The University of Rochester

COLLEGE OF ARTS & SCIENCE • COLLEGE OF ENGINEERING • COLLEGE OF EDUCATION
SCHOOL OF BUSINESS ADMINISTRATION • INSTITUTE OF OPTICS

UNDERGRADUATE STUDIES
1959-1960
Calendar

Fall 1959

September 15—Tuesday  Registration begins. (Registration takes place in the Men's Gymnasium. See section on Registration for detailed information.)

21—Monday  Instruction begins

October 9—Friday  Last day for payment of undergraduate tuition

November 25—Wednesday  Thanksgiving recess begins at noon

30—Monday  Classes resume

December 19—Saturday  Christmas recess begins at close of classes

January 4—Monday  Classes resume

16—Saturday  Last day of classes

19—Tuesday  Term examinations begin

29—Friday  Term examinations end

Spring 1960

February 3—Wednesday  Instruction begins for Spring Semester

19—Friday  Last day for payment of undergraduate tuition

April 13—Wednesday  Easter Recess begins at close of classes

21—Thursday  Classes resume

May 20—Friday  Last day of classes

23—Monday  Term examinations begin

30—Monday  Memorial Day Holiday

June 3—Friday  Term examinations end

12—Sunday  Commencement
Contents

Educational Aims and Purposes 7
The College Setting 11
Buildings and Equipment 17
   Historical Sketch 24
   Admission 35
   Tuition and Fees 43
Scholarships and Student Loans 48
   Fellowships and Prizes 61
Special Services for Undergraduates 67
   General Regulations 71
Degree Programs of the Colleges and Schools of the River Campus 77
   Officer Candidate Programs 81
   Student Life and Interests 87
College of Arts and Science 103
   College of Education 229
   College of Engineering 243
School of Business Administration 266
University Administration 285
Map of the River Campus 290
Index 292
EDUCATIONAL

Aims and Purposes

The University of Rochester offers broad educational opportunities in a wide variety of fields in its several Schools and Colleges. These include graduate and undergraduate work in the College of Arts and Science, the School of Business Administration, the College of Engineering, the College of Education, and University School of Liberal and Applied Studies, all on the River Campus; and in the Eastman School of Music, the School of Medicine and Dentistry, and the Department of Nursing.

In the College of Arts and Science, a diversified program of liberal education—the central core of the University's activity and services—is available to qualified students. Around this core have grown up during more than a century of the University's development the Schools and Colleges for professional and advanced study.

All full-time undergraduate students on the River Campus enroll in the College of Arts and Science as freshmen, and a majority remain in it for all four years of college. Others, however, transfer at the end of their sophomore year to one of the professional units for specialized study in Business Administration, Engineering, Education, or Nursing.

No matter which College they are enrolled in, all are members of one River Campus student body, under the same student government and sharing the same residence
and dining halls and the many extra-curricular phases of campus life.

Educated men and women in the modern world must have command of exact knowledge in some special field, suitable to their interests and competence, to equip them for useful occupations in their community and nation. They must also have opportunity to learn and understand their wider responsibilities for enlightened leadership as citizens in a complex and confused social order. In the light of these demands, liberal education at Rochester is designed to evoke clarity of thought, direction of purpose and integrity of character. Ideally, of course, such qualities should remain as permanent acquisitions of persons enjoying the privilege of higher education.

To assist the student in developing these qualities, the University serving in a free society places its faith and emphasis on these main objectives:

1. A LIBERAL EDUCATION. Knowledge: The University believes that a liberal education should offer students such knowledge of their cultural heritage as to enrich their experience and provide them with sources of wisdom for the future, to comprehend the nature of the physical world, and to appreciate the problems of the social, political, and economic world in which they live.

2. A PROFESSIONAL EDUCATION. Specialization: In addition to a liberal education, the University aims to train students in special professional studies based on a core of the humanities but with intensified work in various fields which will enable them to be versatile in the application of their knowledge, well received by other universities for advanced work, and well equipped to qualify for responsible positions in the productive life of their communities.

3. PREPARATION FOR THE FUTURE. Character: The most important aim of any university is to give students such training as will enable them to face the future without fear. The University hopes to develop in its graduates free, inquiring minds, released from prejudices, able and willing to think in accordance with facts and with the laws of inference, to choose wisely, to feel with discrimination and sympathy and ready to assume their responsibilities to society. The union of knowledge, reason, sympathy, and an appreciation of moral and ethical values in the integrated personality is the final goal of education.
The College Setting

The University of Rochester, founded in 1850, draws strength from its deep roots in the past, but at the same time it has a vitality and flexibility that grow from its constant alertness to changing conditions. It is a privately-controlled, gift-supported, non-denominational institution.

The University is outstanding by plan, not chance. It is a qualitative institution, not so interested in size as in offering the best possible education to its students. Its heart, and its parent school, is the coeducational College of Arts and Science, located on the residential River Campus in a picturesque setting on the Genesee River, the broadest stretch of which flows past the campus for a mile.

The River Campus Schools and Colleges are moderate in size. The current combined undergraduate enrollment in the College of Arts and Science, the School of Business Administration, the College of Education, and the College of Engineering is approximately 1,950 students, who come from many parts of this country and from foreign lands. This number includes about 1,250 men and 700 women. Seventy-five per cent of the students live in the campus residence halls.
Adjacent to the River Campus is the 650-acre Genesee Valley Park on the outskirts of Rochester, where broad, rolling meadows, groves, creeks for canoeing, two eighteen-hole golf courses, ice skating rinks and trails enhance the rustic surroundings.

Since its early days, The University of Rochester has been known for the high quality of its educational program and faculty. Its accomplishments and objectives have won generous support from many benefactors, notably the late George Eastman, founder of the Eastman Kodak Company, and its endowment is one of the strongest of any university in the country. This fact has enabled it not only to provide exceptional buildings and equipment for teaching, research, and campus living, but more important, to attract an outstanding faculty.

The undergraduate program combines the advantages of a moderate-sized college with the broadening influence and intellectual vigor of university relationships. In a community of scholars such as The University of Rochester, the distinguished faculties in music, medicine and other divisions of the University add greatly to the strength and effectiveness of River Campus Schools and Colleges.
Programs of study offered at the River Campus are Liberal Arts, Mechanical, Chemical and Electrical Engineering, Industrial Management, Physics, Optics, Chemistry, Biology, Geology, Astrophysics, Economics, Business Administration, Accounting, Education, and Nursing.

Other divisions of the University are the world-famous Eastman School of Music, which has its own buildings and residential campus but maintains a close relationship with the College of Arts and Science; the equally renowned School of Medicine and Dentistry and the Department of Nursing at the University's Medical Center adjacent to the eighty-seven acre College campus; University School of Liberal and Applied Studies, and the Memorial Art Gallery. The University is fully accredited by the Middle States Association of Colleges and Secondary Schools, and is a member of the Association of American Universities, a select group of the nation's leading graduate schools in this country and Canada.

The total University acreage at the River Campus is 245, including the campuses of the College and the Medical Center and 128 acres of land for future development.
The River Campus is situated on high rolling ground that has permitted striking landscape and architectural treatment. It is unusual in the harmony and attractiveness of the design and arrangement of buildings. All academic structures are in the Georgian and Greek Revival styles of architecture with Doric or Ionic columns. Classroom and laboratory buildings are arranged for the most part around the spacious Eastman Quadrangle. The Quadrangle, on the highest ridge of the campus, is dominated at its head by the Rush Rhees Library with its massive tower, and faces the Genesee River at its open end. In the 185-foot library tower is the Hopeman Memorial Chime of nineteen bells.

Residence halls for men and fraternity houses on the lower campus are in the warm, less formal Georgian style. The new Women's Residence Halls and physical education buildings, one of the finest women's educational centers in the country, are situated on a knoll in the northeast section of the campus. Although the Residence Halls are of contemporary design, their brick and limestone construction harmonizes with the other campus structures. Another attractive new building is the Men's Dining Hall and Faculty Club on the lower campus.

Although its secluded location at the southwest boundary of the city isolates it from the bustle of the town, the University enjoys many advantages from its relations with the community. Rochester is known as one of the great music centers and as a city of high cultural and civic aims. The Rochester Philharmonic Orchestra, the Civic Orchestra, and frequent concerts by Eastman School of Music symphonic and chamber music ensembles, choruses, opera groups, instrumentalists and vocalists provide a wealth of music throughout the year. At the School's magnificent Eastman Theatre, regular concerts and ballet performances are given by the world's foremost artists and visiting orchestras such as the Boston Symphony and the Metropolitan Opera Company on tour. Excellent museums, libraries, theatres, churches and schools add to the city's appeal. Rochester is nationally known for its many beautiful parks, and Lake Ontario at the northern edge of the city affords good swimming and sailing. Nearby are a number of fine state and county parks, and the scenic beauties of the Genesee Country, the Finger Lakes region, and the Bristol Hills attract visitors from all parts of the nation.
Buildings and Equipment

Rush Rhees Library. Books are the indispensable tools of student and teacher. The University Library has a total collection of approximately 675,000 volumes and subscribes to 3,500 periodicals. The main collection is in Rush Rhees Library, named for Rochester's third President, which houses 480,000 volumes and will accommodate nearly a million. The several libraries of the University are under the same administration as Rush Rhees Library and are joined by a delivery system which makes any book in the collection available to each campus. Rush Rhees Library's rich resources embrace not only the commonly used books for assigned and collateral reading in courses but a number of important collections and source material in many fields, as well as current periodicals. The collections on American political history are particularly outstanding. These include the papers of William H. Seward, President Lincoln's Secretary of State, Thurlow Weed, nineteenth century political leader, and former Governor Thomas E. Dewey, who placed all of the papers dealing with his public career on permanent deposit in Rush Rhees Library when he left political life in 1954.

In the Treasure Room are the rare books, first editions, priceless manuscripts and incunabula which lure the book-lover, collector and scholar. Among them are early printed books, significant editions of several American authors, collections on Mark Twain, Washington Irving, the English drama, and the Hoeing Collection of books on the Restoration and eighteenth century English literature.
A noteworthy feature of the Library is the Welles-Brown Room, a spacious, tastefully-appointed room containing choice editions of the classics and a selection of the best work of modern authors. It is designated as a browsing room to encourage the students' recreational reading and love of fine books.

The Sibley Music Library at the Eastman School of Music also is available to students of the River Campus colleges. It contains one of the most complete music collections outside the Library of Congress, and is particularly rich in its manuscript collections, some of which are beautifully illuminated. Holograph scores include works of Mozart, Beethoven, Liszt, Brahms, Debussy, Schumann, as well as such noted American composers as Chadwick, MacDowell, Copland, Harris, Antheil, and Hanson.

Other University libraries are the Memorial Art Gallery Library and the Edward G. Miner Library at the School of Medicine and Dentistry.
Grouped around Eastman Quadrangle, so named to perpetuate the name of the University's great benefactor, George Eastman, with Rush Rhees Library standing at its head, are these four structures:

**Morey Hall**, named for William Carey Morey of the Class of 1871, for forty-eight years a distinguished Professor of History and Political Science. It houses the classrooms and offices of many of the liberal arts departments, the Dean of Students, the administrative offices of the College of Arts and Science, and the Laboratory of Psychology.

**Lattimore Hall**, which houses the Department of Chemistry, named for Samuel Allan Lattimore, Professor of Chemistry for forty-two years. A large new wing was completed in the fall of 1949 for research laboratories, facilities for physical and organic chemistry, the chemistry library, and the national editorial offices of the Journal of the American Chemical Society, which were moved to the Rochester campus on January 1, 1950.

**The John J. Bausch-Henry Lomb Memorial Laboratory**, housing the Department of Physics and the Institute of Optics. It was named in recognition of a generous gift by the families of the founders of the Bausch & Lomb Optical Company.

Special facilities for research in Physics and Optics include a cyclotron capable of producing eight-million-volt protons for nuclear research.

A large cyclotron and an associated laboratory for the purpose of producing 240-million-volt protons and investigating nuclear phenomena at these energies were completed early in 1949. This project is supported by the United States Atomic Energy Commission.

**The Chester Dewey Building**, bearing the name of the University's first Professor of Chemistry and Natural Science. It is shared by the Departments of Biology, Geology and Geography, Sociology, and the offices of the College of Education.
To the south of Eastman Quadrangle are the following buildings:

**Gavett Hall** of the College of Engineering, with a large addition erected in 1947, providing laboratory, drawing room, classroom and shop facilities for engineering instruction in the chemical, electrical, mechanical and metallurgical fields. The laboratories include heat power, materials testing, fuel, chemical engineering, metallurgical, industrial X-ray, electrical machinery, electrical measurements, electronic, vibration, and stress analysis. The College of Engineering Library also is housed in Gavett Hall, which is named in honor of the late Joseph W. Gavett, Jr., Chairman of the Department of Engineering and Professor of Mechanical Engineering from 1921 until his death in 1942.

**Harkness Hall**, the naval and air science building, named for the late Rear Admiral William Harkness of the Class of 1858, noted naval astronomer. It contains classrooms, an armory, a practice range, naval reference library and other facilities for the instruction of the Naval Reserve and Air Force Officers' Training Corps units.

**Taylor Hall**, adjacent to the engineering building, the headquarters of University School of Liberal and Applied Studies, containing administrative offices, classrooms and laboratories. It is named for the late Earl B. Taylor, Professor of Education and first Dean of University School.

**The Henry Alvah Strong Auditorium**, a memorial gift of Mrs. Henry Alvah Strong and her son, L. Corrin Strong. It contains a large hall used for many College functions, and an organ given in 1937 by Mrs. Strong. On a lower floor is a lecture room accommodating 500 persons. These two halls are used for assemblies, lectures, College Chapel, stage productions, concerts and other events.

**The Administration Building**, facing on River Boulevard at the corner of Library Road, houses the central University administrative offices, the Admissions and Placement offices, and the offices of the University registrar and bursar.
On the lower campus to the west and north of Eastman Quadrangle are the following buildings:

**Crosby, Burton, Lovejoy, Hoeing, and Tiernan Halls**, and a new dormitory, completed in the fall of 1959, which form a pleasant men's residence area, adjacent to Fraternity Quadrangle, and provide residence accommodations for approximately 1,000 students. Burton and Crosby Halls were built in 1930, and are named respectively for George Nelson Crosby, of Rochester, and Henry F. Burton, Professor of Latin from 1877 to 1918. Lovejoy and Hoeing Halls were first occupied in the fall of 1953. Special facilities include lounges, typing rooms, game rooms, laundries with automatic washing machines for student use, and luggage storage. Lovejoy Hall is named for the late Frank W. Lovejoy, a devoted Trustee of the University. Hoeing Hall is named for the late Charles Hoeing, Dean of the College for Men from 1914 to 1929. Tiernan Hall honors Martin F. Tiernan, an alumnus of the University in the Class of 1906, a Trustee since 1928 and a generous benefactor of the University.

**Todd Union**, facing the men's residential area, a student center housing offices and meeting rooms for such extra-curricular coeducational groups as religious organizations, the campus newspaper, WRUR radio studio, glee clubs, student government, and others. It also contains a snack bar. It is named for the late George W. Todd of Rochester.

**Alumni Gymnasium** for men, housing under one roof facilities for the Department of Physical Education, including the main gymnasium, a natatorium seating 500 and a seventy-five by thirty foot swimming pool, a basketball palestra seating 2,200, a large field house, handball and squash courts, and wrestling rooms.

**Fauver Stadium**, close to the Alumni Gymnasium, a permanent grandstand at the main athletic field. It seats 6,000 spectators and provides accommodations for contestants in football and other intercollegiate sports. The stadium is named for the late Dr. Edwin Fauver, for many years head of the Department of Physical Education and College Physician. The Sculpture Studio and the offices of the Department of Foreign Languages are located in the building.
Men's Dining Hall, in close proximity to the residential buildings. To the right of the entrance is a spacious students' lounge opening off a central lobby, and on the left is the faculty lounge with a main faculty dining room and two smaller ones. The lobby opens into a hall from both sides of which staircases go up to the second floor. The front portion of the second floor is the student dining hall. There are also four smaller dining rooms of varying sizes for student groups. Located in the building are offices of the School of Business Administration.

Fraternity Houses, built around a large quadrangle by eight national fraternities under a restricted agreement with the University. They are Alpha Delta Phi, Delta Kappa Epsilon, Delta Upsilon, Kappa Nu, Psi Upsilon, Sigma Chi, Theta Chi, and Theta Delta Chi. These houses provide additional residence accommodations.

At the northeast corner of the River Campus, on the crest of a hill, are the:

Women's Residence Halls, consisting of residential facilities for 630 women. Connected with them is a gymnasium with a swimming pool. The residence is divided into four wings, each of which is a separate unit with its own living rooms, dining hall and house director. This arrangement provides an intimate and homelike atmosphere. The four dining halls are so planned that they may be opened into one large area for dances or all-college suppers. A music room and a library are included in each of the units, and each living room opens on a terrace. A large game room for coeducational use, with snack bar, floor lounges, and a clinic and infirmary are other facilities.

The four wings of the Residence Halls are named in honor of Susan B. Anthony, Mary T. L. Gannett, Emily Weed Hollister, and Lewis Henry Morgan, pioneers in women's education at the University. The dining hall is named for Mrs. Henry Danforth of Rochester, a devoted friend of the College for Women.

A tunnel joins the Residence Halls with the gymnasium so that the students may dress for physical education classes in their rooms, making the recreational facilities of the gymnasium easily available.
These women's facilities were planned with infinite care. The result is a center with excellent living, study, and social facilities and opportunities for the finest kind of training for the young women students on the River Campus.

The Memorial Art Gallery shares the Prince Street Campus with the Eastman School of Music. It is the center of creative art activities for the students of the University, as well as for the community and area. Its increasingly important permanent collections cover a wide range of period and art personalities from predynastic Egypt to contemporary times and include paintings, sculpture, tapestries, furniture and related decorative arts. These serve as invaluable teaching aids to the University's Fine Arts Department. Outstanding among its treasures are paintings by El Greco, Rubens, Matisse, Picasso, Strozzi, Delacroix, Courbet, Gilbert Stuart, Winslow Homer, Monet, Degas, Renoir, and others. A program of special monthly loan exhibitions from October through June gives students and public a continuously changing and provocative picture of contemporary and historic art. Paintings from the Gallery's collections are on view in various parts of the University and colorful framed prints are rented each term to students of the University's various schools for use in their dormitory rooms. The Gallery's Creative Workshop has an enrollment of over one thousand students in painting, sculpture, ceramics, weaving and enameling classes.
WHEN The University of Rochester celebrated its Centennial in 1950, a distinguished member of its faculty aptly described it thus: “The University has at last become what it was always meant to be: a fountain of knowledge, a power plant of energy, a treasury of culture.” Its history, he said, is one of “creative change.”

It is only three decades since the small liberal arts college that Rochester had been for seventy-five years was transformed into a true university through the establishment of the two professional schools, the Eastman School of Music in 1922, and the School of Medicine and Dentistry in 1925. These developments were followed by the reorganization of the Division of Graduate Studies as the Graduate School in 1942 and the University's admission to the Association of American Universities.

It was decided in 1957 to decentralize most of the administrative control of graduate work, and each of the colleges or schools of the University now administers its graduate programs. In 1944 the former Division of University Extension became University School of Liberal and Applied Studies.

Now in its second century, The University of Rochester is entering its greatest period of educational development to meet the tasks and challenges of today's complex world, and is internationally known as a center of teaching and research. Before all this came about, however, it went through a long period of early struggle and slow but sound growth.
For its first ten years, the University was located in the old United States Hotel near the Erie Canal, still standing in Main Street West. There, on November 5, 1850, seven professors and seventy students began classes. The furnishings consisted of “five pine tables, six arm chairs, one hundred common chairs, thirty settees for the chapel, seven box stoves, and seven boxes for wood.” Some professors brought their own books as a nucleus for the library, and soon classical texts and histories were being ordered from New York and Europe.

Although it was founded chiefly by Baptists, it was not even from the beginning exclusively denominational. Some of its first Trustees and professors were members of other churches, and it always has been open to students of all faiths. All Baptist connection was severed in 1908, having survived chiefly on paper.

Ira Harris, a founder of the University, was its chancellor for the first three years, and Martin Brewer Anderson became the first President in 1853, serving until his retirement thirty-five years later. The young College had several scholarly teachers of learning and experience. There was also, as one historian has noted, “a remarkably enlightened plan of instruction, drawn up and printed by a special committee long before the doors were opened; a plan so forward-looking that many years elapsed before some of its bold innovations were realized.”
In 1861, when its charter became permanent, the University moved to its own twenty-four acre campus on what is now Prince Street, which comprised the entire University campus until the 1920's.

From 1861 until 1900 the story of Rochester is one of "slow, honest, old-fashioned college education." David Jayne Hill succeeded Martin B. Anderson as President in 1890. He resigned in 1896 and later became United States Ambassador to Germany.

A new era began in 1900 when Rush Rhees was elected President. Until then the University had been a liberal arts college for men only. Interest in the education of young women had developed, however, as early as 1881 when Lewis H. Morgan, the noted anthropologist, bequeathed the University a substantial sum to provide "female education of high grade in the City of Rochester." Thirty-one years passed before this bequest became available. A movement among representative women of Rochester, led by Miss Susan B. Anthony, the great woman's rights advocate, resulted in the admission of women students in 1900. The proceeds of the Morgan bequest having become available, and additional land having been provided, two buildings were erected for the exclusive use of women.

A period of cautious expansion began under President Rhees. Generous gifts made in 1924 by George Eastman, the General Education Board, alumni and alumnae, citizens of Rochester, and many others made possible a new campus in 1930 on the Genesee River for the College for Men, and the College for Women took full possession of the historic Prince Street Campus.

With the retirement of President Rhees in 1935, Alan Valentine was inaugurated as Rochester's fourth President. During the fifteen years of his administration, the University grew rapidly in national and international prestige as its programs in the arts and sciences, music, and medicine attained impressive quality and strength. One of the earliest developments during this period was a revision of the College curriculum. Of special importance was the institution of the Honors Division which gives special opportunities to qualified students to work independently and to receive a large amount of individual instruction.

College departments in general were strengthened, particularly those of psychology, chemistry, and physics. The
Department of Physics and Astronomy became one of the most outstanding in the country, and is a center of teaching and research in the fields of nuclear physics and cosmic ray studies. A 240,000,000-volt cyclotron and laboratory were built shortly after the war, and at that time the cyclotron was the largest post-war atom smasher in the country.

Another important event in the period from 1935 to 1950 was the establishment of the Institute of Optics, the foremost institution of its kind in the United States, which offers training in geometrical, physical and physiological optics leading to the Bachelor of Science and advanced degrees.

Other new facilities built at the College of Arts and Science in the post-war period were a large addition to Gavett Hall, the engineering building; Harkness Hall, which houses the Naval and Air Science Departments; additional men’s residence halls, and a chemistry research wing on Lattimore Hall.

Dr. Cornelis W. de Kiewiet was inaugurated in June, 1951, as the University’s fifth President. A distinguished historian and educational administrator with an international viewpoint, he formerly served on the faculty and administration of Cornell University, where he was appointed Professor of Modern European History in 1941. He subsequently served as Dean of Cornell’s College of Arts and Sciences, Provost of the University and Acting President.

