic program, the fifth course must be carried for "enrichment" purposes only. That is, overloads may be taken to provide a more meaningful semester's work and may not be taken to reduce the residence requirement for the degree. First semester freshmen may not take a fifth course; no student is permitted a sixth course.

GRADING SYSTEM

The following grades are employed: "A" (excellent), "B +", "B", "C +", "C" (minimum satisfactory grade for undergraduates), "D +", "D" (minimum passing grade), "E" (failure), "W" (drop without penalty), "DE" (drop with penalty, failure in course), "S" (satisfactory), "F" (fail), "I" (incomplete), "AU" (audit).
The grade of "I" awarded at the instructor's discretion under special circumstances indicates that a course has not been completed or that permission has been granted to postpone the final examination. If not removed by the end of the ensuing semester or in certain cases by an earlier completion date it automatically becomes "E". For extension of the completion date students must petition the Dean of the College by letter. All such requests must be endorsed by the instructor.

Cumulative averages are computed on a scale of 4.0, where 4.0 is "A", 3.5 is "B+", 3.0 is "B", 2.5 is "C+", 2.0 is "C", 1.5 is "D+", 1.0 is "D", and 0.0 is "E".

ABSENCE FROM CLASS
Travel with an authorized extracurricular group may involve occasional absence from classes. Students should make their own arrangements with instructors; coaches and group advisers may use form letters to certify the reason for absence.

Students who are hospitalized or confined to the Infirmary will receive from the Health Service a statement validating the period of confinement. Any illness resulting in absence should be reported promptly to the Health Service even though the student is under treatment by another physician. The College offices maintain lists of all students whose medical status, as reported by the Health Service, may impair their capability to do academic work.

DEAN'S LIST
Each semester a list of those students who have achieved a 3.0 average is announced by the Dean of the College.

GOOD STANDING IN THE UNIVERSITY
The continuance of each student upon the rolls of the University, his receipt of academic grades, his graduation, or the conferring of any degrees or the granting of any certificate, is strictly subject to the discretionary powers of the University. Each student concedes to the University the right to require his withdrawal at any time for any reason, and no reason for requiring such withdrawal need be given.

ACADEMIC ACTIONS: Probation and Separation
The College regularly reviews the academic progress of its registered students. Those not making satisfactory progress towards completion of degree requirements are either placed on academic probation or separated from the College. Satisfactory progress normally connotes:

1. A cumulative average of at least 2.0 and an average in the term just completed of at least 2.0, and for juniors and seniors the attainment of grades of "C" or better in the field of concentration.

2. An absence of failing grades.

3. Successful completion of work undertaken, avoiding grade "I".
4. Acceptance into a program of concentration in a department of the College of Arts and Science, or in another River Campus College, or the Department of Nursing at the end of the sophomore year (or the end of the semester in which the student completes at least 16 courses).

Although not excluded from extracurricular activities a student on probation is advised to budget time and energy carefully. Unless he shows significant improvement in the semester following probationary action, separation from the College may be expected.

Separation and probation are reviewed only when new evidence bearing on the case is presented in writing to the Dean of the College.

WITHDRAWAL

A student is permitted to withdraw from the University by submitting a request in writing to the Office of the Dean of the College.

ACADEMIC HONESTY

Two of the chief purposes of education are to develop the intelligence of the student and to instill in him a sense of moral responsibility for his own actions. Accordingly, each student is expected to perform all of his required work without improper or unauthorized help. Cheating or plagiarism is a concern not only of the student and the professor involved, but of the entire University.

The academic community has an "honor code." Cheating is equally dishonorable whether or not a proctor is present and whether or not the student who cheated has signed a pledge of honesty. The seriousness of cheating is measured by the degree of premeditation, the extent to which the act is intended to deceive the professor, whether the action injures others and whether the offense is repeated.

The University Board on Academic Honesty, appointed by the Provost, consists of an academic administrator as Chairman and two faculty members. It has jurisdiction over all undergraduates.

A faculty member or proctor who discovers a probable case of academic dishonesty should speak to the student suspected, presenting his views of the facts and obtaining the student's. Unless the matter proves to be clearly a misapprehension, a pertinent report of the incident should be sent to the Chairman of the Board on Academic Honesty. The student should be informed by the Board that a report has been received and of his right to submit a statement in writing.