Under President de Kiewiet’s leadership there has been a sharpening of educational purpose at Rochester based on the conviction that “we must concentrate on the coordination and efficiency of all those activities which constitute each student’s total educational experience.”

One of the first steps to accomplish this purpose was taken in 1952 when the Board of Trustees authorized the merger of the College for Men and the College for Women, which for a quarter of a century occupied separate campuses on opposite sides of the city, as a single coeducational College of Arts and Science. This was followed by a major building program to provide necessary facilities for the combined College, such as the Women’s Residence Halls and Gymnasium, a large Men’s Dining Hall and Faculty Club, and the remodeling of Todd Union as a coeducational student activities headquarters. The merger of the undergraduate College took place with the opening of the 1955–56 academic year.
Significant new educational and student services programs also have been introduced. The College administration was reorganized to give full effect to the University’s philosophy of dealing with the student as a whole human being whose successful college experience is the product not only of satisfactory work in the classroom and laboratory but of his total intellectual, social and spiritual interests as an undergraduate.

Of wide educational significance is the integration into the undergraduate curriculum of a “world awareness” program reflecting the greatly changed nature of the modern world and the revolutionary effects of these changes upon the total life of the American people. It embraces the study of large areas of the world and vast multitudes of its people which in the past have been largely neglected in undergraduate teaching in the colleges of this country, but which have emerged as crucial factors in world relations. The project is being carried out on a broad front which includes:

A pioneering undertaking in Non-Western Civilizations, leading to a field of concentration, and designed to give the students a comprehensive understanding of the history, philosophy, economics, culture and political concerns of the Middle East, Asia, Africa and Latin America, so that they can deal intelligently with the acute problems that involve our nation in these key areas.

A Canadian Studies Program, supported by a grant from the Rockefeller Foundation, to provide in the College of Arts and Science an opportunity for students on the undergraduate level, through formal courses and in other ways, to become better informed about every aspect of Canada and its development, and to promote wider understanding of the international relations problems between that country and the United States. Related to the Canadian Studies Program is a concentration in American Studies, and together they provide an interdisciplinary approach to the development of North American civilization.

A Center for the Study of Group Relations, a subdivision of the Department of Sociology and Anthropology, which began functioning officially in the fall of 1955. Courses in the area of ethnic and minority group relations are offered, as well as a series of institutes on minority groups in the United States, to be held annually, with outstanding national authorities as lecturers.
and discussion leaders. The purpose of the Center is to foster more harmonious relations between ethnic and racial, religious and social groups through education, research and community service.

Professional Studies

For many years the University has conducted successful undergraduate and graduate programs in Business Administration, Education, and Engineering. Their strong development and increasingly important stature led in 1958 to the decision to give these former divisions autonomous professional status as the School of Business Administration, the College of Education, and the College of Engineering. Each has its own Dean or Director and awards its own degrees.

All full-time students preparing for entrance to these professional units enroll in the College of Arts and Science for their first two years of undergraduate work.

School of Business Administration

For nearly twenty years the University has conducted a well-balanced group of professional and liberal arts studies in Business Administration. The growth of this program resulted in the creation of the School of Business Administration to provide more effective and extended professional education in this field. Increasing enrollment of full-time and part-time students in undergraduate and graduate programs, greater demand for community-directed activities, and the developing opportunities and need for research contributed importantly to the decision to establish the School. It offers a four-year course leading to the degree Bachelor of Science with a major in Business Administration, in Accounting, or in Industrial Management, and graduate work for the Master of Science degree with a major in Business Administration.

College of Education

The University has provided courses in teacher education for many decades, first through extension classes, and later through the Department of Education of the College of Arts and Science and in University School evening classes. In 1956 a Division of Education was formed, responsible for all teacher education at both the undergraduate and graduate level on the River Campus. The next major step in its development was
the establishment in 1958 of the College of Education, which includes the Division of Nursing Education. The College offers the degrees Bachelor of Science with specialization in elementary or in secondary school teaching, Bachelor of Science with a major in General Nursing, and Master of Education, Master of Arts in Education and Master of Science in Nursing Education.

**College of Engineering**

Courses in Engineering have been given at The University of Rochester for nearly half a century, in recent times under the Division of Engineering of the College of Arts and Science. The new separate College of Engineering is exclusively an upper division and graduate level college, although it continues to teach as service courses freshman and sophomore engineering subjects. The College offers work through the master's level in Electrical and Mechanical Engineering, and through the Ph.D. level in Chemical Engineering.

**Institute of Optics**

The Institute is the only university optical teaching and research department in the United States offering complete training in geometrical, physical, and physiological optics. A staff of twenty professors and research associates is engaged in instruction, research and development in all branches of optical science. The Institute was established in 1938 to help meet the need for adequately trained men and women not only in the optical industry but in many branches of science and industry which depend for their data upon optical instrumentation and optical data. It offers courses leading to the Bachelor of Science degree with a Major in Optics.

**Other Divisions of the University**

**Eastman School of Music**

In 1918 George Eastman presented to the University the property and corporate rights of the Institute of Musical Art, an independent teaching institution of high standard founded five years earlier. Later Mr. Eastman purchased a site for new buildings, erected a modern and complete music school, and provided generous funds for its endowment. Students in the College of Arts and Science may take courses at the Eastman School for credit towards the arts degree, or may register for individual music instruction. Located in downtown Gibbs Street, the School's buildings provide offices, studios, classrooms,
the Eastman Theatre, and a small auditorium seating 500 persons for recitals, chamber music concerts and operatic performances. Three large buildings adjacent to the Eastman Theatre and School of Music provide shops for construction of scenery, practice rooms, classrooms, gymnasium, and the Sibley Music Library.

In the fall of 1955 the Eastman School acquired a portion of what had been the campus of the College for Women, with buildings that provide Eastman School students with excellent residence and social facilities.

University Medical Center

Opened in 1925, the School of Medicine and Dentistry was the result of a proposal made by the General Education Board to establish a school of the highest order as the first wholly new medical school built under a nationwide program to reorganize medical education. Funds for buildings, equipment, and endowment were furnished by the General Education Board and George Eastman. The Medical Center includes:

*Strong Memorial Hospital*, which serves as the teaching hospital in connection with the School of Medicine and Dentistry, and its associated clinics. A gift from Mrs. Gertrude Strong Achilles and Mrs. Helen Strong Carter in tribute to their parents, Henry Alvah and Helen Griffin Strong, provided for the erection of the hospital. Arrangement was made with the City of Rochester for the erection of its Municipal Hospital in close connection with Strong Memorial Hospital. These function as a single institution and unite under one administrative control a total capacity of about 700 beds. The two hospitals give the Medical School unusual advantages for clinical teaching.

*Psychiatric Clinic*, opened in 1948, made possible by a gift from Mrs. Helen W. Rivas of LeRoy, New York. The clinic, known as Wing R, concerns itself primarily with the study and care of patients whose illnesses promise improvement under modern therapy.

*Atomic Energy Project*, where research and teaching are conducted on medical problems related to atomic energy production, under contract with the Atomic Energy Commission.

*Department of Nursing*, in the School of Medicine and Dentistry, conducts, in cooperation with the College of Arts and Science, a program leading to the degree Bache-
lor of Science in Nursing, given by the College of Arts and Science. The School has unusual facilities for scientific and clinical instruction.

**Graduate Studies** The first graduate degree in course, Master of Arts, was voted by the Board of Trustees of the University in 1851. Graduate work developed slowly from that time forward, and in 1924 a standing University Committee on the Ph.D. Degree was created. With the establishment of the Schools of Medicine and Music, the expansion of University library facilities, and the provision of equipment and fellowships for research in the College of Arts and Science, graduate work developed rapidly and in 1928 a Dean of Graduate Studies and the standing Committee on Graduate Studies were appointed. The constant increase in graduate and research students led in 1937 to the creation of a formal Division of Graduate Studies, headed by its Dean. In 1942 the Division was reorganized as the Graduate School.

Beginning in 1957 it seemed advisable to decentralize much of the work leading to advanced degrees and each college or school in the University is responsible for recommending candidates for Master's degrees. The work for the degree Doctor of Philosophy is under the general control of the University Council on Graduate Studies which recommends to the Board of Trustees the candidates for this degree. Each school of the University has an Associate Dean charged with the responsibility of administering the work for Graduate Studies.

**University School** University School is organized to provide university training to persons who, because of employment or for other reasons, are unable to attend one of the other schools of the University, or whose personal or professional needs are not met by the programs of such schools. Most classes are held in the late afternoon, during the evening, or on Saturdays. Courses not generally given in the College of Arts and Science are available in University School to students of the College.

**Evening and Summer Sessions**

**Evening Session** Five schools and colleges participate in the Evening Session on the River Campus: The College of Arts and Science, the College of Education, the College of Engineering, the School of Business Administration, and Uni-
versity School of Liberal and Applied Studies. Offerings are designed primarily for part-time students. The Colleges of Arts and Science and Engineering give evening session programs at the graduate level leading to the master's degree. The College of Education and the School of Business Administration offer evening session instruction to both undergraduate and graduate students. Part-time students planning to earn bachelor's degrees in one of the professional colleges are registered in University School until they meet the admission requirements of the school or college of their choice. University School provides courses leading to the degree Bachelor of Science in general studies, and to the master's degree in industrial statistics and applied mathematics.

**Summer Sessions** In 1921 the University instituted instruction through summer study. There are two Summer Sessions—one on the River Campus and the other at the Eastman School of Music. Undergraduates in The University of Rochester and from other colleges and universities may take advantage of summer instruction and transfer the credits earned to their own institutions. Undergraduates in the River Campus Colleges may complete requirements for a degree in less than four years by attending the Summer Session. Courses of interest to teachers, nurses and others who desire to do regular college work during the summer period are included in the River Campus summer study offerings. A bulletin containing the announcements for the next session will be available in April, 1960. Inquiries regarding this session should be addressed to the Director of the Summer Session, Taylor Hall, River Campus Station, Rochester 20, New York. Information concerning the Summer Session of the Eastman School of Music may be obtained from the Registrar, Eastman School of Music, Rochester 4, New York.
Admissions

General Statement

ADMISSION is selective. In this selective process the Committee on Admission has two principal objectives. It seeks first to admit only those students who have the qualifications for a successful college experience. In that evaluation the Committee is concerned with the character, motivation, and interests of the candidate as well as the candidate's academic preparation and aptitude. Secondly, the Committee must limit the size of the class to a number consistent with the best teaching and the most efficient use of the River Campus facilities.

In considering applications for admission, the Committee places particular emphasis upon the following:

1. The secondary school record.
2. The results of the College Entrance Examination Board Scholastic Aptitude Test.
3. The recommendation of the principal or headmaster.
4. The candidate's character, health, and personal qualifications.

Application Procedure

All applicants are required to make application on forms which are provided on request. These forms must be accompanied by an application fee of $10.00 which is non-refundable.

Applicants for admission are encouraged to submit their completed applications between October 1 and February 1 of the final year in secondary school. Applicants are also required to take the College Entrance Examination Board Scholastic Aptitude Test. It is to the advantage of the applicant to take either the December, January or February test (see section on Scholastic Aptitude Test on page 38). This may make it possible for the Committee on Admission to take earlier action on applications than would otherwise be possible and to grant provisional admission to better qualified applicants,
subject to the successful completion of their secondary school program. While there are definite advantages in early application, it should be understood that later applications will be considered in the order of their completion as long as vacancies remain in the class.

Applicants for the degree, Bachelor of Arts with concentration in music, should request application forms from the Director of Admissions. The forms for this program will include a supplementary resumé 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. Decisions on applications for admission to this program will be made after the musical qualifications of the candidate have been evaluated by the Eastman School of Music Admissions Committee. These applicants pay the regular $10.00 application fee.

Personal Interview Applicants are encouraged to arrange a personal interview with a member of the Committee on Admission whenever possible. Such an informal conference is usually very helpful in making college plans. It also affords the applicants an opportunity to gain a first-hand impression of the colleges. There is no adequate substitute for this in determining a college choice. Applicants are urged to arrange appointments during the summer and fall months, whenever possible, and to avoid March and April when applications are being processed.

The Admission Office is open for appointments on week days from 9 A.M. to 5 P.M. and on Saturdays from 9 A.M. to Noon. The office is closed on Saturdays from the middle of June to the middle of September.

Applicants are urged to make an appointment for an interview by letter or telephone. This will avoid delays and assure the presence of a member of the Committee on Admission.

Recommended Subject the quality of the applicant's secondary school record rather than upon any prescribed pattern of courses and credits. In determining the adequacy of a student's academic preparation for admission, the Committee on Admission will be influenced by several factors. These factors include the distribution and balance in the secondary school program, the quality of the achievement in that program, and its suitability in content for the course of study which the student proposes to follow.
The subjects listed below are recommended as a safe guide for students in planning their high school programs for admission to the various courses offered by the University but do not constitute an inflexible list of admission requirements:

**For the Bachelor of Arts degree**: Concentration in English, history, government, economics, psychology, foreign language, mathematics, and other fields listed on page 104. (Pre-medical, pre-dental, and pre-law students normally fall within this category.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>Foreign language</td>
<td>2 or 3</td>
</tr>
<tr>
<td>College Preparatory Mathematics (to include the study of algebra and plane geometry)</td>
<td>2½ or 3*</td>
</tr>
<tr>
<td>Chemistry, Physics, or Biology</td>
<td>1</td>
</tr>
<tr>
<td>Social Studies</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>5½ or 4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

**For the Bachelor of Science degree programs**: Astrophysics, biology, business administration, engineering, industrial management, chemistry, geology, physics, optics, education, or nursing. These Programs of Study are listed under individual course listings: see page 131 for an index to the courses.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>College Preparatory Mathematics (to include the study of algebra, geometry and trigonometry)</td>
<td>3 or 4**</td>
</tr>
<tr>
<td>Social Studies</td>
<td>1</td>
</tr>
<tr>
<td>***Chemistry or Physics</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>7 or 6½</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

Students who transfer from one program of study to another after admission may be required to make up any deficiencies in their preparation for the program to which transfer is made.

In general, preferred subjects to be offered as electives for either the Arts or the Science degree programs include

*Although trigonometry is not required, it will be helpful to students who will include mathematics in their college programs.

**Applicants for business administration, industrial management, education, biology, geology, chemistry or nursing should follow the Bachelor of Arts mathematics recommendation.

***Chemistry required as preparation for chemistry, chemical engineering, and biology. Physics required for physics, astrophysics and electrical engineering. Preparation in both chemistry and physics is desirable for these fields.
additional units in language, mathematics, history and science. Other appropriate elective units may be accepted.

Candidates for the degree Bachelor of Science in Education will be better prepared for college by following the guide for candidates for the degree Bachelor of Arts rather than that for the Bachelor of Science.

**Scholastic Aptitude Test**

All applicants for admission as freshmen are expected to take the Scholastic Aptitude Test offered several times a year by the College Entrance Examination Board. The dates on which the test will be given are shown below:

- Saturday, December 5, 1959
- Saturday, January 9, 1960
- Saturday, February 6, 1960
- Saturday, March 12, 1960
- Saturday, May 21, 1960
- Wednesday, August 10, 1960

Applicants for admission are urged, whenever possible, to take this test in December, January or February of their senior year in secondary school. Application to take the test should be made to the College Entrance Examination Board at least three weeks before the scheduled date. A Bulletin of Information, sent to all candidates registered for the test, will acquaint applicants with the character of the questions asked.

Application forms for the test may be secured from the College Entrance Examination Board, Post Office Box 592, Princeton, New Jersey, or the Pacific Coast Office of the Board, Post Office Box 9896, Los Feliz Station, Los Angeles 27, California. The fee is $6.00 and is payable to the Board. The test will be given at numerous centers specified in the Bulletin of Information published by the Board.

**Notification of Action on Applications for Admission**

All applicants are notified as promptly as possible of action taken on their applications. Included with all application forms for admission is a sheet of instructions outlining the steps to be taken in completing the application for admission. The responsibility for fulfilling these requirements rests with the applicant. Action will not be taken on any application until these requirements have been met.

**Admission Deposit**

Students receiving notification of admission prior to May 1 are required to post an Admission Deposit of $50.00 by the middle of May (the exact date will be stated in the letter of admission). Any students admitted after May 1 will be required to make the deposit promptly upon receipt of the letter of admission. This procedure
has been established to provide ample time for students admitted at any early date to reach a decision on college choice. The deposit is not refundable. It is not an additional fee. It will be credited to the first term bill, and in the case of dormitory residents, part of it will be used to cover the dormitory deposit and breakage fee referred to elsewhere in this bulletin.

**Early Decision Program**

Exceptionally well-qualified applicants for admission who have reached a firm decision that Rochester is the college of their choice may apply for early decision upon their application for admission.

To be eligible for such early action the applicant must:

1. Complete formal applications for admission prior to November 15 including College Entrance Examination Board Scholastic Aptitude Test scores taken in the junior year.
2. Present certification by the secondary school that application is being made only to the University of Rochester.

Applicants admitted under this program will be notified not later than December 15 and will be expected to pay the regular deposit within two weeks of notification of acceptance.

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

Since it is not always possible to take early action on scholarship applications, this Early Decision Program is best suited to those students not in urgent need of financial assistance.

**Admission to Advanced Standing**

In general, candidates for admission to advanced standing must meet the entrance requirements and present satisfactory evidence that their previous academic work has been of distinctly high quality. Their credentials must include a statement of honorable dismissal. Credit for work done at other institutions will be given only after the student has been at The University of Rochester long enough to demonstrate that he can meet its standards and will include only those subjects which can reasonably be accepted as the equivalent of work in the course he is pursuing.

All persons admitted must, in order to qualify for graduation, complete not less than one year (thirty
semester hours) of work in a College or School of the University.

Action on applications for admission to advanced standing will ordinarily not be taken before May 1.

It is probable that in 1960 very few, if any, applications for admission to advanced standing can be accepted from any student whose home is outside commuting distance of Rochester.

Students with two or more full years of college work elsewhere, who seek admission to the College of Engineering, School of Business Administration, and the College of Education, should read carefully the material on admission in the section of this bulletin devoted to that school or college.

Special Students

Students desiring to pursue a special course leading to no degree are admitted only for extraordinary reasons. Ordinarily special students are limited to persons holding a degree from a recognized college. All students so admitted must present the usual sixteen units of preparatory work. Special students are subject to all general regulations and pay a tuition fee amounting to $43.00 per semester hour and all incidental fees, attached to any course they take.

Introductory Work For Students Admitted To Advanced Standing

Students admitted to advanced standing are required to report for an abbreviated orientation program during Freshman Week. These students take tests, are given physical examinations, make a tour of the library, and have their photographs taken. While the program is somewhat less extensive than that prescribed for freshmen, its aim is similar—namely, to assist the advanced students in adapting themselves to a new college environment.
Freshman Week

Freshmen are required to report a few days before regular instruction begins. During these days, talks are given by the President, the Deans, the Director of Religious Activities, the Directors of Residence, and others. The nature and aims of college study, the routine procedures of the University, the meaning of a liberal education, and the problem of adjustment to college work are discussed. All entering students take a series of tests to be used by the Faculty Advisers and Vocational Counselors in counseling students during their college course. This program is supplemented by a series of luncheon and dinner meetings, conducted by undergraduate leaders and attended by members of the faculty and administration, by a tour of the library, and, for women two days in the Bristol Hills at a camp sponsored by junior women. A fee of approximately $18.00 is charged for Freshman Week meals and activities.

The objectives of Freshman Week are to assist the incoming students in adapting themselves to college life and work, and to obtain such information regarding the abilities and aptitudes of each student as may help the faculty and advisers in the later guidance of the student's work.
Tuition and Fees

**Tuition and Laboratory Fees** Beginning September 1960 tuition is $1275 a year including laboratory fees. The present maximum and minimum tuition charge for the normal program leading to the Bachelor's degree is $5100. This amount is intended to cover the number of hours of credit specified in the catalogue for the degree for which the student is a candidate. If the total number of hours taken for the Bachelor's degree exceeds by a considerable amount the number specified for the course which the student is taking, an extra charge may be made at the rate of $43.00 per credit hour. The annual tuition charge of $1275 does not include the special fees listed below. All fees are payable at the beginning of each term and must be paid on or before the final date for payment given in the calendar. Bills are not sent by mail; each student is required to obtain his own bill from the Accounting Office. A special fee of $10.00 will be added for late payment. Students who fail to register their courses by the prescribed date each year as indicated on the calendar will be charged a special fee of $5.00.

The University has made arrangements with outside sources for a program which provides for monthly payment of tuition, room, and board. Details may be secured through the Accounting Office.

**Fees for Extra Courses** If the number of courses a student takes for credit in any term exceeds the number specified in his course of study, he may be required to pay an extra fee for such courses at the rate of $43.00 per credit hour. There will be no extra charge, however, when the student is merely an auditor. Any student may audit any course provided only that he has the consent of the instructor. An extra charge may also be made when a student is permitted to take a course in another school of the University over and above his normal program. In such a case, the course will be regarded as the extra course, and full tuition will be charged. Apart from these exceptions, each student's
regular program as approved from year to year by his Faculty Adviser shall be covered by the normal tuition of $637.50 a term.

Application An application fee of $10.00 must accompany all applications for admission. This fee is not returnable.

Health A health service fee of $25.00 is paid by all students. A Service Fee description of the services covered is given on page 69.

Student Activity Fees An activity fee is paid by all students. This fee varies slightly from year to year in accordance with the budget prepared by the Finance Board of the College Cabinet. For the year 1959-60 the fee is $25.00.

An athletic fee of $25.00 is also paid by all students. This includes admissions to all athletic events.

A fee of $5.00 is paid by non-resident students for the maintenance of the special facilities provided in the Residence Halls for their use.

Women students pay an additional fee of $5.00 for support of the social program of the residence halls.

Other Fees There are no extra laboratory fees. These fees are included in the tuition of $1275.

A transcript fee of $1.00 per copy is charged for certified copies of a student's record, except for the first copy which is furnished free.

A special fee of $5.00 shall be assessed against all students missing a term examination through carelessness, the Dean of Students to decide the cases.

Laboratory breakage deposits are charged in all chemistry and some biology courses. Unused balances are refunded.

Resident students rent mail boxes from the River Campus Station Post Office at the annual rate of $1.80.

A special fee of $50.00 is charged to students who retain their status as Rochester undergraduates while they participate in a junior-year-abroad program.

Fees for Students (1) Students who are concentrating in music shall be charged only the regular tuition fee of the College of Arts and Science. The tuition covers the courses in music required for concentration as outlined on page 186. The cost of any additional music subjects shall be paid by the student.

(2) Other students may elect courses at the Eastman School of Music without payment of an additional fee except as follows: (a) if the program of the student
involves courses in excess of the normal thirty-hour program, the elective at the Eastman School of Music will be regarded as the extra course and full tuition for the course will be charged at the normal rates of the Eastman School of Music; (b) if the elective is in Applied Music, an extra fee may be charged if, upon request, the student is assigned to certain teachers for instruction, but this fee will be less than the usual charge for such instruction. All students in Applied Music are charged a practice room fee. The fee varies depending upon the student's program of study.
Estimated Student Expenses

Because of possible severe fluctuations in cost of living and the instability of prices, tuition, fees and estimates for total expenses are subject to change. In the figures used below, estimates for such items as room and board are based upon the cost prevailing at the time of publication of this bulletin. Under any circumstances, the cost of a year at college is variable, depending largely upon the willingness and need of the student to curtail those expenditures which are not essential to education and reasonable comfort.

Expenses differ only slightly for men and women. The table below gives those items of expense which are fixed or only slightly variable:

<table>
<thead>
<tr>
<th>Items</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
<td>$1275</td>
</tr>
<tr>
<td>Student activity and athletic fee</td>
<td>$50</td>
</tr>
<tr>
<td>Health service fee</td>
<td>$25</td>
</tr>
<tr>
<td>Books and supplies</td>
<td>$30–501</td>
</tr>
<tr>
<td>Dormitory room (including linen service)</td>
<td>$300–350</td>
</tr>
<tr>
<td>Board</td>
<td>$500</td>
</tr>
</tbody>
</table>

| Totals                             | $2180–$2250|

Expenditures for personal necessities, organization dues, recreation, and travel vary from one individual to another. Students who watch their expenditures closely report amounts ranging from $250 to $400 a year for these items. The minimum annual cost including board and room in the usual type of college dormitory may, therefore, be estimated at $2450. The average annual expenditure is approximately $2600.

Full information regarding dormitory accommodations will be supplied by the Director of Residence Halls for Men or the Director of Residence Halls for Women.

Day students who live in their homes in the city report total expenditures of approximately $1900. Such students, in planning their budgets, will naturally deduct the items of dormitory room and board from the figures given above, but they should include an average of $100 for lunches and $100 for transportation.

1Engineering students should add $50.00 for slide rules, drawing instruments and supplies.
Scholarships and Loans

The University has available for student aid the income from endowments given specifically for this purpose, certain annual contributions for the maintenance of special funds, and a large sum appropriated annually from the general income of the University. Although the total amount accruing from these sources is large in proportion to the enrollment, it is impossible to assist all deserving students who apply. An exceedingly careful selection of the recipients of financial aid is therefore necessary.

Basis for Scholarship Selections  
Special conditions are attached to some of the scholarships, such as nomination by persons outside the University, residence in a particular place, or specific qualifications of the holder. In most cases selections for award are based upon the relative merits of the candidates, including character, personality, maturity of purpose, and high scholastic aptitude and achievement. The amount of the stipend granted in each case is determined solely by the financial need of the recipient. All applicants for freshman scholarships are required to take the Scholastic Aptitude Test offered by the College Entrance Examination Board. (See Page 38)

Procedure for Making Application  
Applicants for scholarships should file no later than March 1 a complete application for admission. They are also required to submit financial statements to the College Scholarship Service, Princeton, N. J., in which The University of Rochester is one of the participating colleges. Detailed information and forms for this purpose will be provided by the Admission Office. A single scholarship application will make it possible to consider the applicant for any scholarship for which he is eligible and which meets his requirements.

Applications for scholarship aid from students already in college must be submitted on dates specified by the Committee on Student Aid.
**Renewals of Scholarships**

Holders of Rochester National, Centennial Prize, Rochester Prize, Bausch & Lomb, Genesee, Alumni Memorial, Casey-Long, Rochester City, and other prize scholarships as well as some other scholarships granted on nomination of persons outside the University are not required to apply annually for the renewal of their scholarships. These scholarships, as stated in the letter of award, are normally continued from year to year provided the record, conduct, and financial circumstances of the holders justify such continuation. Annual financial statements are required.

All other scholarships, however, are granted for an academic year. The holders of all scholarships, except those referred to above, must therefore make application at the times announced for such renewal application if they desire to have their scholarships renewed. The renewal of annual scholarships cannot be assured. The usual conditions under which annual scholarships may be renewed are that the holder continue to need financial assistance, that he have no failures recorded against him, and that his academic standing for the preceding year be above the average of undergraduate students on the River Campus. Renewal applications should be made on a form provided for the purpose and must be returned to the Office of Student Aid not later than May 10, or date to be posted.

**Scholarship Regulations as Applied to Students Receiving Other Forms of Aid**

Veterans eligible for educational benefits under federal or state legislation, members of the NROTC Unit receiving educational benefits under the “regular” plan, and recipients of scholarships granted outside the jurisdiction of the University may be eligible to hold certain of the prize scholarships, awarded primarily as a recognition of achievement rather than as a means of student aid. In such cases the amount of the stipend granted under such scholarships may be adjusted to the individual student's actual needs.

All students are eligible for loan fund help if they meet the established requirements.

**New York State Scholarships**

The University of Rochester is an approved university in which New York State Scholarships may be used.

**Additional Regulations**

Scholarships are granted only to students who are pursuing one of the regular courses for a degree.\(^1\) If the

\(^{1}\)Holders of Baptist Education Society Scholarships may be freed from the operation of this regulation, on request of the Secretary of the Society.
holder of a scholarship receives a failing grade or has a grade average below the upper half of the students on the River Campus for the first term, he will ordinarily forfeit his scholarship for the second term. If he becomes subject to disciplinary action, he may forfeit his scholarship during the continuance of the discipline.

Statements of the conditions of award of the various types of scholarships are given below:

Scholarships Open to either Men or Women

The Rochester National Scholarships of which there are approximately nine available in each entering class, six for men and three for women, have an adjustable stipend ranging from $100 to $2000 a year for four years. Criteria for award include character, motivation, stability, physical vigor and qualities of leadership as well as evidence of superior academic achievement and promise.

The Centennial Prize Scholarships, of which there are several available in each class, have an adjustable stipend, ranging from $100 to $1800 a year for four years. These scholarships are granted upon the recommendation of principals and headmasters of secondary schools to students of exceptional intellectual promise, maturity of purpose, good character, good health, and personal qualities which should enable their possessor to work happily with his or her associates.

The Rochester Prize Scholarships, of which there are a number available in each class, have an adjustable stipend, ranging from $100 to $1800 a year for four years. These scholarships are awarded upon the same basis as the Centennial Prize Scholarships described above.

Honorary Prize Scholarships may be awarded without stipend to a limited number of applicants who meet the qualifications for award and merit this distinction but who have no need for financial assistance.
The Genesee Scholarships, each yielding a maximum of $1200 a year, are granted by the Trustees for the benefit of graduates of secondary schools located at a distance from the City of Rochester. Nominations for these scholarships are made by the principals and headmasters of secondary schools on the basis of high scholarship, character, personality, and need.

Rush Rhees Scholarships were founded in memory of Rush Rhees, President of the University from 1900 to 1935. In making awards, consideration will be given to the candidate's financial need in addition to his personal qualifications, achievements, and aptitude for leadership. These scholarships are awarded for two years contingent upon satisfactory conduct and are renewable for the remaining two undergraduate years if the recipient's general performance and financial circumstances warrant.

The Rochester City Scholarships are granted by the Trustees to the City of Rochester for the benefit of graduates of the Rochester public high schools who for at least the two years directly preceding graduation have been in attendance at those schools. The scholarships are of two kinds, those awarded by competition and those awarded on nomination. In the first group, those awarded by competition, five scholarships with maximum annual stipends of $1000 each are granted in each class to the three men and the two women who, fulfilling the conditions of eligibility stated above, obtain the highest averages for the first term of the freshman year among men and women respectively. For the second group, the scholarships awarded on nomination, nominations of eligible students are made by the principals of the Rochester public high schools on the basis of high scholarship, character, personality, and need; and awards are made by the Committee on Student Aid to the nominees regarded as most meritorious. The number of these scholarships in each class and the stipend of each are determined by the Committee on Student Aid. The purpose of these scholarships is to provide a college education for graduates of the Rochester public high schools who would be unable to obtain such an education without financial aid, but whose circumstances are such that with aid they can meet the financial obligations of a college course.

Bausch and Lomb Science Scholarships, of which there are several available for each entering class, have
adjustable stipends based upon the financial need of the recipient. The Science Scholarships are open for competition among students who win the Bausch and Lomb Honorary Science Award Medal presented each year in secondary schools of the United States and its possessions to the graduating students with the highest scholastic standing in scientific subjects.

The George Abbott Scholarships are awarded through the George Abbott Foundation. Criteria for award include character, academic achievement, aptitude, industry and need for financial assistance. Stipend adjustable to the financial need of the student.

The Samuel M. Havens Prize Scholarships are awarded to promising candidates for any of the colleges or schools of the University who are residents of the State of Illinois and who are in need of financial assistance. The stipends to be determined by the appropriate committee on awards.

The Katy B. Hofheinz Freshman Scholarship, endowed in 1939 by a gift from Mrs. Rudolph Hofheinz, will be awarded upon entrance to that freshman man or woman, who, in the opinion of the Committee on Student Aid, combines most clearly high scholastic attainments and promise, character, and maturity of purpose, with financial need. This scholarship is tenable only during the freshman year.

The Fred S. and Ella F. Miles Scholarship Fund, the income from which is to be used by the University in assisting needy students, either boys or girls, from Rochester, New York, is awarded upon recommendation of the Superintendent of Schools of the City of Rochester.

Milton S. Comfort Scholarships were endowed by the late Frances B. Comfort. Stipends are determined in each individual case by the Committee on Student Aid.

The Pfaudler Scholarship is contributed by the Pfaudler Company for the financial assistance of a promising entering student. The scholarship will be awarded alternately to a student in engineering and liberal arts and may be held for four years of undergraduate work contingent upon the maintenance of scholarship requirements and a need for financial assistance.
THE KATHERINE UPTON WILSON SCHOLARSHIP FOR HALOID XEROX PEOPLE is provided through gifts of members of the Wilson Family. Eligibility is restricted to sons and daughters of Haloid Xerox Inc. employees with three or more years of service. Criteria for award include personal qualifications, evidence of general promise for successful college work and financial need.

THE JOSEPH R. WILSON SCHOLARSHIP FOR HALOID XEROX PEOPLE is provided by gifts of executives of Haloid Xerox Inc. Eligibility is restricted to sons and daughters of Haloid Xerox Inc. employees with three or more years of service. Selections will be made by the Committee on Student Aid and will be based upon the academic and personal qualifications of the candidate as well as financial need.

THE ELLA HAWKINS CARLSON SCHOLARSHIP FOR HALOID XEROX PEOPLE is provided in memory of Mrs. Carlson by her son. Eligibility and method of selection of recipients are the same as for the Katherine Upton Wilson and Joseph R. Wilson scholarships described above.

THE GEOFFREY BROUGHTON MEMORIAL SCHOLARSHIP is provided by income from endowment. Eligibility is limited to students in Chemical Engineering. Criteria for award include character, academic promise, and need for financial assistance.

ROCHESTER SECTION OF AMERICAN INSTITUTE OF CHEMICAL ENGINEERS SCHOLARSHIP, is provided by annual grants made by the Section for a deserving student in Chemical Engineering.

THE ALUMNI REGIONAL CLUB SCHOLARSHIPS are sponsored by the Alumni of the University. The stipends are adjustable, depending upon the financial need of the recipient, with a maximum stipend of full tuition. Candidates for this award are nominated by the regional alumni clubs (Baltimore, Boston, Buffalo, Capital District of New York, Cincinnati, Cleveland, Detroit, Ithaca, Long Island, Niagara Falls, Northern New Jersey, Philadelphia, Pittsburgh, Rocky Mountain, San Francisco, Schenectady, Southern California, Southern Tier of New York, Susquehanna Valley of New York, Syracuse, Washington, Wayne-Ontario, Westchester (New York), Fairfield (Conn.), and Wilmington). From the nominees, three men and two women are usually selected for award in
each entering class. Nominees may also be considered for other scholarship awards for which they may be eligible. Criteria for award include academic achievement and aptitude, character, personality, and participation in high school and community activities. Application may be made through the Admission Office or through the regional club presidents (whose names may be obtained through the Office of Alumni Relations). Nominations for Alumni Regional Club Scholarships should be forwarded not later than March 1, and the applications of the nominees must be complete and on file in the Admission Office by March 1. Nominees for Alumni Regional Club Scholarships are not required to file duplicate applications or any special forms.

The American Society for Metals Scholarship in Metallurgy is endowed by the Rochester Chapter of the American Society for Metals. Awarded to a senior engineering student who is studying in the metallurgy option, on the basis of personal qualifications, academic promise and financial need.

College Scholarships and Other Special Scholarships, are provided by donors or from general funds. Unless special stipulations have been made by the donors, the income from endowments is granted for scholarship aid on the basis of need as well as upon superior qualifications of character and personality, maturity of purpose, and high scholastic attainment. If a donor who has reserved the right to designate a recipient fails to do so, the scholarship may be awarded by the University. A proportion of the sum available for these scholarships is set aside for entering students; the remainder is used for the three upper classes.

Scholarships for Men

The following Prize Scholarships are awarded in competition upon the basis of literary and scholastic ability and attainments, qualities of manhood, force of character, leadership, and interest in student activities:

The Alumni War Memorial Scholarships, one to be awarded in each class, supported by Alumni in memory of Alumni and undergraduates of the University who gave their lives in the service of their country. These scholar-
scholarships are awarded on the basis of academic achievement, personal qualifications and general promise of the candidates. In making selections for award the Committee will give consideration to the candidate's financial need, but merit rather than need will be the factor of primary importance.

The Charles A. Brown Prize Scholarship, endowed by the late Charles A. Brown of Chicago, A.B., 1879, awarded every four years to a candidate in the Chicago district.

The Michael L. Casey—Richard Long Alumni Scholarships, one to be awarded in each class, supported by annual contributions of Alumni in memory of Dr. Casey and Professor Long. The basis for award is the same as for the Alumni War Memorial Scholarship described above.

The Martin F. Tiernan Prize Scholarships, supported by a gift from Martin F. Tiernan, A.B., 1906. Terms of the gift provide that some awards may be made partly in the form of loans. (See the Martin F. Tiernan Loan Awards.)

The Welles Prize Scholarships, five in number, endowed by the late Francis R. Welles, A.B., 1875. These scholarships are awarded to candidates resident in the Chicago district.

The John Bradley Scholarship, endowed by the late Inez A. Bradley, the recipient to be chosen by the President of the University in such manner as to him seems best.

The Sol Heuman Scholarships, endowed by the late Sol Heuman, the recipients to be selected in equal numbers from each of three faiths: Protestant, Roman Catholic and Jewish.

The William Eastwood Scholarship, endowed by Albert B. Eastwood in memory of his father and awarded every four years to a promising candidate in need of financial assistance.

The Luther Emmett Holt Prize Scholarship, endowed by the late Francis R. Welles, A.B., 1875, in memory of his classmate, Dr. Luther Emmett Holt, and awarded every four years to a candidate from Chicago or New York who intends to follow a premedical course.
THE WILLIAM JUDSON HOWE PRIZE SCHOLARSHIP, endowed by the late Ella G. Howe and awarded every four years without restriction as to the residence of the holder.

THE NEW YORK ALUMNI PRIZE SCHOLARSHIP, contributed by Alumni of the Greater New York area, and awarded every four years to a candidate residing in that area.

THE GRAFLEX PRIZE SCHOLARSHIP in MECHANICAL ENGINEERING, endowed by Graflex, Inc. Awarded to a student at the beginning of his junior year in mechanical engineering on the basis of personal qualifications, achievement and aptitude in this field. Preference is given to a child or grandchild of an employee of the company.

THE RAY HILL WHITE MEMORIAL SCHOLARSHIP, endowed by his widow, Frances French White, in memory of her husband, a graduate of the College in the Class of 1901.

THE UNION CARBIDE AND CARBON SCHOLARSHIP, sponsored by the Linde Air Products Division of that Company. Eligibility limited to students entering their senior year in engineering. Criteria for award include personal qualifications, achievement and aptitude in the field of engineering as well as financial need.

Other special scholarships are awarded only to men who meet the qualifications prescribed by the donors.

Scholarships for Women

THE RUSH RHEES AND HARRIET SEELYE RHEES PRIZE SCHOLARSHIP, contributed annually by the Alumnae Association of The University of Rochester in honor of Dr. and Mrs. Rhees. This scholarship is awarded on the basis of high intellectual ability and attainment, strength of character, personality, and qualities of leadership.

THE ALUMNAE SCHOLARSHIPS, contributed annually by the Alumnae Association of The University of Rochester. Preference is given in the award to the daughter of an alumna needing financial assistance.

THE AUGUSTA LANEY HOEING SCHOLARSHIP, contributed by Alumnae of the Alpha Sigma Sorority in honor of Mrs. Charles Hoeing, an honorary member of the sorority.
Preference is given to members of the Alpha Sigma Sorority.

**New York Alumnae Chapter Scholarship**, contributed by Alumnae residing in the New York City area and awarded every four years to a candidate residing in the metropolitan district. Preference is given to the daughter of an alumna.

**The Margaret Parkhurst Morey Scholarship**, contributed by Alumnae of the Alpha Sigma Sorority in honor of Mrs. William C. Morey, an honorary member of the sorority.

**The Sigma Kappa Upsilon Scholarship**, contributed by the Sigma Kappa Upsilon Sorority. It is given to an undergraduate of that sorority upon recommendation of the Scholarship Committee of the sorority.

**The Rida S. Moore Scholarship**, endowed by the late Mrs. Clarence King Moore in memory of her husband, a former professor of the University. Awarded every four years.

**The Susan Huntington Hooker Scholarship**, honoring Mrs. Horace B. (Susan Huntington) Hooker, daughter of Elon Huntington, a founder and trustee of the University, who was widely known and loved for her cultural and civic interests and activities in Rochester over a long lifetime. In providing for this scholarship, the donor expresses the hope that it will be of assistance to a woman undergraduate or graduate who gives promise of comparable service in her own community.

**The Hazel Wilbraham Memorial Scholarship**, named for an alumna and former professor of physical education, and provided by gifts from her former students.
Student Loans

Loan funds, including National Defense Education loans, are available to aid students to whom scholarships are not granted; and, in many cases, loans are made in addition to scholarship grants. The basis for the selection of students to whom loans are made is the same, in principle, as for the selection of scholarship holders. Loans may be made, however, to students whose academic standing is somewhat lower than that required for a scholarship. Ordinarily loans are not granted to students whose point-hour ratio is less than two. The ability of the student to repay what he borrows receives careful consideration in all cases before a loan is granted.

Loan Applications  Students are urged to discuss with the Committee on Student Aid their probable needs for some time in advance. Loan applications are, however, received at any time. Forms for application are available at the Office of the Director of Admissions and Student Aid. When the Committee on Student Aid approves a loan, the applicant receives a letter of introduction to an officer of a local bank. Favorable reception of the application by this officer will result in the granting of the loan.

Interest and Repayment  All arrangements regarding the payment of interest and repayment of principal must be made at the bank where the loan is secured. Interest payments made before graduation, strictly in accordance with such arrangements, will be credited toward the principal of the loan. Arrangements for repayment after graduation must be made with the bank. After graduation the rate of interest to the University is two per cent on the McGuire Fund and five per cent on all other loan funds, except on the Foley Fund; no interest is charged on loans from this fund. The bank will, however, collect interest at its current rate on all loans; whatever is paid in excess of the percentages of interest stated above will be credited to the principal upon the final payment of the loan.

Repayment of part or all of a note may be made before
the date of maturity. Funds received from the repayment of loans become immediately available for loans to other students.

*The Martin F. Tiernan Loan Awards*

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

These awards, which are limited to students who are earning a part of their own college expenses, are made for the freshman year in the first instance, but may be renewed for succeeding years by the Committee on Student Aid, at its discretion. Each recipient of an award from this fund shall prepare his personal budget in advance of each college year, and shall keep an accurate account of his personal expenses through each year submitting these to the Chairman of the Committee on Student Aid for approval at stated intervals. Recipients of awards from this fund shall be known as "Martin F. Tiernan Scholars."

*Kellogg Loan Fund for Nurses*

This fund is available through the generosity of the W. K. Kellogg Foundation for the use of students in the five-year nursing course in the Arts College. Interest is charged at the rate of two per cent per annum.

*The Victor J. Chambers Loan Fund*

A fund, contributed by the friends and former students of Professor Victor J. Chambers, B.S., '95, who served on the faculty from 1908–1939, is available for loans to students in chemistry and chemical engineering. Loans from this fund may be made to either graduates or undergraduates and may be for studies either at Rochester or other institutions. Applications, submitted to the Director of Student Aid, are acted upon by a special committee of the faculty.
Each student is expected to devote full time to his academic work, but under certain circumstances arrangements can usually be made whereby he may earn a limited amount of money to help defray college expenses. It is important, however, that a student 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 at the Office of Admissions and Student Aid concerning opportunities for part-time employment on or off campus. Ordinarily part-time work schedules should not exceed fifteen to twenty hours per week. Each year students obtain part-time employment on the campus in a variety of places, the library, the book store, departmental offices, laboratories, residence halls, dining halls, fraternity houses, and off campus in such places as retail and industrial firms, restaurants, hotels, and private homes.
Fellowships and Prizes

The University offers prizes and fellowships to encourage superior work in connection with regular college studies, or to stimulate interest in subjects allied to college courses.

Competitors for graduate fellowships and undergraduate prizes must be candidates for a degree.

A student, if on probation or on warning, may not compete for a prize except with the consent of the Dean of Students.

No prize shall be awarded unless at least one candidate offers work of marked excellence.

All essays for which prizes are awarded shall be deposited in the University library for the use of the public.

Full details about fellowships and prizes, terms of competition and award, persons in charge, and the form in which essays should be submitted may be obtained from the Office of the Registrar.

Full information about graduate fellowships, scholarships, and assistantships may be secured from the Associate Dean for Graduate Studies.

Undergraduate Prizes

For information regarding these prizes, consult the chairman of the department concerned.

Biological Sciences

The Donald R. Charles Memorial Award, originating from funds subscribed by students, colleagues and friends of Professor Charles, is given annually to a worthy student who, in the judgment of the Department of Biology, shows promise of a kind which Professor Charles so regularly encouraged and aided. The award provides a sum to cover limited expenses or tuition costs for an undergraduate or graduate student who wishes to carry on advanced studies, or some special project, during the summer months. In special cases the award may be made for a period within the academic year.
The Chester A. Dewey Scholarship of $150, awarded for proficiency in biological work, provides free tuition at the summer session of the Marine Biological Laboratory at Woods Hole, Massachusetts, or at any other recognized biological laboratory.

The Rigby Wile Prize in Biology of $25.00 is awarded to a member of the freshman or sophomore class for proficiency in Biology 1–2.

Economics and Business Administration

The John Dows Maiers Prize of $125 is awarded annually to the member of the junior class who has done the best work in concentration in economics.

The William Morse Hastings Prize of $50.00 is awarded each year for the best essay or thesis upon some topic on the history of industry, to be selected by the Chairman of the Department of Economics and the Director of the School of Business Administration.