Disciplinary action in cases of suspected academic dishonesty should emanate from the proceedings of the Board, not from faculty members or proctors. When a report is received by the Chairman of the Board on Academic Honesty he reviews the student's entire file and decides when a charge of academic dishonesty should be brought against the student. After due notice to the student, the Board, augmented by the Dean (or his representative) of the student's college, hears and decides the case, giving the student fair opportunity to defend himself against the charge.
The Board forwards its findings, the complete file on the student, and its recommendation for action to the Dean of the College. The files and proceedings of the Board will be confidential and will be available only to the Board, the President, the Provost, and the Dean, or to other officers designated by them, except that they may be shown to the student for his use in defending himself and the penalties may become a part of the Registrar's official records. Appeals from penalties imposed by the Dean may be made to the Provost.

PREPARATION FOR GRADUATE AND PROFESSIONAL STUDY

Students who intend to enter graduate or professional schools should consult with their faculty advisers, departmental advisers and vocational counselors as early as possible in their undergraduate years to plan programs of study that will prepare them for advanced and professional training in their chosen fields.

Medicine

Medical schools expect candidates to have a broad education and a solid base in science. "Pre-Med" is not in itself a major, and the pre-medical student should plan to complete a regular concentration program which need not be in the sciences.

Although medical schools vary in their admission requirements, the following courses are recommended: Biology, 1 year; Inorganic Chemistry, 1 year; Organic Chemistry, 1 year; Physics, 1 year. Additional courses in Biology, Chemistry and Mathematics are desirable. Students should plan to meet the requirements of those schools to which they will apply. Medical School Admission Requirements (Association of American Medical Colleges, 2530 Ridge Avenue, Evanston, Ill.) covering all American and Canadian medical schools may be purchased at the University Bookstore or from the publishers. A copy is available for reference in the Placement Office in the Men's Dining Center.

Early in the junior year pre-medical students should initiate a file for the Pre-Medical Advisory Committee at the Program Advising Office, Morey 316. The student has the responsibility for providing the names of faculty members familiar enough with his academic ability to speak in support of his application.

On the basis of an interview with a member of the Committee early in the senior year and the materials in the pre-med file, a letter is drafted by the Committee to be sent in support of the student's application to those medical schools where the student makes formal application.

A capable and mature student may be admitted to medical school after three years of college work. Arrangements may be made for the first year's work in medical school to count as the fourth year's work in the College (see "Senior Year in Absentia").
The Medical College Acceptance Test should be taken early in the senior year and is arranged through the University Counseling and Special Services Office. Course work representing the minimum requirement should be completed before taking the MCAT.

New York State residents planning to compete for Medicine and Dentistry Regents Scholarships must complete organic chemistry by the end of the junior year (sophomore year for three-year students).

Dentistry

Recommendations for pre-medical study also apply for pre-dental students. Some dental schools, however, admit students upon completion of two years of college work, and the course requirements are somewhat less stringent. To assist their program planning students should consult dental school catalogues and Admission Requirements of American Dental Schools (American Association of Dental Schools, 211 East Chicago Avenue, Chicago, Ill.). A copy is available for reference in the Placement Office in the Men's Dining Center.

The Pre-Medical Advisory Committee also assists the pre-dental student in making his applications; the student's responsibilities are the same. He should consult the University Counseling and Special Services Office for dates of the appropriate examination.

Law

The pre-law student should plan a regular concentration program in the College. Political Science, Economics or History are the most commonly chosen major fields, but many others are acceptable. A year's work in Accounting and basic study in both Political Science and Economics are recommended for the preparatory program. The student should check the catalogues of schools in which he is interested.

Students should consult with the Pre-Law Adviser and the University Counseling and Special Services Office to determine appropriate dates for taking the Law School Admission Test.

OFFICER CANDIDATE PROGRAMS

Air Force Reserve Officers' Training Corps

The Air Force ROTC prepares students to qualify for a commission in the U.S. Air Force upon completion of degree requirements.

The training program is conducted by personnel assigned to the Air Force and to the University, where they are organized as Air Force ROTC Detachment 580 and the Department of Aerospace Studies.

The Professional Officer Course is open to qualified students with two academic years remaining before the baccalaureate or graduate degree. Enrollment is on a selective and competitive basis. To qualify a student must pass the Air Force Officers Qualifying Test and be:
1. a male citizen of the United States,
2. at least 17 years of age at the time of acceptance,
3. of sound physical condition,
4. accepted by an interview board,
5. of good moral character.

Candidates must also complete a six-week Field Training Course at an Air Force Base.
A student accepted for this program must earn a degree and participate in three classroom hours of instruction each week for the two academic years. He must also agree to accept, if offered, a commission in the United States Air Force, to serve for a period of not less than four years on active duty (five years if an applicant for pilot or navigator training) and to join the Air Force Reserve for a period of six years. Membership in this Reserve status is creditable toward meeting the required minimum service obligation under the Universal Military Training and Service Act. Students fully enrolled in the Professional Officer Course are classified ID, draft deferred status, and receive $40 subsistence pay a month.

The Air Force also offers a flight instruction program of 36 1/2 hours of flight training and 30 hours of ground training to eligible applicants who are in their second year of the Professional Officer Course. Successful completion of this program and passage of FAA examinations qualify the student for a private pilot's license.

Consult Aerospace studies for course descriptions.

Naval Reserve Officers' Training Corps

The University of Rochester is one of more than 50 colleges and universities with a permanent Naval Reserve Officers' Training Corps Unit. A Department of Naval Science comprising a Professor of Naval Science and a staff of naval instructors is an integral part of the College of Arts and Science.

The Naval Science sequence, one course a semester, complements the University's regular academic courses. Those enrolled in the NROTC program may fulfill the requirements for a Baccalaureate degree in either arts or science. Requirements for a commission in the naval service may be completed in either eight terms or four terms plus summer school.

Students enroll in the NROTC program in two categories:

1. Regular NROTC Students are subsidized by the Navy for tuition, fees, textbooks, uniforms and subsistence allowance of $600 a year. In return, they are obligated to attend three cruises or summer training periods of six to eight weeks, to accept a commission as ensign, USN, or second lieutenant, USMC, upon graduation and to serve on active duty at the discretion of the President as career officers in the U.S. Navy or Marine Corps. Depending upon the needs of the service, the Secretary of the Navy may accept resignations from officers of the Regular Naval Service who serve a minimum of four years on active duty and do not wish to continue on active duty as career officers.

2. Contract NROTC Students may participate in either of two programs: a four-year course available to incoming freshmen or a two-year plan for selected juniors after completion of a special six-week
summer training session at a regionally selected NROTC university. All contract students agree to make a one-summer practice cruise, to accept a commission for three years in the Naval Reserve or the Marine Corps Reserve, to serve three years on active duty and not to resign before the sixth anniversary of the commission.

Regular NROTC students are selected by national competitive exams and certified to the University by the Navy Department. Contract students are selected from applicants in the incoming freshman class, the number limited to a quota set by the Navy Department.

Qualified students who have not entered into any contract with the Navy may be permitted to pursue Naval Science courses with the approval of the Professor of Naval Science and the academic authorities and they are designated as Naval Science students. Although ineligible for NROTC practice cruises, uniforms, compensation or benefits, they may become eligible for enrollment as contract NROTC students, upon complying with requirements for enrollment. They may also participate in the annual competition for entrance into the NROTC as regular students.

Requirements for enrollment in the program for regular and contract students are: (1) must be unmarried male citizens of the United States and agree to remain unmarried until commissioned or disenrolled, (2) must be not less than 17 years old nor more than 21 on July 1 of the year in which they enter college (contract students may be accepted at 16 if considered of sufficient maturity by the Professor of Naval Science), (3) must meet all of the entrance requirements of the University, and be granted admission by the University, (4) must agree to remain in college until graduation, (5) must be physically qualified.

Regular and contract NROTC students are deferred from the draft while enrolled in the NROTC Unit; Naval Science students are not.

**Platoon Leaders' Class, U.S. Marine Corps**

The Marine Corps Platoon Leaders' Class program (PLC) is designed for the college undergraduate. Freshmen and sophomores attend two six-week training sessions during summer vacation periods. Juniors attend one 10-week session. No on-campus participation is required.

Time spent in the program counts toward pay when commissioned, and all men enrolled in the program are draft-deferred. Upon completion of degree and training requirements, the PLC receives a commission as a Second Lieutenant and embarks upon a three-year tour of active duty.

The college senior can take the Officer Candidate Course (OCC) program, receiving a Second Lieutenant's commission upon completion of a 10-week screening course held after graduation from college. Further information may be obtained from the Marine Corps Officer Selection Officer or the nearest Marine Corps recruiter.
A flexible program of activities has been developed to meet the varying interests of the student body. Opportunities are offered to develop both vocational and avocational interests and to acquire leadership skills.