Economics

The Sherman Fellowship of $500 awarded in alternate years, was endowed by Isaac Sherman of New York as a graduate fellowship in the Department of Economics. The next award will be made in June, 1960, to that student of the Class of 1959 or 1960 who has shown the highest ability in the work of the Economics Department and who has completed not less than eighteen hours in that department. The sum is payable upon approval of the President of the University after the recipient has registered for a year of graduate study in economics.

Engineering

The Emil Kuchling Prize of $100 is awarded annually to that man of the class in applied mechanics who has shown the greatest proficiency in the work of the course.

The Leet Prize, an article of mechanical drawing equipment, is donated by Professor Horace William Leet and is awarded annually to a member of the freshman class showing proficiency in the elementary course in machine design.

The Charles L. Newton Prize of $50.00 is awarded to a student in the “Department of Applied Sciences who shall show a special proficiency in some subject connected with that department, either in oral or in written examination or by thesis.”

The Marie Petz Lehmann Prize of $100 is awarded annually to the full-time mechanical engineering major who has shown the most improvement from his freshman through his junior year.
English  The Alumnae Prize of $10.00, provided by the Alumnae Association, is awarded annually to the woman in the sophomore class who has done the best work in English during her sophomore year.

The Charles Ellis Caldwell Prize of $100 is awarded annually to the man of the senior class who in his college work has shown the greatest proficiency in the Department of English.

The Davis Prizes, founded in 1864, of $30.00 and $20.00 respectively, are awarded to the two men in the graduating class whose original expository or persuasive speeches exhibit the highest excellence in content, organization, style and delivery.

The Dewey Prizes, founded in 1866, of $15.00 and $10.00, are awarded annually to the two men in the sophomore class whose original expository or persuasive speeches exhibit the highest excellence in content, organization, style and delivery.

The Hull Prize of $50.00 is awarded to the man in each senior class concentrating in English who has done the best work in English studies.

The Williams Memorial Prize of $50.00 is awarded to the woman in the senior class concentrating in English who has done the best work in that department.

Fine Arts  The Elizabeth M. Anderson Prize of $40.00 is awarded annually to that senior who shows the highest proficiency in some subject connected with art.

French  The Neil C. Arvin Memorial Prize of $100, established by the students, colleagues and friends of Professor Arvin, is awarded annually to the student in the senior class who has excelled in French during his undergraduate course.

German  The E. P. Appelt Memorial Prize in German of $100, provided annually by the Federation of German-American Societies of Rochester, is awarded each year to a student of German in the University of Rochester for progress toward over-all proficiency in spoken and written German.

The Kreyer Prize in German of $50.00 is awarded for facility in spoken German.
Political Science  The James D. McGill Memorial Prize of $100.00, established by former students and friends of Professor McGill, is awarded annually to that undergraduate student who is deemed to have shown the greatest interest and demonstrated the highest achievement in the field of political science. The names of annual recipients will be recorded on a plaque hung in the classroom where political science classes meet.

The Townsend Fellowship of $500 awarded in alternate years, was endowed by Charles John Townsend of Lockport, New York, as a graduate fellowship in the Department of Political Science, in memory of his father, John Pomeroy Townsend, LL.D., who founded the fellowship in 1876 and supported it by annual payments for many years. The next award will be made in June, 1959, to that student of the Class of 1958 or 1959 who has shown the highest ability in the work of the Department of Political Science and who has completed not less than eighteen hours in the Department of Political Science or History.

Greek  The Russell Mumford Tuttle Prize of $50.00 is awarded each year to a man student for proficiency in the study of Greek.

History  The N. B. Ellison Prize of $65.00 is awarded to the man in the senior class concentrating in history who has done the best work in that department.

The Hugh MacKenzie Prizes, amounting to approximately $80.00, provided from income from the Hugh MacKenzie Memorial Fund raised by friends, colleagues, Alumnae, and Alumni to honor the memory of Professor MacKenzie, are awarded each year to the woman student who has shown the highest achievement and interest in History 1–2 and to the woman student who has shown the greatest improvement in the same course.

Languages  The Sigma Kappa Upsilon Prize of $10.00 is awarded annually to the woman student who has shown the greatest achievement in a foreign language.

Mathematics  The Stoddard Prizes, of $30.00 and $25.00 in mathematics, are awarded annually to two men pursuing the course in analytic geometry and calculus.

Physics  The Stoddard Prize of $25.00 is awarded to the man in each graduating class who shall present the best thesis on some assigned topic of investigation in physics.
General

The Jesse L. Rosenberger Prize of $25.00 is awarded to the man in the junior class whose work has shown the greatest improvement during the freshman and sophomore years.

The Susan Colver Rosenberger Prize of $25.00 is awarded to the woman in each junior class whose work has shown the greatest improvement during her freshman and sophomore years.

The Terry Prize of $125 is awarded annually to that man of the senior class who by his industry, manliness, and honorable conduct has done most for the life and character of the men of the River Campus.

The Theta Eta Prize of $25.00 is awarded annually to the senior woman who through her participation in campus life and by her influence, personality and achievement has contributed most to the River Campus.

The Gamma Phi Prize of $25.00 is awarded each year to the sophomore woman who has contributed most to the general advancement of the River Campus.

The Percy B. Dutton Prize of $100 is awarded each year to that male member of the graduating class who in the opinion of the Dean of Students shall have excelled all his men classmates in wholesome, unselfish, and helpful influence among his fellow students.

The Louis A. Alexander Alumni Award, in the form of a trophy, is to be presented annually to a male member of the senior class who has made an outstanding contribution to student life through his significant achievements in athletics and general student activities; and whose character and leadership qualities have been a wholesome influence on his fellow students.

The Joseph P. O'Hern Scholarship for Travel and Study in Europe was endowed by the late Joseph P. O'Hern, of the Class of 1892. This scholarship was awarded in 1954 and thereafter in alternate years will be awarded to a graduate who has been elected to Phi Beta Kappa, and who wishes to prepare for a career in teaching. A committee, composed of the Dean of Students as chairman, the Dean of Women, and the President and the Secretary of the New York Iota Chapter of Phi Beta Kappa, will select the recipients. The selection for 1960 will be made from eligible persons in the Classes of 1958, 1959, and 1960. The stipend will be $2000.
The Joseph O'Connor Graduate Study Endowment Fund, endowed by a bequest from Evelyn O'Connor, is awarded annually to a woman in the graduating class who has shown marked ability in Original Writing, in English Literature, in Classical Languages and Literature, or in Archaeology. A committee composed of the Dean of Women, the Chairman of the English Department, the Chairman of the Foreign Language Department, Miss Eleanor Gleason, and Mrs. Alling Clements will select the recipient.

The Fannie R. Bigelow Alumnae Awards, silver trays bearing the insignia of the University, endowed by a fund contributed to the University in Mrs. Bigelow's memory by members of her family, will be presented to an undergraduate woman and an alumna on Susan B. Anthony Day by the Alumnae Association. These awards will be given in recognition of the importance of the contributions made by women to the cultural, intellectual, and civic life of their communities.

Scholarship Cups, one for men and one for women, are awarded annually to that fraternity and to that sorority whose average scholarship for the preceding year has been the highest.
Special Services For Undergraduates

The aim of the Office of the Dean of Students is to provide each student with an opportunity to develop to his fullest intellectual, spiritual, and social capacity. The student services are coordinated in the staff of the Office of the Dean of Students which includes the Dean of Women, the Associate Dean of Students, the Freshman Faculty Adviser for Women, the Director of Men's Residence Halls, the Director of Women's Residence Halls, the Director of Student Activities and of the Counseling and Testing Services, Vocational Counselors, and Placement Officers.

Service is provided to students through a variety of persons and agencies many of which are described elsewhere in this bulletin. Each student, upon admission, is assigned to a member of the faculty who serves as his academic adviser during his first two years, and is available to counsel him on non-academic matters as well. Students are often referred by their advisers to other members of the staff of the University for assistance. During his last two years each student is assigned a faculty member in the department of his field of concentration for academic guidance. The staff of the Office of the Dean of Students will counsel juniors and seniors who seek assistance in non-academic matters.

Additional counseling services are available to students in the following persons or agencies:
- Medical Officers, members of the Departments of Physical Education, Director of Religious Activities, adviser to the University Protestant Fellowship, adviser to Jewish students, adviser to Catholic students, Directors of Student Aid, Placement Office, Vocational Counselor, the Testing and Counseling Service, the Psychological Clinic and the Department of Psychiatry.

Vocational guidance is provided by Vocational Counselors and Faculty Advisers. For women the service is
offered by the office of the Vocational Counselors for Women and for men by the Testing and Counseling Service. Occupational libraries in the respective offices are accessible to all students. Vocational aptitude and interest tests are available as a basis of career counseling.

Group activities for both men and women, sponsored by students, counselors and alumni, include career coffee hours, and discussion meetings in lounges on campus and in alumni homes. Students thus meet representatives of various vocations and professions while they are forming their vocational goals.

**Placement** The Vocational Counselors and Placement Officers aid both men and women seniors in obtaining suitable positions. Placement assistance is also offered to returning veterans and other alumni who may be seeking new job opportunities. Although graduates are not guaranteed positions, every effort is made to help place those who choose to make use of the placement service without charge to graduates. Each student is urged early in the senior year to register with the Placement Office in order to take advantage of both on-campus and off-campus interviews before and after graduation. Cordial relations are constantly maintained with business firms, governmental agencies and educational institutions for the purpose of acquainting students and graduates with the various opportunities open to them. Placement credentials compiled in the senior year are kept in a permanent file for use by potential employers of seniors and alumni.

Students who desire assistance in obtaining summer employment may register with the campus Placement Office early in the spring. Whenever it is possible, summer placements are made with the aim of helping the student gain work experience in line with his career objective.

**Educational** The Bureau is maintained to assist University of Rochester students and graduates in securing teaching positions and to assist school officials in filling vacancies.

Students in all schools, colleges, or departments of the University of Rochester may register with the Bureau by paying a permanent registration fee of $2.00. The office of the Bureau is in Room 205, Dewey Hall.

**The Testing and Counseling Service** The Testing and Counseling Service, sponsored by the Office of the Dean of Students, is available for the students and faculty of The University of Rochester. Requests for testing and counseling of high school students
and recent high school graduates will be accepted as staff and time permit. The typical fee for testing and counseling individuals outside the University seldom exceeds $25.00.

Student counseling which supplements the services provided by the faculty, Faculty Advisers, religious advisers and the Deans is available. Special attention is given to study skills, reading difficulties, and vocational and educational planning. Complete testing service is provided to aid in appraising students' aptitudes, interests, personality traits and related factors. Emphasis is placed upon counseling initiated by the student and every effort is made to assist each individual in accepting responsibility for his decisions and actions.

The tests given to all entering students during Freshman Week are administered and scored by the staff of the Testing and Counseling Service. Other tests administered periodically during each year include the Graduate Record Examination, Medical College Admissions Test, the Navy College Aptitude Test, the College Entrance Board Examinations, Law School Admission Test, tests of the National League for Nursing, and tests of the American College of Life Underwriters.

The Testing Service renders assistance, upon request, to the faculty in the construction, scoring and interpretation of course examinations.

Area colleges, high schools, and elementary schools may obtain information regarding the cost of test scoring and other statistical services by contacting the Testing and Counseling Service, The University of Rochester, River Campus Station, Rochester 20, New York.

Health Service

The health of the student body is under the care of physicians at the Student Health Service. The out-patient department for men and women students is housed in the medical office in the men's gymnasium. Infirmary patients, both men and women, are housed in the Women's Residence Halls. The infirmary is open twenty-four hours daily for the treatment of all types of illness; complicated cases are admitted to the University Medical Center directly or by transfer from the infirmary on the recommendations of the student health physicians.

All full-time students are entitled to the services of the
medical officers and to such infirmary, dispensary or hospital care as may be thought necessary by the medical officers provided the cost does not exceed $80.00 in any one academic year. Hospital service is limited. It is expected that students will pay for unusual medications or prolonged hospitalization. Elective surgery, refractions, and dental care are not provided under the program. No care is provided resident students during vacation periods.

If a student prefers to go to a private physician or hospital for treatment, the cost of such treatment and care becomes his or her responsibility.

All entering students must be vaccinated, or submit evidence of recent successful vaccination. Before matriculation, a preliminary medical examination is required, and the correction of remedial defects is urged.
General Regulations

Terms and vacations of the college year are indicated on the calendar printed on page 2.

Attendance All teachers are required to keep a record of attendance and to report absences to the Faculty Advisers. Responsibility for attendance of juniors and seniors is assumed to rest directly upon the student. This privilege is extended for each term to those members of the sophomore and freshman classes whose names appear on the Dean's List.

Report of Illness Absence from any college exercise on account of illness should be promptly reported to the Medical Officer even though the student is under treatment by another physician.

Marriage If a student plans to be married during an academic year, the Office of the Dean of Students should be noti-
fied at least two weeks in advance. It is also expected that parents or guardians have been fully informed.

A student in the residence halls who marries during an academic year must obtain permission from the appropriate dean in order to retain a room in the residence halls. Marriage and withdrawal from the residence halls does not release a student from a room contract.

**Student Cars**  Students driving cars on campus are required to register them. Beginning with the Class of 1963, freshman and sophomore resident students are not permitted to bring cars to the University.

**Residence Requirement**  The minimum residence requirement for the bachelor's degree is one full academic year, according to the requirements of the New York State Department of Education.

**Program Approval**  During the second term of each year at a specified time each student must obtain approval from his adviser for the studies he intends to pursue in the following year. A special fee of $5 is charged each student who fails to obtain program approval by the prescribed date.

A student is not allowed to drop a course or change registration without written permission of his adviser.

**Junior Year Abroad**  Superior students who receive the permission of their departments of concentration and of the Administrative Committee may apply for admission to a foreign university for study abroad in the junior year or for admission to one of the foreign-study programs conducted by an American college or university. Students who study abroad under this plan are retained on the rolls of the University of Rochester and receive full credit for work successfully completed abroad provided the student's registration has been approved in advance by the University. Students interested in the program of study abroad must apply to the Office of the Dean of Students early in the autumn of their sophomore years.

**Marking System**  A student's work in any course will be rated in accordance with the following definitions: Grade A, Excellent; Grades B+ and B, Good; Grades C+ and C, Satisfactory; Grades D+ and D, Poor; Grade E, Failure. The official definitions of these grades as adopted by the faculty may be inspected on application the Registrar's Office.

Grades in Physical Education are given as Cr—Credit, P—Pass, NC—No Credit, and E—Failure. Two points of credit are given for each hour of credit for a grade of Cr and no points for a grade of P.
**Hours of Credit and Points of Credit**

Two units are employed in fixing the total requirements for graduation, the hour of credit and the point of credit. The hour of credit represents a passing grade (D or higher) in a course of one hour a week for one term. For each hour of credit the student will receive four points of credit if his grade is A; three and one-half points of credit if his grade is B+; three points of credit if his grade is B; two and one-half points of credit if his grade is C+; two points of credit if his grade is C; one and one half points of credit if his grade is D+; or one point of credit if his grade is D.

In laboratory courses at least two hours of attendance in laboratory are required to gain one hour of credit.

**Examinations and Failure**

A student whose work during the term has not been satisfactory to the instructor in charge may, at the discretion of the instructor, be excluded from the final examination, and be reported as failed.

The instructor’s report at the close of the course includes a grade indicating the combined result of term work and examination. Any student who is absent from a regular examination through causes beyond his control may, by special permission of the Dean of Students, be allowed make-up examination to be taken at a time appointed by the instructor.

**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: 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. This work or paper must be in the area of the student’s concentration and of such a nature that the task have prior approval from the Department concerned and from the Administrative Committee. After approving the proposed task the Department shall submit the proposal to the Administrative Committee not later than March 1 of the year in which the degree is to be conferred, and the Administrative Committee shall approve or disapprove the proposal within five days of that date. In no case shall such a proposal be considered unless the cumulative point-hour ratio at the end of the first semester of
the senior year is at least 3.20 for distinction recommendation, 3.50 for high distinction, or 3.70 for highest distinction.

The work or paper must be of an outstanding character if it is to be submitted by the Department chairman, with the approval of the Department, in support of a recommendation for one degree higher level of distinction. This recommendation shall be submitted to the Administrative Committee prior to its June meeting.

Except in unusual cases, no student shall be considered for a degree with distinction who has not had at least two years of academic work at the University of Rochester. Ordinarily nothing higher than a degree with distinction will be given in such cases.

Deficiency in Academic Work

The Committee of Faculty Advisers and Deans periodically reviews the academic records of first and second year students; departmental counselors review the records of juniors and seniors. Students who do not make satisfactory progress towards the completion of requirements for a degree may be warned, placed on probation, or dropped from college.

It is not the policy of the University to apply rigid numerical criteria in determining when warning, probation, or dismissal action is warranted. However, freshmen whose point-hour ratios are below 1.7 (D plus average) normally are subject to academic action. Sophomores, juniors, and seniors are expected to maintain a cumulative point-hour ratio of 2.0 (C average) or better. An upperclass student may be warned or placed on probation for an exceptionally poor term record, even though his cumulative record is 2.0 or better. All factors relevant to a student's academic progress are considered in making decisions regarding academic action.¹

A student on probation (1) may not be absent from classes, (2) may hold no class or other office or participate in extracurricular activities, (3) may not represent the University in any public function, and (4) should expect dismissal at the end of the period of probation if his work has not shown marked improvement.

Withdrawal

The continuance of each student upon the rolls of the University, the receipt by him of academic grades, his graduation, or the conferring of any degrees or the grant-

¹Members of the class of 1960 should refer to the official bulletin of the College of Arts and Science, issue for 1957-58, for a statement of regulations regarding their academic deficiency.
ing of any certificate, shall be strictly subject to the discretionary powers of the University. The University expressly reserves the right, and each student expressly concedes to the University the right, to require his withdrawal at any time for any reason; no reason for requiring such withdrawal need be given.

If a student withdraws on his own initiative while his academic standing is unsatisfactory, he may be recorded as dropped. A student who withdraws early in a college term may be excused from payment of a part of his tuition for that term. After five weeks the student must pay full tuition. Up to that time he pays a percentage of his tuition based on the length of his attendance.

Firearms

The following regulations apply to the possession and use of firearms:

1. No student may possess a firearm or airgun on the River Campus without registering his weapon in the Office of the Dean of Students within twenty-four hours after it is brought on campus.

2. Weapons registered with the Dean of Students must be deposited with the appropriate dormitory head or fraternity president. If such deposit is inconvenient the student may retain the firearm but deposit a major operating piece of the mechanism such as a bolt or a cylinder with the dormitory adviser or fraternity president.

3. No student may fire a rifle, shotgun, pistol or airgun on the River Campus except in places specifically designated for this purpose, i.e. the rifle range.

4. Students who are found with an unregistered firearm (including an airgun) in their possession or who are apprehended shooting a firearm or airgun on the River Campus or riverbank adjacent thereto are subject to expulsion from this University.

Master Keys

The unauthorized possession or use of a key to a University lock is forbidden, and students violating this regulation are subject to a fine and/or expulsion.
Degree Programs

OFFERED BY THE COLLEGES
AND SCHOOLS LOCATED
ON THE RIVER CAMPUS

The responsibilities which a complex civilization places upon the citizen of today remind him that narrow fields of specialization prepare him for only a small portion of his life. The best education should prepare him morally, physically, intellectually, and spiritually to live to his fullest capacities. He must know not only himself but also the world about him; he must be trained to make judgments based on a sense of values, not on prejudices and misconceptions. In the study of the liberal arts he learns that science, literature, history, philosophy, the social sciences, and all the other arts can free his mind from the limits of narrow interests. Knowledge of the past enriches his experience and affords wisdom for the future. Education in the humanities helps a student to answer the question, “What am I to live for?”

Mastery of a chosen field of professional competency is often essential to material success, but the demands of every important profession increasingly require broad social vision as well. The best schools of law, medicine, and theology, positions in the world of industry, government, journalism, and many other spheres, call for men and women with understanding, not only in the areas of specialization, but also in subjects which prepare them to accept their wider responsibilities in life.

For these reasons The University of Rochester urges the importance of the liberal studies in both the degrees which it offers, Bachelor of Arts and Bachelor of Science.
Courses for the Bachelor's Degree

Candidates for the Bachelor's degree will normally complete two years of liberal studies in the College of Arts and Science and the final two years of preparation will be completed in the College of Arts and Science, the College of Engineering, the College of Education, the School of Business Administration, the Department of Nursing, or the Institute of Optics. A summary of the programs offered by the respective colleges and schools located on the River Campus follows:

**College of Arts and Science**

**Arts Course with a major in:**
- Biology
- Chemistry
- Economics
- English
- Fine Arts
- Foreign Languages
- Geology and Geography
- History
- Mathematics
- Music
- Philosophy
- Physics
- Political Science
- Psychology
- Sociology

**Division of Honors Studies with a major in:**
- Economics
- English
- Foreign Languages
- History
- Philosophy
- Political Science

**Interdepartmental programs with a major in:**
- General Science
- American Studies
- Non-Western Civilizations
- Bachelor of Arts

**Course of Study with a major in:**
- Applied Optics
- Astrophysics
- Biology
- Chemistry
- Geology
- Nursing
- Optics
- Physics
- Bachelor of Science

**College of Education**

**Course of Study with a major in:**
- Elementary Education
- Secondary Education
- Nursing Education
- Bachelor of Science

**College of Engineering**

**Course of Study with a major in:**
- Chemical Engineering
- Electrical Engineering
- Mechanical Engineering
- Bachelor of Science

**School of Business Administration**

**Course of Study with a major in:**
- Accounting (C.P.A.)
- Business Administration
- Industrial Management
- Bachelor of Science

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1Work offered by the Institute of Optics; degree awarded by the College of Arts and Science.
2Administered by the School of Business Administration in cooperation with the College of Engineering.
Graduate Studies

The University offers opportunities for graduate and professional instruction leading to the degrees Doctor of Philosophy, Doctor of Musical Arts, Master of Arts, Master of Science, Master of Education, Master of Business Administration, and Master of Music.

The College of Arts and Science offers graduate work leading to the degree of Doctor of Philosophy in the following departments: Biology, Chemistry, Economics, English, Geology, History, Mathematics, Optics, Physics, Psychology, and Sociology. The degrees Master of Arts and Master of Science also are given for work in these departments, and in the following departments of the College: Fine Arts, Foreign Languages, Political Science, and Philosophy.

The College of Engineering offers work leading to the Doctor of Philosophy and the Master of Science degrees in Chemical Engineering, and to the Master of Science degree in Electrical and Mechanical Engineering.

The College of Education offers work leading to the degrees Master of Education, Master of Arts in Education and Master of Science in Nursing Education.

The School of Business Administration offers work leading to the degrees Master of Science with a major in Business Administration, and Master of Business Administration.

The Eastman School of Music offers work leading to the degrees Doctor of Philosophy, Doctor of Musical Arts, Master of Arts, and Master of Music.

The School of Medicine and Dentistry offers work leading to the degrees 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 20, New York.

Detailed information on graduate programs offered on the River Campus, as well as on the programs leading to graduate degrees in the other Schools of the University, is given in the bulletin “Graduate Studies,” which may be obtained on request from the Associate Dean for Graduate Studies in each School. Students requesting application forms, bulletins, and additional information should write to the Office of Graduate Studies in that one of the above listed Schools of the University in which they propose to do their graduate work.
Officer Candidate Programs

Naval Reserve Officers’ Training Corps

The University of Rochester is one of fifty-three colleges or universities at which a permanent Naval Reserve Officers’ Training Corp Unit has been established. A Department of Naval Science under a Professor of Naval Science and a staff of Naval instructors is an integral part of the College of Arts and Science; a permanent building, Harkness Hall, has been constructed by the University to house the Department.

The Naval Science sequence, consisting of one course per term, complements the University’s regular academic courses in arts and science. Those enrolled in the NROTC program may fulfill the requirements for a Baccalaureate degree in either arts or science, as well as the requirements for a commission in the Naval Service, in eight terms (four academic years).

There are two types of students enrolled in the NROTC program:

1. Regular NROTC Students are subsidized by the Navy for tuition, fees, textbooks, uniforms, and retainer pay of $600 per year. In return for these benefits, regular NROTC students obligate themselves to attend three cruises or summer training periods of six to eight weeks; to accept a commission as ensign, USN, or second lieutenant, USMC; and to serve for four years on active duty after graduation, with the ultimate option of applying for a permanent commission or of transferring to the Naval Reserve for a period of such length as to total six years of commissioned service.

2. Contract NROTC Students agree to make one summer practice cruise of three to six weeks, to accept a commission for two years in the Naval Reserve or
for three years in the Marine Corps Reserve, if offered, to serve for two years on active duty, if called, and not to resign such commission before six years from its original date. Contract students may, if granted permission by the Chief of Naval Personnel, delay their reporting for active duty in order to pursue (at their own expense) graduate study in Engineering, Chemistry, Physics, or Mathematics. Delay will not be granted for work beyond the Master's Degree, nor for a period longer than two years. Contract NROTC students are issued a complete uniform and Naval Science textbooks by the government and are paid a subsistence allowance during their last two academic years.

Regular NROTC students are selected after nationwide competitive aptitude and screening tests and certified to the University by the Navy Department.

Contract students are selected from applicants from the incoming freshman class, the number being limited to a quota set by the Navy Department.

With the approval of the Professor of Naval Science and the academic authorities, civilian students, citizens of the United States, who have not entered into any contract with the Navy may be permitted to pursue Naval Science courses for college credit. They will be designated as Naval Science students. Since they are not members of the NROTC, either as regular or contract students, they will not be eligible to make NROTC practice cruises, to be issued uniforms, to have access to classified information or to be paid any compensation or benefits. Naval Science students may become eligible for enrollment as Contract NROTC students, provided they comply in every respect with the requirements for such enrollment. They may also participate in the annual competition for entrance into the NROTC as regular students.

The requirements for enrollment in the NROTC program for both regular and contract students are that they:
1. must be unmarried male citizens of the United States and must agree to remain unmarried until commissioned or disenrolled;
2. must be not less than seventeen years of age nor more than twenty-one years of age on July 1 of the year in which they enter college (contract students may be accepted at age sixteen 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 for at least four years; (5) must be physically qualified.

In addition to the requirements for a Baccalaureate degree and those for a commission in the Naval Service, the following must be fulfilled: (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. The University will prescribe standards of proficiency and determine procedures necessary to achieve them. (4) Physical training will be taken by every student. (5) Each student shall take such instruction in swimming as to qualify him as a First Class Swimmer. Both Regular and Contract NROTC students are deferred from the draft while enrolled in the NROTC Unit. Naval Science students are not deferred from the draft by the Navy.
Air Force Reserve Officers’ Training Corps

The Air Force Reserve Officers’ Training Corps at The University of Rochester is one of 176 such units located at colleges and universities throughout the United States. Its purpose is to prepare selected male college students to qualify for commissions as second lieutenants in the Air Force Reserve at the same time that they graduate from college. The training program is conducted by personnel assigned from the United States Air Force to the University, where they have been organized into the Department of Air Science.

The Air Science program is divided into two parts, the basic course (freshman and sophomore years), and the advance course (junior and senior years). All of the Air Science courses listed on page 132 must be successfully completed in order to qualify for a commission in the Air Force Reserve upon graduation.

Requirements for enrollment in the basic course (freshman and sophomore years) are that the student: (1) be a citizen of the United States (2) be over fourteen years of age upon entering the course and be less than twenty-eight years of age at the time of completing the program (3) be physically qualified for entrance to the University. Selection for enrollment in the advanced course (junior and senior years) requires that the student: (1) complete the basic course or equivalent thereof (2) meet the physical requirements for flight training or for general military service in the scientific or administrative categories (3) have successfully completed such general survey or screening tests prescribed for entering into each of the categories (4) must possess the overall academic average of “C” (2.0).

Accepted students are eligible for draft deferments after completing the first semester of the freshman year.

Basic students are loaned a complete Air Force uniform while advanced students receive a complete Air Force Officers uniform which becomes theirs upon graduation. Including summer training session, advanced students are paid up to $600.00 for their two years’ training. One summer training period of four weeks duration is required between the junior and senior years which consists of practical training in Survival Training, Air Base Defense, Aircraft and Aircrew Indoclination and Junior Officer Training. The Summer Training Units are held at various United States Air Force bases.
Platoon Leaders' Class, U.S. Marine Corps

Qualified undergraduates may enroll in this course, which consists of two summer training periods of six weeks each. There is no military training during the academic year. Undergraduates who are enrolled in this program are draft deferred. Applications or requests for further information may be submitted to the Marine Officer instructor in the Department of Naval Science.
Student Life
AND INTERESTS

Student life on the River Campus is centered around the residence halls and the student activities building. A flexible program of activities is encouraged to meet the varying interests of the student body. Activities provide an opportunity to develop wholesome interests, to learn leadership skills, to foster friendships, and to promote opportunities for wide acquaintance between faculty and students.

Todd Union, the student activities building, provides office space for many organized groups. In this building are the headquarters for student government, religious activities, musical activities, the campus radio station, the newspaper offices, and a Branch Post Office. The snack bar is a popular gathering place.

The Women's Residence Halls include an attractive coeducational recreation room and snack bar, as well as lounges for the use of groups and individuals.

Students Association Every full-time student on the River Campus is a member of the Students Association, which functions through a cabinet composed of students and faculty. The governing bodies for the residence halls are the Interhall Council for men and the Women's Council. The Cabinet has general responsibility for the development and supervision of extracurricular activities and for the maintaining of high standards of student life.
Publications

Through publications students obtain editorial, business and advertising experience. Publications include The Campus Times, a bi-weekly newspaper; Interpres, a yearbook edited by the Junior Class; Prologue, a bi-yearly magazine; freshman handbooks; student directories, and the Rochester Indicator, published by engineering students.

Extra-curricular Activities

The Forensic Society participates in intercollegiate debates as well as in campus programs. Dramatic interests find expression in the activities of The Stagers and the University of Rochester Players, and in two student-written and directed musical shows presented each year. There are opportunities for the expression of special interests, such as photography and international affairs. Through departmental clubs students become better acquainted with other students and with faculty members of similar academic interests.
Athletics  Ample provision is made for athletic interests. Inter-collegiate sports include baseball, basketball, football, golf, soccer, tennis, swimming, track, wrestling, squash, and sailing. Intramural contests are an important part of the program.

The athletic policy of The University of Rochester has been developed to further the best interests of the students who participate in intercollegiate athletics.

The definite objectives are to afford as many men as possible experience in intercollegiate sports; to devote only as much time to athletics as is necessary to give the participants all the worthwhile values that are derived from such participation, with as little interference with their scholastic endeavors as is possible; to arrange schedules, the playing of which entails only a minimum loss of time from classes, and, as far as practical, with teams
of approximately the same ability, representing institutions not only of about the same enrollment of men but also of similar educational standards and athletic ideals; to have the membership of all varsity teams composed of students successfully carrying a full program of work and who play for recreation.

To this end, the University does not subsidize its teams. Members of all athletic squads must meet the same entrance requirements and scholarship standards required of the student body in general, and they enjoy the same privileges as are granted other qualified students.

Women's sports are sponsored by the Women's Athletic Association and include archery, badminton, baseball, basketball, dancing, fencing, hockey, riding, swimming, tennis and volleyball. Women students participate in Play Days with women's groups from other colleges. Dancing is an important part of the program and is sponsored through a Dance Club.
Honorary societies include Phi Beta Kappa, Sigma Xi, Tau Beta Pi, Delta Phi Alpha and Phi Sigma Iota. There are, in addition, the following local honorary organizations: Marsiens for senior women, Keidaeans for senior men, Mendicants for junior men, Yellow Key for sophomore men and D'Lions for sophomore women.

Fraternities, Sororities

There are eleven social fraternities for men and five for women. Ten of the eleven men's fraternities are national; the eleventh, and all of the sororities, are local groups. The fraternities are Alpha Delta Phi (1851), Delta Upsilon (1852), Delta Kappa Epsilon (1856), Psi Upsilon (1858), Theta Delta Chi (1867), Kappa Nu (1911), Theta Chi (1920), Beta Delta Gamma (1926), Sigma Chi (1932), Tau Kappa Epsilon (1954), and Sigma Alpha Mu (1954). The sororities are: Theta Eta (1903), Alpha Sigma (1903), Theta Tau Theta (1906), Gamma Phi (1909), Sigma Kappa Upsilon (1923). The Hellenic Council and the Intersorority Council deal with the common interests of the respective groups.

Careful thought is given to social life on the River Campus. Social functions are sponsored each weekend by residence and social groups and are coordinated through a social calendar.
Student Residence

Housing for Men

Undergraduate men from outside the Rochester area are provided with housing in residence halls and fraternity houses on the River Campus. Six residence units provide living quarters for about 1,000 students. About 150 upperclassmen live in eight fraternity houses.

Each of the residence halls is operated 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 both social life and conduct. The facilities within the halls include lounges, game rooms, typing rooms, kitchenettes, and laundry equipment. Dances, student-faculty coffee hours, intramural sports competition, ping-pong tournaments, and group discussions of current issues are typical of the social program within the residence units. Through activity of this sort each student is given experience in group living which will supplement his academic training.

Selected students for advanced degrees live in the residence halls as advisers. They are aided by a group of undergraduates who also serve as advisers. A close contact is maintained between the residence advisers and other counselors. It is the duty of the residence hall advisers to help individual students with their problems, direct students to other advisory agencies in the University, and develop the individual halls as social units which will reflect the social and intellectual spirit of the University. The advisory program within the halls is coordinated by the Director of Residence Halls for Men.

Annual room rentals in the residence halls range from $250 to $295 per academic year. Both single and double rooms are available. The Men's Dining Hall is located across the street from the residence quadrangle. Additional recreational and activities facilities are provided in Todd Union, which is also where students receive their mail.

Students furnish their own blankets and bedspreads. A weekly laundry service for linens is supplied for each student at a nominal extra cost. Each student will receive two sheets, one pillow case, two bath towels the first week and will exchange these each remaining week of the school year. The cost to the student is $19.00 per year and will be included in the term bill.
Full-time students on the River Campus, except residents of the city, live on campus unless excused by the Dean of Students. Freshmen must live in the residence halls and upperclassmen in the residence halls or fraternity houses. Students who reside in or near the city who wish to live on campus will be accommodated to the extent that space is available.

Unique and adequate facilities for non-resident men students are provided in the Men's Residence Halls. City students affiliate themselves with a Residence, have full use of the city men's lounge and locker room, and take full part in all the activities and social functions of the Residence. All non-resident freshmen participate in these programs as well as upperclassmen who wish to do so. There is a $5.00 fee for those in the program which also covers the expenses for non-resident freshmen who stay in the residence halls during Freshmen Week. Several rooms are provided in the Residence for non-resident men. These rooms are furnished with bunk beds and dressing facilities. Men may stay overnight in these rooms at any time at a cost of thirty-five cents per night, with linen furnished for an additional fifty cents.

Detailed information regarding the residence halls will be sent with the room application which is mailed upon payment of the entrance deposit fee. Any questions concerning the residence halls should be addressed to the Director of Residence Halls for Men, River Campus.

Housing for Women

Excellent accommodations for women students are provided in the Women's Residence Halls on the River Campus. This modern seven-story building, built in 1955, offers many new and unique features for student living and social activities. There are spacious lounges and terraces on the main floor, music rooms and libraries, and a dining room which may be divided into four smaller dining rooms for a more intimate atmosphere. On the ground floor there is a coeducational recreational room with a snack bar. Situated on the seventh floor is a modern automatic laundry, solarium and sun-deck for the use of the women residents, and on each of the living floors there are two lounges, kitchenettes, and small laundry rooms.

Both single and double rooms are provided. The rate for a single room is $300 per academic year, and the rate for a double room is $260 for the academic year. All
undergraduate women from outside the Rochester area are expected to live in residence. Students who reside in or near Rochester will be accommodated to the extent that space is available.

Student rooms are spacious and fully furnished with desks, beds, chairs, lamps, bookcases, chest of drawers, and built-in closet units for each occupant. The interiors of the rooms are furnished in contemporary style, decorated in warm colors, and highlighted by large picture windows with harmonizing draw-curtains.

Students furnish their own blankets and bedspreads. Freshman women are advised to wait until they arrive on campus to purchase bedspreads. These can be obtained at the University Book Store for a very reasonable amount, and are available in colors and patterns that will harmonize with the decor of the rooms.

A weekly laundry service for linens is supplied for each student at a small extra cost which is included in the term bill. Each student receives two sheets, one pillowcase, and two bath towels on arrival. The cost to women is $13.00 per year for a weekly exchange set of one sheet, one pillow case, and two bath towels and $19.00 to men for a two-sheet set.

The advisory system of the Residence Halls is under the administration of the Dean of Women, and includes a Director of Women's Residence, Head Residents, and Graduate Assistants. Their duties include the supervision of the four wings of the residence hall, personal counseling, advising of women students in their activities and social affairs, and supervision of the coeducational recreation program in the halls. Specially selected upper class women serve as Freshman Counselors and live on the freshman corridors throughout the year.

The social program of the Residence Halls is planned and carried out mainly by the Women's Council and its standing committees, and includes a variety of women's activities and coeducational events. Throughout the year there is a full calendar of social occasions such as traditional women's college suppers, conferences, faculty coffee hours, formal and informal dances and parties, teas and receptions, pajama parties, picnics, open houses, and game nights.

All phases of community living, standards and regulations for women are also under the jurisdiction of the Women's Council, which is the legislative and adminis-
trative body in the Women's Residence Halls. This Council is made up of an executive board, elected corridor representatives, and standing committees. Women students at Rochester operate on an Honor System in matters of standards of conduct and community life, and every woman is considered to be a participant in this form of government. Administration of the Honor System is under the jurisdiction of an Honor Board.

Unique and adequate facilities for non-resident women students are provided in the Women's Residence Halls. City students affiliate themselves with the Residence, have full use of all social areas in the building, and take part in all the activities and social functions of the Residence. Several rooms are provided on the corridors of the Residence for the use of non-resident women. These rooms are furnished with bunk beds and dressing facilities. Non-resident women may stay overnight in these rooms at any time at a cost of thirty-five cents per night, with linen furnished for an additional fifty cents. Non-resident women are welcome in the dining room at all times and may buy their meals on a cash basis.

Further information will be sent with the application for a room, or may be had by writing to the Director of Women's Residence Halls.
Room Deposits  Both men and women students who live in residence halls are required to deposit the sum of $10.00 with the Bursar against which charges may be made for damage to the halls. For new students, this deposit is taken from the $50.00 deposit fee paid prior to entrance. Any charges made against this deposit are subtracted and the remainder is refunded upon surrender of the room.

Men's Dining Hall  The Men's Dining Hall provides dining facilities for men students and their guests. In addition to the beautiful and gracious main dining hall, there are several small private dining rooms for special parties. Breakfast and lunch are served cafeteria style; dinner is served by student waiters. A board plan is compulsory for all students. Additional facilities for student recreation and social life as well as the Faculty Club are housed in the building.

Women's Dining Hall  All women residents are expected to take their meals in the residence dining room. The board plan includes all meals during the week except Sunday evening supper. Breakfast and lunch are served cafeteria style; dinner is served by student waitresses. A snack bar is open in the residence Sunday evenings for students wishing to buy supper on the campus.
Religion

The University of Rochester was founded by men of strong religious convictions. Although the school has no tie with any particular denomination, it recognizes the importance of religion in campus life.

A Director of Religious Activities is appointed by the University to counsel with students and to coordinate the activities of all religious groups. He serves as chaplain to Protestant students on an interdenominational basis, assisted by chaplains or advisers to Protestant denominational groups. Working with him are chaplains for Roman Catholic and Jewish students, provided by their own organizations for work at the University.
Religious Organizations Voluntary student religious interest finds its expression through the activities of various campus organizations. Protestant students are organized through a Student Christian Association which meets bi-weekly for study and discussion and which sponsors many other activities. Working closely with the Student Christian Association and operating as part of its total ministry are the Baptist Student Association, the Canterbury Club, the Lutheran Student Association, the Wesley Foundation, and the Westminster Club. A Christian Science group, a Unitarian-Universalist group, and an Inter-Varsity Fellowship meet during the month. Catholic students are organized through a Newman Club which meets every other week for a talk and discussion, holds retreats, and provides social fellowship. Study groups are held for freshman students, and for upper-classmen. Jewish students are organized through a chapter of the Hillel Foundation which sponsors cultural meetings, breakfasts, religious discussions, and social activities. All of the religious groups on campus are represented on an inter-religious council which coordinates programs and sponsors joint activities, such as brotherhood dinners, coffee hours, and the Campus Conference on Religion. It also takes an active interest in campus life, social service, and international affairs.

Chapel University Protestant Chapel services are held each Sunday morning at 11 o'clock in Strong Auditorium. The University Chaplain preaches at all services except one each month when a distinguished clergyman, recognized for national leadership, is invited to bring the message. The University Chapel Choir sings at these services.

Mass is celebrated each Sunday morning at 11 o'clock in the West Lounge of Todd Union.

Jewish services are held on Friday evening in the upper lounge of Todd Union.

Holy Communion is served by the Episcopalian Chaplain each Sunday at 9:30 A.M. in the Men's Dining Center Lounge.

Religious Center Offices for the Director of Religious Activities and for the various chaplains are provided on the second floor of Todd Union. A lounge is available there for group meetings and other facilities of Todd Union are available for use. Opposite the lounge is located a room set aside for prayer and meditation, open to all students.
Musical Activities

The program of musical activities is designed to contribute to the artistic and aesthetic development of the student. Opportunity is provided for students with musical interests to participate in active choral and instrumental organizations.

The Men's Glee Club
A group with over seventy years of activity behind it, Glee Club sings at numerous functions of the University and makes a significant contribution to the cultural life of the city of Rochester through its appearances with the Rochester Philharmonic Orchestra, in concerts for high schools, local industries, and service clubs. Television appearances and spring tours that take the Glee Club to cities and communities in many parts of this country and Canada round out the activities of one of the University's most outstanding organizations.

The Women's Glee Club
With a membership of one hundred girls selected for their vocal ability, appears locally and for special events at the University. In addition, the organization sings with the Men's Glee Club in a joint program each year and presents a pair of concerts with some outstanding men's chorus from another Eastern university.
The University Chapel Choir functions primarily in connection with the Protestant Chapel and is open to students from all schools and colleges of the University. In addition to providing choral support to the weekly worship service, the University Chapel Choir from time to time presents special musical programs of a religious nature. The finest literature selected from the a cappella music of the sixteenth century, the great cantatas and oratorios of the masters, and contemporary sacred compositions are studied and performed.

The All-University Symphony Orchestra draws its membership from the student bodies, faculties, and alumni of all schools and colleges of the University. Outstanding soloists are occasionally featured in the several concerts which are presented each year in Strong Auditorium.

The Marching Band is open to both men and women, provides music and “half-time” spectacles for home football games. The band accompanies the football team to at least one out-of-town game. During the second semester the Concert Band is organized and prepares musical presentations for other University functions. Repertoire includes original music for band, arrangements of the symphonic masterpieces, and marches.

Student Conferences

Among the most stimulating events of the college year are the student conferences held on subjects of wide interest and significance, such as recent ones on “Freedom to Dissent,” “The New India,” “Human Rights,” “The Western Impact on Contemporary Africa” and “Social Nonconformity: Studies in Deviant Behavior.” Men and women of national and international reputation in various fields are invited as speakers, and formal sessions are followed by coffee hour discussions at which students may question the speakers. The undergraduates take a prominent part in the planning and conduct of the programs. Costs of the conferences are defrayed from funds for public lectures provided by the late Jesse L. Rosenberger, of the Class of 1888, and the late James G. Cutler of Rochester, and from general funds of the University.
The College of
ARTS and SCIENCE
Course Leading to Bachelor of Arts Degree

The Arts Course leading to the degree Bachelor of Arts offers the student the opportunity to formulate an educational program best fitted to his own needs, interests, and abilities. This will include, usually during the first two years, a general introduction to the main branches of knowledge: literature and the arts, the social sciences, and the biological and physical sciences. During the last two years the student will pursue more intensive study in some chosen field of special interest to him. The departments offering programs of concentration in the Arts Course are as follows:

- Biology
- Chemistry
- Economics
- English
- Fine Arts
- Foreign Languages
- Geology and Geography
- History
- Mathematics
- Music
- Philosophy
- Physics
- Political Science
- Psychology
- Sociology

Three other programs of concentration are offered which are interdepartmental in scope. These are in General Science, American Studies and Non-Western Civilizations. They are described in detail on pages 110–111.

The Arts Course, because of its flexibility, enables the student to secure a liberal education in the fullest sense of the term.

The requirement for the degree Bachelor of Arts is not less than 124 hours of approved credit (see page 73 for definition of hours and points) and a minimum cumulative point-hour ratio of 2.0. An arts student normally takes five courses in addition to the physical education prescribed for the freshman and sophomore years. Normal progress toward the degree implies a program of fifteen hours each term excluding physical education. Programs involving either fewer or more than five courses will require special permission of the Dean of Students. In general, no arts student is permitted to take more than eighteen hours a term.

It is the expectation in the Arts Course that each student will plan for himself, with the assistance of his advisers, the program best suited to his needs and interests.

Requirements for the Freshman Year. Physical Education and English 101–102 are prescribed for all freshmen. Upon the recommendation of the Department of English, students who show unusual proficiency in English on the basis of the secondary school record and the freshman entrance tests may be excused from English 101–102.