Todd Union, the Student Activities building, provides popular gathering places for students in its snack bar and main lounges. As the center of an organized activities program, it houses offices of student government, college publications, the campus radio station and is the headquarters for dramatics, music and religious organizations. Rooms are available for meetings and social events. Student mailboxes and a branch of the United States Post Office are located on the ground floor in Todd Union.
Freshman Week

Freshman Week is designed to familiarize new students with all aspects of student life at the University. Over a period of a few days new students are briefed on the University's academic expectations, meet faculty and administrative personnel and are familiarized with the "college way of life" and the physical layout of the campus.
RESIDENCE HALLS

All full-time River Campus students, except local students who live at home, must reside on campus unless excused by the Dean of Student Life. Freshmen must live in the residence halls; upperclassmen, in the residence halls or fraternity houses. All students living in undergraduate residence halls are on the University's Board Plan. Each resident unit includes attractive dining facilities. Detailed information regarding the residence halls accompanies the room application, which is mailed on payment of the entrance deposit fee. Questions about residence halls should be addressed to the Associate Director of Residence Halls for Men or Women.

Selected graduate students live in the residence halls as head residents. They are aided by specially chosen upperclassmen who serve as resident advisers. Close contact is maintained between the residence advisers and other counselors. Residence hall advisers help individual students with minor problems pertaining to activities and social affairs, direct students to other advisory agencies in the University and develop the atmosphere of the individual halls to reflect the social and intellectual spirit of the University. Advisory programs within the halls are coordinated by the Associate Directors of Residence Halls for Men and Women, respectively.

Full-time students in the Department of Nursing, except local students who live at home, live in Helen Wood Hall.

All phases of residence hall living, including standards and regulations for men and women are under the jurisdiction of the Residence Halls Government. This body is composed of an executive board, elected corridor representatives, and standing committees. The University entrusts to students the primary responsibility for developing and administering their own rules in matters of conduct and community life. Infractions of these regulations are reviewed by the Student Judicial Board.

Throughout the year there is a full calendar of social events such as traditional women's college suppers, conferences, faculty coffee hours, formal and informal dances and parties, teas and receptions, picnics, open houses, game nights and sports competitions.

Each residence hall operates as a unit. The students in each residence unit plan and participate in a social program within the hall. Student government is largely responsible for residents' social life and conduct. Within the residence halls are recreation rooms, snack bars and lounges for group and individual use. Other facilities include typing rooms, kitchenettes, laundry equipment, and a solarium and sun deck for use of women students on the seventh floor of the Women's Residence Halls.

Founders Court

Anderson Tower, Wilder Tower, and Sage Dining Hall comprise a residential-dining complex which accommodates about 500 junior and senior men and women. Emphasizing the concept of community
living, these halls also permit the University to provide housing for a few faculty families.

Accommodations for students in Anderson and Wilder Towers are arranged in six-person suites providing a lounge, individual rooms and a bath for each unit. Junior and senior men and women students live on separate floors. Faculty apartments are located on the main floor and on floors four and seven in each hall.

Sage Dining Hall, designed to permit small group dining, serves residents of Anderson and Wilder Towers. Students are expected to dress in good taste for meals.

THE STUDENTS' ASSOCIATION

Every full-time undergraduate student on the River Campus is a member of the Students' Association, which is governed by an Executive Committee of five, a Cabinet of 24 elected student delegates, and an all-campus Judicial Board of nine students appointed by the cabinet. The Students' Association has general responsibility for the development and supervision of extracurricular activities and for maintaining high standards of student life.

Several of the major policy-making groups, responsible to the College Cabinet, include both student and staff membership. The Extracurricular Policy Board (EPB) oversees the total activities program, establishes the yearly student activities calendar, helps new interest groups become organized, evaluates programs offered and works to assure a balanced, coordinated program throughout the year. The Finance Board (CCFB) has sole responsibility for allocating the activities budget of approximately $150,000 to all campus student groups. The All-Campus Judicial Board, comprised of seven carefully selected sophomore, junior and senior students, exercises primary judicial responsibility for all disciplinary review matters, excepting those involved in academic integrity. This Board also serves as an Appellate Body for the lower Judicial Boards of the respective resident areas. The Committee on Educational Policy (C.E.P.), appointed by College Cabinet, is responsible for initiating recommendations on academic
matters and maintaining liaison with faculty, academic committees of the River Campus.