In addition to the two prescribed subjects, each student begins in his freshman year to meet the requirements of distribution but is not expected to complete them until later in his course.
Requirements of Distribution. The fields of instruction in which work is offered through the College are divided into four groups as follows:

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature and Other Arts</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>Economics</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>Political Science</td>
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<tr>
<td>Foreign Languages</td>
<td>History</td>
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<tr>
<td>Music</td>
<td>Philosophy</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>Group II</td>
<td></td>
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<tr>
<td>Social Sciences</td>
<td></td>
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<tr>
<td>English</td>
<td>Economics</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>Political Science</td>
</tr>
<tr>
<td>Music</td>
<td>History</td>
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<tr>
<td></td>
<td>Philosophy</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>Group III</td>
<td></td>
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<tr>
<td>Biological Sciences</td>
<td></td>
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<tr>
<td>Bacteriology</td>
<td>Astronomy</td>
</tr>
<tr>
<td>Biology</td>
<td>Chemistry</td>
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<tr>
<td>Physiology</td>
<td>Geology</td>
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<tr>
<td>Psychology</td>
<td></td>
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</tbody>
</table>

To meet the requirements of distribution, all students must take in addition to Physical Education and English 101–102 two full-year courses or their equivalent in each of the two groups other than that in which their field of concentration or their major lies (Groups III and IV being considered together). One of the two courses chosen to fulfill the distribution requirements in each of the two groups with which the student is concerned must be selected from the following list:

- In Group I:
  - English 103-104 or 131, 132
  - French 131, 132
  - German 131, 132
  - Spanish 131, 132

- In Group II:
  - Economics 101–102
  - Political Science 101, 102
  - History 101, 102
  - Philosophy 101, 102
  - Sociology 101–102

- In Groups III and IV, taken together:
  - Biology 101–102
  - Chemistry 111, 112 or 121, 122 or 123, 124
  - Geology 101–102
  - Physics 101–102
  - Physics 107–108

The second course in each group required for distribution may be any course in the group without restriction other than that prescribed by the departments themselves.

Certain of the courses listed above, because of their general character, are particularly called to the attention of students and Faculty Advisers. These courses are:

- In Group I, English 103–104
- In Group II, History 101, 102
- In Groups III and IV, Biology 101–102, Chemistry 121-122, Geology 101–102

1 The courses offered by the Department of Psychology fall within both Group III and Group II. Those classified as Group III, the Biological Sciences, are: Psychology 101–102, 201–202, 203, 205, 209, 297, 293. Those classified as Group II, the Social Sciences, are: Psychology 242, 247, 207, 210, 211, 215, and 214.

2 Students entering college with sufficient training in French, German, or Spanish to admit them to literature courses more advanced than French 131, 132, German 131, 132, or Spanish 131, 132 may count such courses as meeting the distribution requirements.

3 English 113 may not be counted as satisfying the Group I distribution requirement unless prior approval is obtained from the Chairman of the English Department. Non-Western Civilizations 201–202 may be counted either as a Group I or II course.
REQUIREMENT FOR A FIELD OF CONCENTRATION. In the sophomore year at the time of program approval each student shall consult with his advisers and submit to them for approval a tentative plan of study for the junior and senior years. This general plan will be the basis for preparing a specific program of courses to be taken. For students whose aims and interests are not yet clear, the program for the junior and senior years may be left in a tentative general form subject to more specific formulation by the spring of the sophomore year.

The preparation of this plan of study will be carried out in cooperation with the advisers and must be approved by them and by the Dean of Students. To be approved the student's program must meet the following regulations:

A. It must include a total of 124 semester hours of work, including physical education in the first two years, and meet the requirement for English composition and the requirements of distribution in the various groups as stated in the previous section.

B. It must include a group of approximately six year-courses in the main field or fields of interest which are sufficiently unified and sufficiently advanced so that, in the judgment of the heads of the departments concerned, the work covered may be made the basis of a senior comprehensive examination. Of the six courses to be taken in the field of concentration during the junior and senior years, not more than five nor less than three may be in the principal department, without special permission of the Dean of Students and the chairman of the department concerned. No introductory course from the principal department of concentration may be included in a concentration program. In general, introductory courses in an allied department shall not be included in the concentration program, but one such course may be taken with the consent of the department adviser and the Faculty Adviser; inclusion of two such courses must be approved by the Dean of Students.

C. The plan of study shall include courses outside the field of concentration which will contribute breadth to the whole program.

D. Every candidate for the Bachelor of Arts degree is required to demonstrate a comprehensive grasp of the subject matter of his field of concentration. In some departments this is done chiefly by means of comprehensive examinations, which are described below; in others by an approved substitute for the comprehensives which the student must perform during his junior and senior years. The student is recommended for the degree by the department of concentration on the basis of satisfactory completion of all requirements. The comprehensive examinations or the approved substitute constitute one element in the total program of the student. Whichever test of comprehensive knowledge is used could be overbalanced by other elements in the student's record in determining whether the student is to be recommended for the degree.
The requirement that the student shall demonstrate a comprehensive knowledge of his field of concentration is applicable to all candidates for the Bachelor of Arts degree, whether this knowledge is tested by the comprehensive examinations or by an approved substitute.\(^1\) The principles which guide the departments in recommending their concentrating students for the degree are as follows:

The accepted goal for students who are candidates for the Bachelor of Arts degree is a comprehensive grasp of the subject matter represented by the field of concentration. In addition, therefore, to earning at least 124 hours in approved courses with a minimum cumulative point-hour ratio of 2.0 and satisfying the requirements of distribution and concentration, the student must demonstrate on a comprehensive examination or such substitute as is approved by the Committee on Educational Policy, that he or she has met that goal and may be recommended for the award of the degree.

It rests with the individual department to evaluate the student's performance on the comprehensive examination or approved substitute as a part of his or her total record and to recommend on that basis whether or not the student may be graduated and the level of distinction earned, if any.

Passing the comprehensive examination or approved substitute is evidence that the student has a sufficiently comprehensive grasp of the subject matter of his field of concentration to qualify for the degree of Bachelor of Arts.

The Comprehensive Examination. Since the term comprehensive is construed to mean more than merely inclusive, these examinations will do more than test the student’s knowledge of work covered in his courses of concentration. They will be so designed as to evoke a demonstration of his intellectual maturity, of his ability to correlate material derived from different courses, to evaluate the relative importance of the facts and principles presented in different courses on the basis of his wider knowledge of the general field, and to appreciate the significance and permanent value of the material of his field of concentration. Course work should therefore give a student practice in judging as well as in acquiring information.

Administration of the Comprehensive Examination. There shall be not less than three nor more than four three-hour examinations, given normally at the end of the senior year. In other respects, departments using the comprehensives are free to determine the kind of examinations most suitable to their field.

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\(^1\)Candidates for the Bachelor of Arts degree with a concentration in music, and premedical students admitted to an approved medical school at the end of the junior year are not required to take comprehensive examinations or to complete an approved substitute therefor. Comprehensive examinations are not normally required for the Bachelor of Science degree, but divisions or departments concerned with this degree may require comprehensive examinations of students graduating in their fields if they regard such examinations as feasible and educationally desirable.
The three or four examination sessions which compose the comprehensive examination shall be given at the rate of not more than one a day and shall normally be three-hour written examinations. Only one of the written examinations may be replaced by an oral examination. Comprehensive examinations cover only courses included in the program of concentration. All questions, including those on allied fields, are to be made up and graded by members of the principal department of concentration.

A candidate for the degree with distinction may expect a more searching comprehensive examination than that for the ordinary degree, and an oral examination may also be included if the department so desires.

Seniors taking the final comprehensive examination shall be excused from all final course examinations in the term in which the comprehensive is taken. Their term grades shall be determined by the average of such things as previous hour-examinations, quizzes, papers, and laboratory work; in the department of concentration, the instructor may also take into consideration the rating obtained on the comprehensive examinations or pertinent portions thereof.

If desired by the instructor, hour examinations may be given at any time prior to the last week of classes. Instructors may give hour examinations during the last week of classes but seniors taking comprehensive examinations are not expected to take these examinations.

The comprehensive examinations shall be given on or after the fourth day of the regular examination period in order to give at least a one-week reading period.

Students shall be informed of the departmental requirements for the comprehensive examinations as early as possible, certainly not later than the beginning of their junior year.

The Approved Substitutes for the Comprehensive Examination. The substitutes for the comprehensive examination by which certain of the departments test the student’s knowledge of his field of concentration are approved by the Committee on Educational Policy. A subcommittee of the Committee on Educational Policy is concerned with the supervision and evaluation of the operation of substitutes for the comprehensive examination.

Seniors concentrating in departments which use an approved substitute for the comprehensive examination will normally take the final examinations in all of their courses.

Failure to Demonstrate Comprehensive Knowledge. The failure of a student to demonstrate by the comprehensive examination or by the approved substitute procedure of his department that he possesses comprehensive knowledge of his field of concentration does not prevent

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1The following departments use approved substitutes for the comprehensive examinations: Biology, Chemistry, Economics, General Science, Geology, Mathematics, Non-Western Civilizations, and Psychology.
his department from recommending him for the degree if he has met all of the other requirements. As stated above, the department of concentration may recommend such a student if, in the opinion of the department, other elements of his total program counterbalance this deficiency. If the department concerned does not recommend such a student for the degree, he shall not graduate with his class.

If the department is one which uses the comprehensive examination, the student may take the examinations again in the following autumn in order to qualify for the degree. If, however, in the opinion of the department concerned, it is not feasible for him to take them again at that time, or if he fails the comprehensive examination a second time, he shall have the privilege, by arrangement with his department of concentration, of completing a project in a part of the field of concentration in which he has failed to show adequate knowledge or understanding, and one which he may correlate with other parts of his field of concentration. The project must be under the direction of and approved by the department concerned and should be of such a nature as to permit its completion by September 1 following the June in which the degree would have been awarded; in no event may the time for its completion be extended beyond May 15 of the ensuing academic year. A recommendation for or against granting the degree shall then be made by the department to the Administrative Committee. A fee of $10.00 will be charged for each re-examination.

In the event that a department which uses an approved substitute for the comprehensive examination does not feel at the end of the student’s degree program that it can certify that the student has the desired comprehensive knowledge, the department shall specify what additional work shall be required of the student at some later date as evidence that he has acquired the required comprehension. On the completion of such work, the department shall recommend to the Administrative Committee for or against granting the degree.

THE CONCENTRATION IN GENERAL SCIENCE

For a concentration in General Science, nine year-courses or their equivalent must be taken in the departments of biology, chemistry, geology, mathematics, physics or psychology. (Only the following Group III courses in psychology may be included in this concentration: Psychology 101–102, 201–202, 203, 205, 209, 211, 297, 220, 293, 294. Chemistry 101 and 102 may not be included in this concentration.) Of these nine courses at least four shall be elementary, at least four shall be advanced courses, and at least one of these advanced courses shall be a third-year course. For example, a General Science program may consist of a three-year sequence in one department, two-year sequences in two departments, and single courses in two departments. In addition to this 3:2:2:1:1 sequence, the General Science committee will approve a 3:3:2:1, 3:3:1:1:1, 3:2:2:2,
4:3:1:1, or 4:2:1:1:1 sequence of courses. Term courses in separate fields or departments may not be used toward the concentration. Philosophy 252 (Philosophy of Science) must be taken, without academic credit, during the second term of the senior year as the approved substitute for the comprehensive examination.

The concentration program should be worked out by the student together with Mr. Muchmore (Chairman) or Mr. Sutton of the General Science Committee. Other members of this committee are: Messrs. Nollis, Wigg, Childs, and Gunderson.

**THE CONCENTRATION IN AMERICAN STUDIES**

The concentration in American Studies fosters broad comprehension of the civilization of the United States. Its major goals are to induce the perception of significant relationships and patterns in American life, and to develop informed and intelligent thinking about its problems. At the same time, participation in the program requires a reasonable familiarity with European history and thought. A student must have adequate breadth in his courses, but by judicious choice of electives he may also obtain the equivalent of concentration in a particular subject. In whatever program he finds most suitable for his purposes, the concentrator in American Studies receives aid, through seminars and other means, in correlating what he learns.

**Requirements for Concentration.** The American Studies seminars 201-202 and 203-204 are required. Other courses for concentration may be selected from approved offerings in the departments of art, economics, education, English, geography, political science, history, philosophy, and sociology. Selections must be taken from both the humanities and the social sciences, and they must include at least four subjects (for example, history, literature, education, and sociology). Sample programs may be obtained from members of the committee on American Studies.

The committee in charge of the concentration in American Studies: Miss Denny, Chairman; Messrs. Hersey, Gilman, Hall, and Stewart.

**THE CONCENTRATION IN NON-WESTERN CIVILIZATIONS**

The concentration in Non-Western Civilizations gives the student a broad understanding of the history, cultures, philosophies and contemporary political, economic and social problems of the Middle East, Asia, Africa and Latin America, and of the relations, past and present, of these areas with the Western nations. Participation in this program requires knowledge of the development of the Western world as background for evaluating the impact of the West on Non-Western Civilizations. Careful selection of electives may also provide the student with the equivalent of concentration in a particular subject. The concentrator in Non-Western Civilizations receives aid, through seminars and other means, in correlating what he learns.
Requirements for Concentration. A student who plans to concentrate in Non-Western Civilizations should, if possible, take the introductory course, Non-Western Civilizations 201–202. The student would then be expected to take the following courses listed under Category I: (1) courses covering four non-Western areas (choosing Russia, the Far East, Southeast Asia, the Middle East, Latin America, Africa or India); (2) one course in government (choosing The British Commonwealth of Nations or Government and Politics in Contemporary Africa); (3) one course in economics; (4) one course in geography; and, (5) a course in anthropology, history of religions or comparative non-Western literatures. The student taking honors can enlarge the range of work by selecting courses from Category II, and in Category III has a choice of four to six honors seminars, among them Political Science 350, History 361, 362 and 367, and Economics 325.

Category I (Courses dealing with non-Western areas)

<table>
<thead>
<tr>
<th>Category I</th>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>History:</td>
<td>261</td>
<td>China &amp; Japan</td>
</tr>
<tr>
<td></td>
<td>262</td>
<td>Southeast Asia</td>
</tr>
<tr>
<td></td>
<td>265, 266</td>
<td>A History of Russia to the Present Time</td>
</tr>
<tr>
<td></td>
<td>267</td>
<td>The Middle East in Modern Times</td>
</tr>
<tr>
<td>Political Science:</td>
<td>253</td>
<td>Contemporary India</td>
</tr>
<tr>
<td>Economics:</td>
<td>260</td>
<td>Government and Politics in Contemporary Africa</td>
</tr>
<tr>
<td>Geography:</td>
<td>252</td>
<td>Geography of South America</td>
</tr>
<tr>
<td>Sociology and Anthropology:</td>
<td>241, 242</td>
<td>Cultural Anthropology</td>
</tr>
<tr>
<td>Religion:</td>
<td>103</td>
<td>History of Religions</td>
</tr>
<tr>
<td>Literature:</td>
<td>285, 286</td>
<td>European Literature in Translation</td>
</tr>
</tbody>
</table>

Category II (Related Courses)

<table>
<thead>
<tr>
<th>Category II</th>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>History:</td>
<td>222</td>
<td>British History</td>
</tr>
<tr>
<td></td>
<td>281</td>
<td>World Communism</td>
</tr>
<tr>
<td>Political Science:</td>
<td>251, 252</td>
<td>International Politics</td>
</tr>
<tr>
<td>Economics:</td>
<td>249</td>
<td>Comparative Economics Systems</td>
</tr>
<tr>
<td>Science:</td>
<td>Chem 261</td>
<td>Science in National and International Affairs</td>
</tr>
<tr>
<td>Sociology:</td>
<td>221</td>
<td>Population and Human Ecology</td>
</tr>
<tr>
<td></td>
<td>232</td>
<td>Racial and Cultural Minorities</td>
</tr>
</tbody>
</table>

Category III (Honors Seminars)

<table>
<thead>
<tr>
<th>Category III</th>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Science:</td>
<td>250</td>
<td>India</td>
</tr>
<tr>
<td>History:</td>
<td>362</td>
<td>Southeast Asia</td>
</tr>
<tr>
<td></td>
<td>367</td>
<td>Middle East</td>
</tr>
<tr>
<td></td>
<td>361</td>
<td>Japan and China</td>
</tr>
<tr>
<td>Economics:</td>
<td>325</td>
<td>Economic Development</td>
</tr>
</tbody>
</table>

The committee in charge of the concentration in Non-Western Civilizations: Professor DEAN (Political Science), Chairman; Professor HAROOTUNIAN (History), Coordinator; Professor CANFIELD (Foreign Languages); Professor CHRISTOPHER (History); Professor DIFZ (Political Science); Professor HALL (Geography); Professor ECKSTEIN (Economics); DEAN HAZLETT, represented by Professor HOFFMEISTER (Geology); Professor VAN DEUSEN (History).
THE HONORS PROGRAM

PURPOSE AND NATURE OF HONORS WORK. The Honors Program provides an unusual opportunity for capable juniors and seniors who wish to work independently and to receive a large amount of individual instruction. The seminars of the Honors Program offer students frequent and extensive participation in discussion by small groups as well as directed training in the techniques of analysis, criticism, and research. Honors work furnishes a useful background for post-graduate study in many fields. The Program, however, by no means aims exclusively at specialized training. It provides a general education by increasing the student's knowledge both in depth and in breadth, and it supplies valuable experience in the arts of writing and of evaluating ideas.

Honors students in their junior and senior years normally take two seminars each term instead of four or five regular courses. Each seminar carries eight hours of credit and is normally limited to an enrollment of eight students. Each meets once a week for approximately three hours, usually in the afternoon, and in an informal atmosphere designed to promote the ready interchange of ideas. The work in each seminar generally centers on the presentation and discussion of written papers and oral reports.

EXAMINATION AND GRADES. Quizzes and hour examinations are not held in seminars. At the end of the junior year Honors students take a three-hour written examination in the work of each seminar in which they have been enrolled during the year. At the end of the senior year they take both written examinations and brief oral examinations in the work of the seminars of that year. Honors seniors also take a comprehensive examination (usually written, for three hours) covering the field of concentration, and set and graded by the department of concentration. The written seminar examinations are set and graded, and the senior orals administered, by a Board of Outside Examiners ordinarily drawn from the faculties of other universities and colleges. In no case will they have taken part in the instruction of the students they examine. As a basis for the examinations the examiners receive information about the work in the seminars from the instructors. After the examiners evaluate the examinations the instructors have the privilege of communicating to the examiners any serious dissatisfaction with the rating of any student. The final decision rests with the examiner, unless the Executive Committee of the Honors Program unanimously disagrees.

For each seminar a student receives one of the following grades:
- Highest Honors
- High Honors
- Honors
- Pass (credit, but not toward the degree with Honors)
- Fail (no credit)
The final ranking of seniors—Honors, High Honors, etc.—is made by the Committee of Examiners who examine them orally in the seminars of their senior year. This oral examination is intended solely to give the student a chance to improve his standing. In this final ranking, the Committee of Examiners may draw upon the counsel of the instructors and the Honors Committee.

Offerings and Concentration. Honors seminars are offered in the following fields:

<table>
<thead>
<tr>
<th>Comparative Literature</th>
<th>Foreign Languages</th>
<th>History</th>
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</thead>
<tbody>
<tr>
<td>Economics</td>
<td>Political Science</td>
<td>Philosophy</td>
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<tr>
<td>English</td>
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</table>

An Honors student may offer any one of these as his field of concentration, with the exception of Comparative Literature. In addition, students concentrating in American Studies may take their work in the Honors Program. Normally a student chooses four of the eight seminars during the junior and senior years in his field of concentration.

Planning an Honors Program. A good deal of flexibility is possible in the planning of an Honors program. The Honors Committee may permit students to take an Honors degree with fewer than eight seminars. Students preparing to be teachers, for instance, may take the necessary courses in Education along with a somewhat reduced number of seminars. Premedical students can arrange schedules allowing them to complete their science courses and begin Honors work at the same time. Honors students may be able to take a regular course or two in fields not offering seminars, in order to round out their education. In regular courses Honors students take the usual quizzes and examinations and receive a letter grade.

Honors students who wish to withdraw from the program and resume regular course work may do so at the close of either term during the junior year or of the first term of the senior year. Conversely, the student wishing to enter the program at the beginning of the second term of the junior year may usually do so. Enrollment in seminars is not restricted to students formally enrolled in the Honors program. Seminars which do not have their full complement of eight generally admit both qualified juniors and seniors majoring in regular course work and qualified graduate students.

Students planning to enter the Honors Program are generally expected to have demonstrated their capacity for successful individual work by obtaining an average of B or higher in their regular courses. Each application for admission to the program, however, is considered by the Committee on its own merits. Freshmen and sophomores planning to go into Honors work should aim to meet the requirements for group distribution by the end of the sophomore year. They are urged to take general survey courses.
which will furnish a useful background for seminars in the fields of their choice. Examples are: English 11, 112, French 131, 132, German 131, 132, Political Science 101, 102, History 101–102 and 231, 232, Philosophy 103, 104.

The Director of the Honors Program is Miss Ruth Adams. The Executive Committee for the year 1959–60 includes: Messrs. Beck, Harvey, Wiltsey, Christopher, Jones and Wasserstrom.

The Director and the members of the Executive Committee welcome inquiries concerning the Honors Program. Interested students should also consult their Faculty Advisers.

Courses Leading to Bachelor of Science Degree

Courses of study are offered leading to the degree Bachelor of Science: Applied Optics, Astrophysics, Biology, Chemistry, Geology, Nursing, Optics, and Physics. Except for the five-year nursing program, these courses extend through four years. The course requirements for the degree are indicated in the synopses on the following pages. In addition, students must earn a point-hour ratio of 2.0. In each course English 101–102 is prescribed in the freshman year and physical education is prescribed for the first two years.

The distribution requirements for the Science Courses are the same as for the Arts Courses. These are outlined in detail on page 105. In some cases the courses counted for distribution are prescribed and appear in the synopses on the following pages; in others elective courses are chosen to meet the requirements.

Students in the Optics Courses are excused from the full application of the requirements of distribution. Their programs will be arranged to provide the largest possible amount of distribution consonant with the other requirements for their degrees.

REGISTRATION FOR STUDIES. The registration for studies in each year (see page 72) should be approved by the chairman of the department before being presented for the approval of the Faculty Adviser.
Preparation for Advanced and Professional Study

The College of Arts and Science believes that the maximum of liberal studies possible is the best foundation on which to build a thorough specialized training. The curriculum is so arranged, therefore, that the student has a wide choice of courses designed to help him gain the broad knowledge and discipline indispensable to a full professional life, as well as of courses which will furnish the necessary basis for technical 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 courses to plan programs of study that will provide the best preparation for advanced and professional training in their chosen fields.

Medicine. Students who are planning a professional career in medicine should realize clearly what is required—a broadly educated person with an adequate grounding in science. Since the accomplishment of this objective is somewhat involved, the opportunities offered to the student are presented in considerable detail. Two plans of study are open:

1) Premedical students may pursue a program leading to the Bachelor of Arts degree. A concentration in any department of study is acceptable, provided that the requirements for admission to medical school are fulfilled. This plan satisfies the entrance requirement of a college degree set by a few medical schools, and gives to the student the opportunity for concentration in a particular field of learning.

Premedical students may study for the degree in the Honors Program.

2) Capable and mature students are admitted to some medical schools after three years of college work. The University of Rochester will accept the first year courses in an approved medical school, as equivalent to the work of the fourth year in college, provided that:

(a) distribution requirements have been met,
(b) at least 94 credit hours have been completed and at least 124 points of credit have been earned before entrance to medical school,

(c) the first year of medical school has been completed satisfactorily.

The Bachelor of Arts degree will be granted to a student meeting these requirements upon application by the student.

Premedical students should understand that completion of three years of college study and a meeting of stated requirements does not insure their admission to a medical school. The program of study should be so
planned, therefore, that it may be adapted after the three years to the College's requirements for concentration in some department of study.

Although medical schools vary somewhat in their admission requirements, the following courses represent the minimum commonly required for a premedical program:

- Biology 101–102, and an additional year in this field.
- Chemistry 121, 122 (or 123, 124), 142, 161–162.
- Physics 101–102.
- Mathematics, one year.
- English 101–102, and a year in literature.
- Modern foreign language, two years.

The catalogues of particular medical schools should be consulted for their specific requirements for admission. (also see “Admission Requirements of American Medical Colleges” by the Association of American Medical Colleges.) Student should be careful to meet the entrance requirements of the medical schools to which they may apply.

The special premedical synopses should be followed in the registration of students in the ROTC and those whose high school records indicate that they should not undertake two laboratory courses in the freshman year.

It is recommended that the more able students, particularly those planning to qualify for admission to a medical school at the end of the junior year, adhere so far as possible to the following sequence in taking the science courses listed:

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
<th>SOPHOMORE YEAR</th>
<th>JUNIOR YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 121, 122 (or 123, 124)</td>
<td>Biology 101–102</td>
<td>Biology 125</td>
</tr>
<tr>
<td>Mathematics 100, 101 (or 105)</td>
<td>Chemistry 142</td>
<td>Chemistry 161–162</td>
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<td>Physics 101–102</td>
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</tbody>
</table>

It is imperative that students residing in New York State and planning to compete for the Regents Scholarships for Medicine and Dentistry should have completed their study of organic chemistry (Chemistry 161–162) by the end of the third year of college.

It will be difficult, and in some cases impossible, to fulfill these and the requirements listed under (2) above unless the student notifies the College of his intention before the beginning of the freshman year.

The student's interest may make it desirable to include further training in natural sciences and mathematics than that provided by the courses indicated. This should not, however, be done to the exclusion of courses in social sciences and the humanities. It is not wise to anticipate medical school courses.

The Premedical Advisory Committee assists students in the preparation of their programs of study and aids them in application for admission to medical schools. The members of this committee are: Mr. Muchmore, Chairman; Miss French; Messrs. Andreas, Hafner, Raimi and Sutton.
Dentistry. The recommendations given above for premedical study apply also for the predental student, except that some dental schools admit students upon the completion of two years of college work and the course requirements are somewhat less stringent. The Premedical Advisory Committee also advises predental students in the arrangement of their programs of study and in their applications for admission to dental schools.


Teaching. Suggestions for students planning to enter the teaching profession will be found on pages 229–236 of this catalogue.

Law. There is no one field in which a student preparing for the study of law is advised to concentrate. The members of the Pre-Legal Advisory Committee, will be glad to consult with students preparing for entrance to law school.

The members of the committee are: Mr. Coates (chairman); Messrs. France and Hinman.

1See catalogues of particular dental schools for their specific requirements for admission.
2See catalogues of particular law schools for their specific requirements for admission.
The Administrative Officers

Dean of the College of Arts and Science
McCrea Hazlett, PH.D.
302 Morey Hall

Associate Dean for Graduate Studies
Glyndon G. Van Deusen, PH.D.
303 Morey Hall

Administrative Assistant to the Deans of the College
Marian A. McClintock, ED.M.
302 Morey Hall

Dean Emeritus, College for Men
Lester O. Wilder, A.M.

Dean Emeritus, College for Women
Janet Howell Clark, PH.D.

Director, The Institute of Optics
Robert E. Hopkins, PH.D.
414 Bausch and Lomb Building

The Faculty

(The names printed here are those members of the College Faculty in service in 1959-60, unless otherwise indicated, and are arranged alphabetically within each order of rank, appointees on full time preceding those on part time service to the College.)

Cornelis Willem de Kiewiet, PH.D. (London)
President

Harold Lattimore Alling, PH.D. (Columbia)
Professor Emeritus of Geology

Janet Howell Clark, PH.D. (Johns Hopkins)
Professor Emeritus of Biophysics and Dean Emeritus of the College for Women

Roth Clausing, PH.D. (Columbia)
Professor Emeritus of Economics

Elmer Augustin Kurtz Culler, PH.D. (Chicago)
Professor Emeritus of Psychology

George Chester Curtiss, A.M. (Harvard)
Professor Emeritus of Rhetoric and English Literature

Arthur Sullivan Gale, PH.D. (Yale)
Professor Emeritus of Mathematics

Ralph William Helmkamp, PH.D. (Harvard)
Professor Emeritus of Chemistry

Alfred Harrison Jones, PH.D. (Cornell)
Professor Emeritus of Philosophy

Willard Riggs Line, PH.D. (Columbia)
Professor Emeritus of Chemistry

Robert Alexander MacLean, PH.D. (Chicago)
Professor Emeritus of Classics

Dexter Perkins, PH.D. (Harvard)
Professor Emeritus of History

John Rothwell Slater, PH.D. (Harvard)
Professor Emeritus of English

Professor Emeritus of Mathematics

Lester Oatway Wilder, A.M. (Harvard)
Professor Emeritus of English and Dean Emeritus of the College for Men

Walter Campbell, M.ED. (Springfield)
Associate Professor Emeritus of Physical Education
<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Institution</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>Louis Albion Alexander, Sr., A.M. (Columbia)</td>
<td>Professor of Physical Education</td>
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<tr>
<td>Sidney Willson Barnes, Ph.D. (Cornell)</td>
<td>Professor of Physics, Administrator of the 130° Cyclotron</td>
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<tr>
<td>Lewis White Beck, Ph.D. (Duke)</td>
<td>Professor of Philosophy</td>
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<td>Virgil Carl Boekelheide, Ph.D. (Minnesota)</td>
<td>Professor of Chemistry</td>
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<tr>
<td>Elmer H. Burnham, B.S.F.E. (Notre Dame)</td>
<td>Professor of Physical Education</td>
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<tr>
<td>Cornelius P. Callahan, Jr., Capt., USN</td>
<td>Professor of Naval Science</td>
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<td>D(e los) Lincoln Canfield, Ph.D. (Columbia)</td>
<td>Professor of Spanish</td>
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<td>Willson Havelock Coates, Ph.D. (Cornell)</td>
<td>Professor of History</td>
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<tr>
<td>James E. Cross, M.A. (Bristol, England)</td>
<td>Visiting Professor of English</td>
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<tr>
<td>Vera Michele Dean, Ph.D. (Radcliffe)</td>
<td>Visiting Professor of Government</td>
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<td>William Edwin Dietz, Ph.D. (Chicago)</td>
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<td>Albert Benjamin Ford Duncan, Ph.D. (Johns Hopkins)</td>
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<td>Wilbur Dwight Dunkel, Ph.D. (Chicago)</td>
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<td>William Edward Dunkman, Ph.D. (Columbia)</td>
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<tr>
<td>Alexander Eckstein, Ph.D. (California)</td>
<td>Haloid Xerox Professor of International Economics</td>
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<td>William Frederick Eberlein, Ph.D. (Harvard)</td>
<td>Professor of Mathematics</td>
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<td>George Ford, Ph.D. (Yale)</td>
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<td>Harry Wilks Fulbright, Ph.D. (Washington)</td>
<td>Professor of Physics</td>
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<td>William Henry Gilman, Ph.D. (Yale)</td>
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<td>Joseph Bertram Gittler, Ph.D. (Chicago)</td>
<td>Professor of Sociology</td>
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<td>Arthur Monroe Hanhardt, Ph.D. (Cornell)</td>
<td>Professor of German</td>
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<td>Howard Graham Harvey, Ph.D. (Harvard)</td>
<td>Professor of French</td>
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<td>Carl Kenneth Hersey, Ph.D. (Harvard)</td>
<td>Professor of Fine Arts</td>
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<tr>
<td>Louise Alfreda Hill, Ph.D. (Johns Hopkins)</td>
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<tr>
<td>John Edward Hoffmeister, Ph.D. (Johns Hopkins)</td>
<td>Professor of Geology</td>
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<tr>
<td>Johannes Friedrich Karl Holtfreter, Ph.D. (Frieburg, Germany)</td>
<td>Professor of Zoology</td>
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<tr>
<td>Kathrine Koller, Ph.D. (Johns Hopkins)</td>
<td>Joseph H. Gilmore Professor of English</td>
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<tr>
<td>Richard Wood Maffry, Lt. Col., USAF, B.S. (U. S. Military Academy)</td>
<td>Professor of Air Science</td>
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<tr>
<td>Robert Eugene Marshak, Ph.D. (Cornell)</td>
<td>Harris Professor of Physics</td>
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<td>Arthur James May, Ph.D. (Pennsylvania)</td>
<td>Professor of History</td>
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<tr>
<td>Lionel Wilfred McKenzie, Ph.D. (Princeton)</td>
<td>Professor of Economics</td>
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<tr>
<td>Vincent Nowlis, Ph.D. (Yale)</td>
<td>Professor of Psychology</td>
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<tr>
<td>W. Albert Noyes, Jr., D-ES-SC (D'ETAT), S.C.D. (Paris)</td>
<td>Charles Frederick Houghton Professor of Chemistry</td>
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<tr>
<td>John Adam Fitz Randolph, Ph.D. (Cornell)</td>
<td>Fayerweather Professor of Mathematics</td>
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<tr>
<td>Arthur Roberts, Ph.D. (New York)</td>
<td>Professor of Physics</td>
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<tr>
<td>John Richmond Russell, Ph.B., A.B. in L.S. (Michigan)</td>
<td>Librarian</td>
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<tr>
<td>Bernard Nicholas Schilling, Ph.D. (Yale)</td>
<td>Professor of English</td>
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<tr>
<td>Sidney Durward Shirley Spragg, Ph.D. (Yale)</td>
<td>Professor of Psychology</td>
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<tr>
<td>Merle Spurrier, B.A. (Ohio Wesleyan)</td>
<td>Professor of Physical Education</td>
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<tr>
<td>Elmer Suhr, Ph.D. (Johns Hopkins)</td>
<td>Professor of Classical Art and Archeology</td>
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<tr>
<td>Dov Tamari, M.Sc. (Hebrew University)</td>
<td>Visiting Professor of Mathematics</td>
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<tr>
<td>Dean Stanley Tarbell, Ph.D. (Harvard)</td>
<td>Professor of Chemistry</td>
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<td>Glyndon Garlock Van Deusen, Ph.D. (Columbia)</td>
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<td>Winston Danae Walters, Ph.D. (Johns Hopkins)</td>
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<td>G. Richard Wendt, Ph.D. (Columbia)</td>
<td>Professor of Psychology</td>
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<tr>
<td>Edwin Odde Weg, Ph.D. (Wisconsin)</td>
<td>Professor of Chemistry</td>
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</tbody>
</table>

1 On leave Term I.  
2 On leave 1959-60.
Glenn Gordon Wiltsey, Ph.D. (Chicago)
Professor of Government

†Vinjamuri Everett Devadutt, Th.D. (Toronto)
Visiting Professor of Religion

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Charles Goebel, Ph.D. (Chicago)
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Russell Frank Green, Ph.D. (Southern California)
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Norman Gustav Gunderson, Ph.D. (Cornell)
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Everett Mark Hafner, Ph.D. (Rochester)
Associate Professor of Physics

Robert Burnett Hall, Jr., Ph.D. (Michigan)
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William Alexander Jamison, Jr., Ph.D. (Princeton)
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Associate Professor of English

Erwin Roy John, Ph.D. (Chicago)
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Morton Fischel Kaplan, Ph.D. (Rochester)
Associate Professor of Physics

Howard Sutermeister Merritt, Ph.D. (Princeton)
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Virginia Moscrip, Ph.D. (Chicago)
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William Breuleux Muchmore, Ph.D. (Washington)
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Malcolm Paul Svedoff, Ph.D. (Princeton)
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Murray Jerome Stolnitz, Ph.D. (Harvard)
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Virgil William Topazio, Ph.D. (Columbia)
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Colin Murray Turbayne, Ph.D. (Pennsylvania)
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H. Mason Wade, M.A. (McGill)
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Associate Professor of History

†David L. Dexter, Ph.D. (Wisconsin)
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†William Hughes Hamilton, Ph.D. (St. Andrews)
Associate Professor of Religion

†Term II.
†On leave 1959–60.
‡Term I.
†Part-time.
James Charles Peskin, PH.D. (Columbia)  
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R. W. Abraham, Capt., USAF  
Assistant Professor of Air Science

W. Parker Alford, PH.D. (Princeton)  
Assistant Professor of Physics

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Assistant Professor of Mathematics

Eduardo Betoret-Paris, PH.D. (Kansas)  
Assistant Professor of Spanish

Olexa-Ymron Bilaniuk, PH.D. (Michigan)  
Assistant Professor of Physics

William Theodore Bluhm, PH.D. (Chicago)  
Assistant Professor of Government

Wilhelm Braun, PH.D. (Toronto)  
Assistant Professor of German

Lyle Duane Brown, M.S. (Ithaca)  
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Allan McCulloch Campbell, PH.D. (Illinois)  
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A. F. Creighton, Jr.  
Assistant Professor of Air Science

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H. Lawrence Helfer, PH.D. (Chicago)  
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Robert Benedict Hinman, PH.D. (Johns Hopkins)  
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James William Johnson, PH.D. (Vanderbilt)  
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Jerome Sidney Kaye, PH.D. (Columbia)  
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Hewitt Kenyon, PH.D. (California)  
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Antanas Klimas, PH.D. (Pennsylvania)  
Assistant Professor of German

Saul Kravetz, PH.D. (Harvard)  
Assistant Professor of Mathematics

Lawrence William Lundgren, Jr., PH.D. (Yale)  
Assistant Professor of Geology

Thomas R. Punnett, Jr. PH.D. (Illinois)  
Assistant Professor of Biology

Lisa Rauschenbusch, A.M. (Cornell)  
Assistant Professor of English

Philip J. Reilly, USN  
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Richard N. Rosett, PH.D. (Yale)  
Assistant Professor of Economics

Neal J. Rothman, PH.D. (Louisiana)  
Assistant Professor of Mathematics

Walter Hinchman Sangree, M.A. (Wesleyan)  
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William Hundley Saunders, Jr., PH.D. (Northwestern)  
Assistant Professor of Chemistry

Seymour Scher, PH.D. (Chicago)  
Assistant Professor of Government

Louis Sucheston, PH.D. (Wayne)  
Assistant Professor of Mathematics

E. C. G. Sudarshan, PH.D. (Rochester)  
Assistant Professor of Physics

R. W. Trebolet, Capt. USAF  
Assistant Professor of Air Science

William Wasserstrom, PH.D. (Columbia)  
Assistant Professor of English

Hayden V. White, PH.D. (Michigan)  
Assistant Professor of History

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Assistant Professor of Economics

†On leave 1959-60.

2On leave Term I.

†Part-time.
Melvin Zax, Ph.D. (Tennessee)
Assistant Professor of Psychology

Robert Haddow Beaven, Ph.D. (Chicago)
Assistant Professor of Religion

Babette Brown Coleman, Ph.D. (Cornell)
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David B. Dutton, Ph.D. (Illinois)
Assistant Professor of Physics

William Ernest Ehrich
Assistant Professor of Sculpture

Robert Haddow Beaven
Assistant Professor of Religion

Babette Brown Coleman
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Robert Haddow Beaven
Assistant Professor of Religion

Babette Brown Coleman
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David B. Dutton
Assistant Professor of Physics

William Ernest Ehrich
Assistant Professor of Sculpture

Ernst Heer, Dr. sc. nat. (Swiss Federal Institute of Technology)
Senior Research Associate in Physics

Robert Ader, Ph.D. (Cornell)
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Iwo Bialynicki-Birula, Ph.D. (Warsaw)
Research Associate in Physics

Donald W. DeMott, Ph.D. (Rochester)
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Johan Jacob de Swart, Ingenieur (Delft)
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Kazuo Gotow, Ph.D. (Rochester)
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Howard P. Iker, Ph.D. (Rochester)
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Jakov Krivshenko, B.S.C. (Ukraine)
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Dean W. Maurer, B.S. (Carnegie Institute of Technology)
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Bishan Perkas Nigam, Ph.D.
Research Associate in Physics

Judith Onley, Ph.D. (Rochester)
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Alvin L. Ureles, M.D. (Rochester)
Research Associate in Psychology

Stephen Herbert Davol, Ph.D. (Rochester)
Research Associate in Psychology

Karl Lowy, M.D. (Vienna)
Senior Research Associate in Psychology (Otology)

Sidney Merritt Newhall, Ph.D. (Columbia)
Research Associate in Psychology

Leonard Ashley, Ph.D. (Princeton)
Instructor in English

Robert Luis Autrey, Ph.D. (Harvard)
Instructor in Chemistry

Thomas T. Bannister, Ph.D. (Illinois)
Instructor in Biology

Marvin Charles Bergan, T/Sgt., USAF
Instructor in Air Science

Harry L. Brooks, USMC
Instructor in Naval Science

David H. Cooper, USN
Instructor in Naval Science

H. A. Chase, M/Sgt., USAF
Instructor in Air Science

†Part-time.
Giovanni G. Fazio, Ph.D. (Massachusetts Institute of Technology) 
Instructor in Physics

David Floyd, GMI, USN 
Instructor in Naval Science

Robert T. Giuffrida, Ph.D. (Rochester) 
Instructor in German

Richard M. Gollin, M.A. (Minnesota) 
Instructor in English

David Hadas, A.M. (Columbia) 
Instructor in English

Eugene R. Heffron, M/Sgt., USAF 
Instructor in Air Science

Carol Hughes, B.S. (Tufts) 
Instructor in Physical Education in Women

Saroop Krishan Kaul, Ph.D. (Delhi) 
Instructor in Mathematics

Lorraine Khouri, B.S. (Tufts) 
Instructor in Physical Education

Joseph Klarmann, Ph.D. (Rochester) 
Instructor in Physics

William L. Lauenberg, Chief Storekeeper, USN 
Instructor in Naval Science

Bruce Lercher, M.S. (Wisconsin) 
Instructor in Mathematics

John W. Lukich, Chief Yoeman, USN 
Instructor in Naval Science

Ruth Marsey, M.A. (Rochester) 
Instructor in Sociology

Robert C. McLean, M.A. (Indiana) 
Instructor in English

Adrian C. Melissinos, Ph.D. (M.I.T.) 
Instructor in Physics

*Jerrold Moore, M.A. (Yale) 
Instructor in English

Dean Hubert Obrecht, M.A. (Florida State) 
Instructor in Spanish

J. Ownby, USN 
Instructor in Naval Science

Everett J. Phillips, B.S. (Springfield) 
Instructor in Physical Education for Men

Franklin Puff, M.E.D. (Rochester) 
Instructor in Mathematics

David Edward Schroer, B.A. (Cornell) 
Instructor in Mathematics

Donald C. Smith, M.Ed. (Springfield) 
Instructor in Physical Education

John Powers Stewart, M.S. (Pennsylvania) 
Instructor in Philosophy

Conrad Noble Trumbore, Ph.D. (Pennsylvania State) 
Instructor in Chemistry

Susan Van Arsdale, B.S. (Rochester) 
Instructor in Physical Education for Women

Robert Edson Warner, Ph.D. (Rochester) 
Instructor in Physics

David Wilson, Ph.D. (California Institute of Technology) 
Instructor in Chemistry

†Jessie Disston Mason, (Bouvé-Boston School) 
Instructor in Physical Education for Women

†Dora Sanders, B.S. (New Jersey) 
Instructor in Physical Education for Women

†Rita Gollin, M.A. (Minnesota) 
Instructor in English

Lawrence E. Benjamin, Ph.D. (Rochester) 
Post-Doctoral Fellow in Chemistry

T. A. Crabb, B.Sc. (Exeter) 
Post-Doctoral Fellow in Chemistry

Marcel Grdinic, Dr.Sci. (Zagreb) 
Post-Doctoral Fellow in Chemistry

Dusanka Pavlovic, B.Sc. (Zagreb) 
Post-Doctoral Fellow in Chemistry

Paula E. Pimlott 
Post-Doctoral Fellow in Chemistry

Rangaswamy Srinivasan, Ph.D. (California) 
Post-Doctoral Fellow in Chemistry

J. R. Turner 
Post-Doctoral Fellow in Chemistry

David Stewart Weir, B.Sc. (Glasgow) 
Post-Doctoral Fellow in Chemistry

Graham Solomons, Ph.D. (Duke) 
Postdoctoral Fellow in Chemistry

Yutaka Kawazoe, M.Pharm.Sc.O (Tokyo) 
Senior Research Assistant in Chemistry

William F. Coombs, M.S. (Massachusetts Institute of Technology) 
Technical Associate in Physics

James Oliver Dungan, M.S. (Rochester) 
Technical Associate in Physics

Arthur K. Hamann, E.E. (Munich) 
Technical Associate in Physics

Roman A. Hawrylak, Diplom-Ingenieur (Munich) 
Technical Associate in Physics

*Also on 1958-59 faculty.
†Part-time.
Richard Walter Mortenson, B. of M.E. 
(Clarkson) 
Technical Associate in Physics and Director of Research Budgets and Services

THE INSTITUTE OF OPTICS

Miles Parker Givens, Ph.D. (Cornell) 
Professor of Optics

Robert Earl Hopkins, Ph.D. (Rochester) 
Professor of Optics

†Rudolph Kingslake, D.Sc. (London) 
Professor of Geometrical Optics

David Dexter, Ph.D. (Wisconsin) 
Associate Professor of Optics

John Cushing Evans, M.S. (Rochester) 
Associate Professor of Optics

Harold S. Stewart, Ph.D. (Johns Hopkins) 
Associate Professor of Optics

Emil Wolf, D.Sc. (Edinburgh) 
Associate Professor of Optics

†Robert Merrill Boynton, Ph.D. (Brown) 
Associate Professor of Optics

Kenneth James Teegarden, Ph.D. (Illinois) 
Assistant Professor of Optics

David Bellamy Dutton, Ph.D. (Illinois) 
Senior Research Associate in Optics

James C. Peskin, Ph.D. (Columbia) 
Senior Research Associate in Optics

Robert Blakney 
Senior Research Associate and †Assistant Professor of Optics

Gordon Gladstone Milne, Ph.D. (Rochester) 
Senior Research Associate and †Assistant Professor of Optics

Philip W. Baumeister, Ph.D. (California) 
Research Associate and †Assistant Professor

James Eyer, Ph.D. (Rochester) 
Research Associate and †Assistant Professor

M.V.R.K. Murty, Ph.D. (Rochester) 
Research Associate in Optics

Yoshio Nakai, Ph.D. (Kyoto) 
Research Associate in Optics

†Vance J. Carpenter, M.S. 
Lecturer in Optics

†William P. Ewald, B.S. 
Lecturer in Optics

†Fred Perrin, Ph.D. (Rochester) 
Lecturer in Optics

†Fordyce Tuttle, M.A. (Wisconsin) 
Lecturer in Optics

† Part-time.
EXPLANATION OF COURSE NUMBERING SYSTEM

<table>
<thead>
<tr>
<th>Course Range</th>
<th>Description</th>
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<tbody>
<tr>
<td>1-99</td>
<td>Non-credit courses.</td>
</tr>
<tr>
<td>100-199</td>
<td>Introductory courses—usually at the freshman and sophomore level—no graduate credit.</td>
</tr>
<tr>
<td>200-289</td>
<td>Courses at the junior and senior level carrying graduate credit unless otherwise specified.</td>
</tr>
<tr>
<td>290-299</td>
<td>Undergraduate reading or research courses.</td>
</tr>
<tr>
<td>300-399</td>
<td>Courses in the Honors Division.</td>
</tr>
<tr>
<td>400-489</td>
<td>Graduate courses at the master's level or the first-year of graduate study. Open to undergraduates only by special arrangement.</td>
</tr>
<tr>
<td>490-499</td>
<td>Master's level, reading or research courses.</td>
</tr>
<tr>
<td>500-589</td>
<td>Advanced or specialized graduate courses.</td>
</tr>
<tr>
<td>590-599</td>
<td>Ph.D. reading or research courses.</td>
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INDEX

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Science</td>
<td>132</td>
</tr>
<tr>
<td>American Studies</td>
<td>133</td>
</tr>
<tr>
<td>Biology</td>
<td>133</td>
</tr>
<tr>
<td>Chemistry</td>
<td>139</td>
</tr>
<tr>
<td>Economics</td>
<td>145</td>
</tr>
<tr>
<td>English</td>
<td>149</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>154</td>
</tr>
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<td>Foreign Languages</td>
<td>159</td>
</tr>
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<td>Classics</td>
<td>161</td>
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<td>French</td>
<td>163</td>
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<td>168</td>
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<td>170</td>
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<td>History</td>
<td>175</td>
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<td>Honors Seminars</td>
<td>126</td>
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<td>Mathematics</td>
<td>180</td>
</tr>
<tr>
<td>Music</td>
<td>185</td>
</tr>
<tr>
<td>Naval Science</td>
<td>188</td>
</tr>
<tr>
<td>Non-Western Civilizations</td>
<td>190</td>
</tr>
<tr>
<td>Nursing</td>
<td>191</td>
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<td>206</td>
</tr>
<tr>
<td>Physics &amp; Astronomy</td>
<td>208</td>
</tr>
<tr>
<td>Political Science</td>
<td>215</td>
</tr>
<tr>
<td>Psychology</td>
<td>218</td>
</tr>
<tr>
<td>Religion</td>
<td>222</td>
</tr>
<tr>
<td>Sociology &amp; Anthropology</td>
<td>223</td>
</tr>
</tbody>
</table>
HONORS SEMINARS
(All Honors courses have eight hours credit.)