**Communications and Publications:** In publications, students obtain editorial, business and advertising experience. Publications are the *Campus Times*, a semi-weekly newspaper; *Contrast*, a monthly publication featuring news in depth; *Interpres*, a yearbook, edited by the Junior Class; *Prologue*, a semi-annual literary magazine; *Ugh-Renegade*, a semi-annual humor magazine; a Freshman Directory; a handbook and chronicle; and the Engineering students' monthly newsletter, *Rochester Indicator*. Two radio groups, WRUR, the student-operated AM-FM station, and the Amateur Radio Club (K2ZWI), offer students experience in broadcast announcing and engineering.

**Drama:** Drama groups include the Stagers, an organization which presents two plays a year under the direction of a faculty member; Experiment ’67, an experimental theater group under student directorship; Co-Kast, a student group which produces a recent Broadway musical show each fall; and Jesters, a student-written, student-directed, musical comedy presented in the spring.

**Social Service Organizations:** Through Alpha Phi Omega (national men's service fraternity), World University Service, the U. of R. Red Cross Chapter, Civil Rights and Civil Liberties Committee, as well as various religious organizations, students may volunteer service to area settlement houses, hospitals, tutorial programs, and fund-raising drives for charitable causes.

**Fraternities and Sororities:** Fourteen active social fraternities for men and four sororities for women are located on the River Campus. Twelve of the fraternities are nationally affiliated; the other two and all four sororities are local groups. The fraternities are Alpha Delta Phi (1851), Alpha Kappa Phi (1965), Delta Upsilon (1852), Delta Kappa Epsilon (1856), Psi Upsilon (1858), Alpha Epsilon Pi (1961), Theta Delta Chi (1920), Beta Delta Gamma (1926), Sigma Chi (1932), Tau Kappa Epsilon (1954), Sigma Alpha Mu (1954), Chi Phi (1966), Theta Chi (1920), and Phi Epsilon Pi (1911). The sororities are Theta Eta (1903), Alpha Sigma (1903), Theta Tau Theta (1906), and Sigma Kappa Upsilon (1923). The Interfraternity and Intersorority Councils deal with the common interests of the respective groups.

**Honorary Societies:** Academic honorary societies include Phi Beta Kappa, Sigma Xi (Science), Tau Beta Pi (Engineering), Beta Gamma Sigma (Business), Delta Phi Alpha (German) and Phi Sigma Iota (Romance Languages). In addition, there are the following local honorary leadership and service organizations: Marsiens for senior women, Keidaeans for senior men, Mendicants for junior men, Yellow Key for sophomore men and D'Lions for sophomore women.

**Academic and Special Interest Groups:** Departmental clubs give students opportunities to become acquainted with faculty and other students with similar academic interests.
Among nearly 100 organizations which provide a wide range of outlets for the individual student's personal interests are: Forensic Society, which sends debate teams to other area colleges and sponsors a tournament of its own each fall; an Arts Committee, with interest areas in Jazz, Classical, and Folk Music, Dance Drama and Art Exhibits; two student-run film programs—Cinema '62, which brings well-known art films to the campus and Campus Flicks, which provides light movie entertainment; Bridge Club, Outing Club, Photographic Society, International Students Union, several political groups, and an Association of Women Students.

Musical Activities

The program of musical activities on the River Campus is designed to contribute to the artistic and aesthetic development of the participating and listening student body. Active choral and instrumental organizations provide opportunities for those with musical interests and talents to develop these abilities under capable direction.

Men's Glee Club, founded in 1865, is one of the outstanding college men's choral groups in the country. The membership is selected by audition. The group performs several times a year on campus and often combines with women's singing groups from other colleges as well as with the U. of R. Women's Glee Club in order to perform major works with orchestra.

The Women's Glee Club, an outstanding women's choral group of about 100 voices, is selected by audition. The Club sings major works with men's choral groups on other college campuses.

The University Chapel Choir, composed of 50 members, presents special programs of sacred music primarily in Protestant Chapel services.

All-University Symphony Orchestra. The All-University Symphony Orchestra is composed of about 80 students, faculty, staff and alumni. The orchestra presents several concerts during the year with outstanding guest artists and in collaboration with glee clubs and chapel choir.

The Marching Band, open to both men and women, provides music and "half-time" spectacles for all home football games and for at least one out-of-town game.

The Symphonic Band begins rehearsals at the close of the Marching Band season and prepares musical presentations for University and civic functions.

The Pep Band is less formalized in its structure than the Marching Band or the Symphonic Band. It is run entirely by students to provide musical spirit at basketball games.

The Yellowjackets is a singing group of 16 upperclassmen selected from the Men's Glee Club.

The Baroque Ensemble is a small chamber orchestra specializing in baroque and early classical music.
RELIGION

The University of Rochester has no church affiliation, but it recognizes the importance of religion in campus life. A Chaplain and Assistant Chaplain are appointed by the University to counsel and work with students and to coordinate the activities of all religious groups. They serve Protestant students on an inter-denominational basis, assisted by Chaplains or Advisers to Protestant denominational groups. A full-time Roman Catholic Chaplain is provided by the Diocese. The B'nai B'rith Hillel Foundation provides a full-time Hillel Director who also serves as Chaplain to Jewish students. Offices for the chaplains are on the second floor of Todd Union. Todd Union lounges and other facilities are available for group meetings.

Religious Organizations

Voluntary student religious interest finds expression through the activities of various campus organizations. A University Protestant Fellowship sponsors discussions, student programs, social service, deputations, and worship, and affords opportunities for fellowship. Episcopal Church services are held on campus and there is a Lutheran Student Association. A Christian Science organization and an InterVarsity Christian Fellowship meet during the week.

A Newman Program offers Catholic students regular lectures, study groups, annual retreats, daily Mass and social fellowship. The Newman Oratory, 561 Mt. Hope Avenue, provides a center for off-campus activities as well as a residence for the Catholic Chaplain.

The B'nai B'rith Hillel Foundation serves to transmit the Jewish heritage to the Jewish student through educational, religious, cultural, social and counseling services.

All campus religious groups are represented on an inter-religious council which coordinates programs and sponsors joint activities, such as study groups, coffee hours and the Campus Conference on Religion. The Council takes an active interest in campus life, social service and international affairs.

Worship

University Protestant Chapel services are held each Sunday at 11 a.m. in Strong Auditorium. The University Chaplain conducts all services except one each month when a distinguished clergyman, recognized for national leadership, is invited to the campus. The University Chapel Choir sings at these services.

Mass is celebrated each Sunday at 9 and 11 a.m. in the West Lounge of Todd Union, Monday through Friday at 4:30 and at noon on Saturday in Upper Todd.

Jewish services are held on Friday at 7:15 p.m. in Upper Todd and are followed by a discussion or Oneg Shabbat.
ATHLETICS

The University of Rochester participates in intercollegiate competition in baseball, basketball, football, golf, soccer, tennis, swimming, track, wrestling, squash and sailing. Intramural sports also are a vital part of the athletic program.

The objectives of the University’s athletic program are:

1. To give as many men as possible experience in intercollegiate sports.

2. To devote as much time to athletics as is necessary to give the participants all the worthwhile values that are derived from competition.

3. To arrange schedules which entail a minimum loss of time from classes. Opposing teams generally represent institutions of the same size with similar educational standards and athletic ideals.

4. To see that members of all varsity teams meet the same entrance requirements and scholarship standards as those required of the student body in general and successfully carry full work programs.

Women’s sports, sponsored by the Women’s Recreation Association, include archery, badminton, baseball, basketball, dancing, fencing, hockey, skiing, swimming, tennis and volleyball. Women students participate in Play Days with women’s groups from other colleges. Modern dance is an important part of the program and is sponsored through a Dance Club.
GENERAL REGULATIONS

General Responsibility

Students are expected to abide by the rules of the University and its faculties and conduct themselves in accordance with accepted standards of good citizenship, honesty and propriety, and with proper regard for the rights of others. When the University delegates judicial and disciplinary responsibilities to student groups, students must abide by their decisions.

Marriage: If a student plans to be married during an academic year, the Office of the Dean of Student Life should be notified at least two weeks in advance. Parents or guardians should also notify the Office of the Dean of Student Life that they are aware of the proposed marriage. A resident student who marries during the academic year may not continue to live in the Residence Halls.

Firearms: Possession of firearms on Campus is discouraged. Regulations governing their possession may be obtained from the Office of the Dean of Student Life. Immediate registration is required.

Master Keys: The unauthorized possession or use of a key to a University lock is forbidden; students violating this regulation are subject to a fine and/or expulsion.

Soliciting Funds: Student groups engaged in any type of fund-raising activity must restrict their efforts to the River Campus. Exceptions to this rule must be approved by the Dean of Student Life.

Student Cars: Freshman and sophomore resident students are not permitted to bring cars to the University.

Drugs: Possessing certain drugs or providing them to others is against the law. The University will not tolerate these or any other illegal activities by its students or on its campus. Normally, punishment for students found guilty of possession, distribution, or use of drugs will be separation from the College, and the names of students violating drug laws will be made available to the law enforcement authorities.
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