COMPARATIVE LITERATURE

301. Contemporary Literature. A study of some of the more important European novelists of the twentieth century: Kafka, Gide, Proust, D. H. Lawrence, Thomas Mann, Koestler, Sartre, Malraux, Camus, Joyce.
Offered 1959–60.
Spring term.
Mr. Wasserstrom


ECONOMICS

Prerequisite: Economics 101–102.

307. Economic Theory. A study of the theories of value, production and distribution, with emphasis on modern work in these areas. An analysis of market structures. An introduction to general equilibrium theory and Keynesian modern income analysis. Economics majors should include this course in their Junior year program.
Fall term.
Mr. Jones

323. Labor Economics. A study of labor in a modern, industrial economy. Emphasis is placed on economic analysis of such problems as wages, labor productivity, employment and unemployment. Attention is also given to the history and growth of trade unions and to their relations with the government.
Spring term.
Mr. France

325. Economic Development. Selected problems in the theory and strategy of economic development will be intensively explored with particular emphasis upon criteria for investment allocation, the concept of balanced growth, the theoretical and empirical aspects of underemployment, and agrarian reform and its economic effects. The seminar will be oriented towards discussion based on assigned readings, papers by each member and by visiting lecturers.
Fall term.
Mr. Eckstein

363. Public Finance and Fiscal Policy. The subject matter in this seminar will include governmental expenditures, taxation and debt at the federal, state and local levels. Administrative, historical and theoretical aspects will be investigated. A major emphasis will be the economic effects of fiscal policies. American institutions will provide the main illustrative examples, but student papers may be based on experience in other countries.
Omitted 1959–60.
Professor Jones

367. Economic Fluctuations. Economic instability will be studied in its long- and short-run manifestations. The role of business, government and the banking system as causes will be investigated as well as the stabilization policies which each of these sectors of the economy might follow. Theory and history will be emphasized.
Spring term.
Mr. Dunkman

369. International Economics. The theory of international trade and balance of payments problems. Commercial policy is examined 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.
Omitted 1959–60.
Mr. Jones
ENGLISH

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

Omitted 1959–60.
Mr. Hinman

304. Shakespeare. A study of the complete works of Shakespeare.

Each term.
Mr. Dunkel, Mr. Hazlett

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

Omitted 1959–60.


Fall term.
Mr. Frank

313. Eighteenth Century Literature. A study of the 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.

Spring term.
Mr. Schilling

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

Spring term.
Mr. Jamison


Omitted 1959–60.
Mr. Jamison

322. Modern Poetry. The theories and techniques of modern British and American poets.

Fall term.
Mr. Plutzik

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.

Spring term.
Mr. Gilman


Omitted 1959–60.
Miss Denny

331. The English Drama. A study of the drama both as a social force and as an artistic form, using representative plays from classical, Renaissance and modern literatures.

Spring term.
Mr. Kaufmann

336. The English Novel. The development of English prose fiction from Defoe to the present.

Fall term.
Miss Adams
FOREIGN LANGUAGES


Fall term.
Mr. Harvey

311. The Age of Goethe. A study of the work of Goethe and important contemporaries traditionally associated with him under the designation of German classicism. Knowledge of German not required.

Omitted 1959-60.
Mr. Clark


Omitted 1959-60.


Spring term.
Miss Hill


Omitted 1959-60.

331. Modern French Thought and Literature. An examination of the contributions of representative authors from 1880 to the present. No German required.

Spring term.
Mr. Braun

HISTORY

322. The British Empire and Commonwealth. A historical study of the British Empire and Commonwealth with attention given to both Western and non-Western peoples and with particular emphasis on the incentives, problems, expedients, political forms, and ideals within the Empire-Commonwealth since the British Revolution. Some previous knowledge of the political and social history of Britain since the Revolution of 1688 will be expected.

Fall term.
Mr. Coates

327. Seventeenth Century. A study of seventeenth century history, primarily in England, dealing with the political, economic, social, intellectual, and religious aspects of the period.

Omitted 1959-60.
Mr. Coates

328. Canada-United States Relations. This seminar will deal with problems in the relations of Canada and the United States from 1763 to the present and will afford students an opportunity to study the analogies and differences in developments in Canada and the United States or Canada and other members of the British Commonwealth. The approach will be largely in terms of history and literature. Previous knowledge of British Commonwealth or American History will be expected.

Omitted 1959-60.
Mr. Mason Wade

333. American Economic History. This seminar will discuss the economic evolution of the United States from the simple agrarian nation of 1789 to the complex industrial society of today. Topical questions to be treated are: the development of American agriculture; the growth of business organization; and the role of government in economic change.

Omitted 1959-60.
Mr. VanDeusen

335. American Diplomatic History. This seminar will deal with the problems of American foreign policy from the American Revolution to the present day. Special attention will be paid to the Monroe Doctrine, American imperialism, and American policy in the World Wars.

Fall term.
Mr. Vevier
340. The Social History of American Thought. This seminar will deal with the development of American thought from 1865 to the present day. Special attention will be given to the social background of intellectual currents.

Fall term.
Mr. Richard Wade

345. The Renaissance. A study of Western Europe from about 1300 to 1527, with equal emphasis upon Italy and the North.

Omitted 1959–60.

351. Eighteenth and Early Nineteenth Centuries. A comprehensive study of European history, 1715–1815. Particular stress is placed on the shifting balance of power, the evolution of arts and letters, the Enlightenment, and the era of the French Revolution and Napoleon.

Spring term.
Mr. Christopher

356. European Diplomacy since 1919. A study of the diplomatic history of Europe and the wider world from the Paris Peace Conference to the present.

Spring term.
Mr. May

361. The Modern History of China and Japan. Comparative studies in the social, political and ideological development of China and Japan, with especial emphasis on the last one hundred years.

Omitted 1959–60.

362. The Modern History of Southeast Asia. Comparative studies in the evolution of Southeast Asian social, political and ideological developments beginning with the era of modern Western colonialism in the area.

Spring term.
Mr. Harootunian

366. Russia since Waterloo. This seminar will emphasize diplomatic history, with some attention paid to domestic policy.

Fall term.
Mr. May

367. The Modern Middle East. After a rapid survey of the historical background, this seminar will stress the period since 1800. Particular attention will be given to the genesis of Turkish and Arab nationalism, to problems of economic development, and to the changing relations between the Middle Eastern states and the Western powers.

Fall term.
Mr. Christopher

See also Philosophy 340.
PHILOSOPHY

306. Recent Philosophy. Studies of some of the chief philosophical movements and their leading representatives.
   Fall term.
   Mr. Stewart

310. The Structure and Scope of Knowledge. An introduction to theories of knowledge, with special emphasis upon the various views of the origin, conditions of growth, criteria, and limits of knowledge.
   Spring term.
   Mr. Beck

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.
   Omitted 1959-60.
   Mr. Stolnitz

340. Philosophy of History. A study of 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.
   Spring term.
   Mr. Coates

350. Concepts of Mind. A study of the metaphysical and psychological problem of the relation of mind and consciousness to bodily conditions, the foundations of psychological theory, the concept of human freedom, and philosophical disputes about immortality. The study will be based on important works in philosophy and psychology from Aristotle to Gilbert Ryle.
   Omitted 1959-60.
   Mr. Stolnitz

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 1959-60.
   Mr. Stewart

380. 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 1959-60.

   Fall term.
   Mr. Turbayne
POLITICAL SCIENCE

300. *The Role of War in International Politics.* An examination of war as an institution and its relation to the policy making process.
   - Fall term.
   - Mr. Diez

310. *Problems of Democratic Policy Formulation.* A study of the legislative and administrative processes as instruments of policy formulation in a democratic state. Attention will be given to the strengths and weaknesses of each and the relationships between the two. British and American experience will be used as the basis of the study.
   - Omitted 1959-60.
   - Mr. Fenno

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.
   - Omitted 1959-60.
   - Mr. Wiltsey

330. *The Theory of Revolution.* A study of the causes, agents, and typical forms of political revolution. Critical examination of some important theories of revolutionary change through their application to the data of selected recent revolutions.
   - Spring term.
   - Mr. Bluhm

340. *Political Leadership.* A consideration of leadership as it affects the political process. Personal characteristics and the functions of political leaders will be examined in the context of various political institutions.
   - Spring term.
   - Mr. Scher

350. *Contemporary India and Its Role in World Affairs.* This seminar will discuss the emergence of independent India from centuries of historical struggle to achieve a united country, beginning with the earliest times. It will also analyze political, economic, social and cultural developments in contemporary India, and the effect of these developments on India's foreign policy.
   - Spring term.
   - Mrs. Dean
Air Science


101. Foundations of Air Power I. A general survey of air power designed to provide the student with an understanding of the elements and potentials of air power. It includes fundamentals of air power; military air powers of the world; military research and development; the aircraft industry; airlines and airways; general aviation; elements of an aircraft; and aerodynamics.

Credit—two hours.
Two lecture-recitations.
One one-hour Leadership Lab a week.
Fall term.

102. Foundations of Air Power II. A general survey of airpower to include guidance, control, and navigation; propulsion systems; space flights; military instruments of national security; and professional opportunities in the United States Air Force.

Credit—two hours.
Two lecture-recitations.
One one-hour Leadership Lab a week.
Spring term.

201. Air Force Officer Development I. Knowledge and skills required of a junior officer in the Air Force. This includes staff organization and functions, communicating, instructing, and techniques of problem solving.

Credit—three hours.
Four lecture-recitations.
One one-hour Leadership Lab a week.
Fall term.

202. Air Force Officer Development II. Principles and practices of leadership. This includes basic psychology of leadership, the military justice system, and application of problem-solving techniques and leadership theory to simulated and real Air Force problems.

Credit—three hours.
Four lecture-recitations.
One one-hour Leadership Lab a week.
Spring term.

211. Global Relations I. A study of global relations of special concern to the Air Force officer with attention to such aspects as weather, navigation, geography, and international relations.

Credit—three hours.
Four lecture-recitations.
One one-hour Leadership Lab a week.
Fall term.

212. Global Relations II. Treatment of global relations is continued with attention to the concepts of the military aspects of political geography; maps and charts; factors of power; and the geographic influences upon political problems with a geopolitical analysis of the strategic areas.

Credit—three hours.
Four lecture-recitations.
One one-hour Leadership Lab a week.
Spring term.
American Studies

The requirements for the concentration in American Studies include the two seminars described below and other courses to be chosen from the list on page 110. Each concentrating student takes one American Studies seminar in the junior year and one in the senior year.

101–102. The Influence of the Frontier in American Life. Reading, lectures, reports, and discussions. Credit—three hours. One hour and a half meeting each week. Omitted 1959-60. Assistant Professor Denny and other members of the committee.

103–104. The Influence of Europe in American Life. Reading, lectures, reports, and discussions. Credit—three hours. One hour and a half meeting each week. Omitted 1959-60. Assistant Professor Denny and other members of the committee.

Biology

Professor HOLTRETER; Associate Professors LEWONTIN, MUCHMORE, RAVIN (Chairman); Assistant Professors CAMPBELL, *COLEMAN, KAYE, PUNNETT; Instructor BANNISTER; Senior Research Associate KRYSHENK; Graduate Assistants.

Students who wish to prepare for an academic or research career in biology may consider the program leading to the degree of Bachelor of Science (described on p. 111), or else plan to concentrate in biology under the regular course leading to the Bachelor of Arts degree. In the latter case students should consult the departmental adviser as early as possible, preferably at the start of the freshman year, to ensure arrangement of a suitable program.

Concentration Program. Students proposing to concentrate in the biological sciences under the Bachelor of Arts program should obtain a broad foundation in chemistry, physics, and mathematics, and—if feasible—acquire a reading knowledge of German or French. It is recommended that such students take Biology 101–102 and Chemistry 121 and 122 (or 123 and 124) in the freshman year. Ordinarily the schedule for the sophomore year would then include Chemistry 142 (or 213), Physics 101–102, and two or more of the following: Biology 122, 125, 131, 132, 221. The program for the junior and senior years is arranged, with the aid of the departmental adviser, to include advanced courses in biology as well as related courses from the departments of chemistry, geology, mathematics, physics, and psychology.

Senior concentrators take Biology 295–296 as a substitute form of comprehensive examination.

Education Program. Requirements for secondary school teaching are given on page 232. The courses beyond Biology 101–102 which are particularly recommended as preparation for secondary school teaching are: Biology US115, 117, 122, 125, 131, 132, 220, and 221.

*Part-time.
# A.B. IN BIOLOGY

## Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Biol. 101-102</td>
<td>General Biology</td>
<td>4</td>
</tr>
<tr>
<td>Math. 100</td>
<td>Introductory College Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Math. 101 (or 105)</td>
<td>Elementary Calculus</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td>Group I*</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>Group II</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 101-102</td>
<td>English Composition</td>
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## Sophomore Year

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</tr>
</thead>
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<tr>
<td>Biol. 131</td>
<td>The Plant Kingdom</td>
<td>3</td>
</tr>
<tr>
<td>Biol. 122</td>
<td>Invertebrate Zoology</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 121, 122</td>
<td>General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Phys. 101-102</td>
<td>General Physics</td>
<td>4</td>
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<tr>
<td>Elective</td>
<td>Group I* or II</td>
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<tr>
<td>Phys. Ed.</td>
<td>Physical Education</td>
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<td><strong>Total</strong></td>
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## Junior Year

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<tr>
<td>Biol. 125</td>
<td>Comparative Anatomy</td>
<td>4</td>
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<tr>
<td>Biol. 221</td>
<td>Genetics</td>
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<tr>
<td>Chem. 142</td>
<td>Quantitative Analysis</td>
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<tr>
<td>Chem. 161-162</td>
<td>Organic Chemistry</td>
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<tr>
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## Senior Year

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<tbody>
<tr>
<td>Biol. 241</td>
<td>Embryology</td>
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</tr>
<tr>
<td>Biol. 265</td>
<td>Cellular Physiology and Metabolism</td>
<td>3</td>
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<tr>
<td>Biol. 220</td>
<td>Cellular Biology</td>
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<tr>
<td>Biol. 242</td>
<td>Experimental Embryology or Plant Physiology or</td>
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<tr>
<td>Biol. 270</td>
<td>Comparative Microbiology</td>
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<tr>
<td>Biol. 295-296</td>
<td>Senior Seminar</td>
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<td>Electives</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>15-16</td>
</tr>
</tbody>
</table>

*It is strongly recommended that a foreign language be one of the Group I courses taken, so that a student acquires a reading knowledge of at least French, German or Russian by the Senior Year.*
B.S. IN BIOLOGY

Enrollment is restricted to students of high standing or promise in mathematics and science, and is thereafter subject to approval by the Department of Biology.

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st Term</td>
</tr>
<tr>
<td>Biol. 101-102</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 123, 124</td>
<td>4</td>
</tr>
<tr>
<td>[Math. 100]</td>
<td>3</td>
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<tr>
<td>[Math. 101]</td>
<td>3</td>
</tr>
<tr>
<td>Math 110, 111</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 101-102</td>
<td>3</td>
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<tr>
<td>Ph. Ed.</td>
<td>1</td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1st Term</td>
</tr>
<tr>
<td>Biol. 131</td>
<td>3</td>
</tr>
<tr>
<td>Biol. 132</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 213</td>
<td>4</td>
</tr>
<tr>
<td>Physics 101-102</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 103-104</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 111-112</td>
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<tr>
<td>Elective</td>
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<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Ph. Ed. 11, 12</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Biol. 125</td>
<td>4</td>
</tr>
<tr>
<td>Biol. 132</td>
<td>3</td>
</tr>
<tr>
<td>Biol. 220</td>
<td>3</td>
</tr>
<tr>
<td>Biol. 221</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 161, 162</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

1Either Engl. 103–104 or Engl. 111–112 is required for the program, but it may be postponed until the third or fourth year if this seems desirable. In this event a Group II course will be taken during the second year in place of English.

2At least two full-year courses in a modern foreign language (usually French, German or Russian) must be taken. This will insure that the student acquires a reading knowledge of at least one language other than English. In the event a student enters college with advanced standing in a language, study of a second language can be begun in the second or third year.
101-102. General Biology. An examination of the principles unifying modern biological knowledge through study of a variety of plants, animals, and microorganisms. The ways in which observations and experiments have led to present-day concepts and interpretations are considered, with the aim of arriving at an appreciation of the problems facing the biologist at the frontiers of his science. The course is offered to serve the needs of all students wishing to acquire a biological base for their cultural and intellectual education, and is an essential foundation for those who wish to pursue careers in the biological sciences.

Credit—eight hours.
Three lectures, one three-hour lab a week that includes conferences and demonstrations.
Fall through Spring.
Mr. Ravin, Staff, and Assistants


Credit—three hours.
Three lectures or demonstrations, one three-hour lab a week.
Spring term.
Mr. Muchmore

125. Comparative Chordate Anatomy. A study of the structural changes in the line of descent leading from primitive jawless fish to modern mammals, principally as a background for the understanding of human anatomy. The structure of a series of fossil vertebrates and the development and structure of a number of modern chordates are dealt with by laboratory observation, dissection or lecture. Biology 101-102 is prerequisite.

Credit—four hours.
Two lectures or conferences, two three-hour labs a week.
Fall term.
Mr. Muchmore

131. The Plant Kingdom. A study of the general biology of plants, with a 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 101-102 is prerequisite.

Credit—three hours.
Three lectures or conferences, one three-hour lab or field trip a week.
Fall term.
*Mrs. Coleman

*Part-time.
132. Biology of Flowering Plants. An 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 101–102 is prerequisite, as is Biology 151, or permission of the instructor.

Credit—three hours.
Three lectures or conferences, one three-hour lab or field trip a week.
*Mrs. Coleman

213. Statistical Analysis in Biology. Elements of probability and combinatorial analysis. Principles of statistical inference and the testing of hypotheses as applied to biological problems. The design of experiments. Prerequisites: Mathematics 100, 101 (or equivalent).

Credit—three hours.
Fall term.
Mr. Lewontin

218. Microscopy. Principles and application of ordinary light, phase contrast, interference and polarization microscopy. Methods for quantitative measurement in physical, chemical and biological applications will be discussed. Laboratory exercises will include such practical aspects as photomicrography and photometry. Prerequisite: Mathematics 100, 101 and Physics 101–102 (or their equivalents).

Credit—three hours.
Two hours lecture, two hours lab.
Omitted 1959–60.

220. Cellular Biology. An introduction to the study of cells and tissues of plants and animals, with emphasis on the living cell. Subjects include: principles of light and electron microscopy, preparation of living material, fixation and staining, the generalized cell, mitosis and cell division, the cell and its environment, specialized cells and tissues. Prerequisite: Biology 101–102, Chemistry 121 and 122 (or 123 and 124) and Physics 101–102.

Credit—three hours.
Three lectures or demonstrations, one three-hour lab a week.
Spring term.
Mr. Kaye

221. Genetics. Genes as units of heredity; relation of genes to chromosomes; crossing-over and chromosome maps; mutation; current theories on gene structure and the roles of genes in development and evolution. Biology 101–102 is prerequisite.

Credit—three hours.
Three lectures, one lab a week.
Fall term.
Mr. Lewontin


Credit—four hours.
Two lectures or conferences, two three-hour labs a week.
Fall term.
Mr. Holtfreter

242. Experimental Embryology. A practical and theoretical introduction to the experimental analysis of embryogenesis. Open, on approval of the instructor, to students who have satisfactorily completed Biology 241.

Credit—four hours.
Two lectures or conferences, six hours lab a week.
Spring term.
Mr. Holtfreter

265. Cellular Physiology and Metabolism. A study of organisms from the point of view of cell function. Emphasis will be placed on properties of permeability, the chemical and physical properties of protoplasm, cellular metabolism, etc. Biology 101–102 is prerequisite; Organic Chemistry is prerequisite, or may be taken concurrently, unless instructor's permission is granted.

Credit—three hours.
Two lectures, one three-hour lab a week.
Fall term.
Mr. Bannister

270. Plant Physiology. A study of physiological phenomena peculiar to higher plants. Topics will include water relations, translocation, growth and differentiation, tissue culture, plant hormones, germination, flowering and fruit development. Students will be required either to write a term paper on a selected problem or to perform some selected experiments under supervision in laboratory. Prerequisite: Biology 265.

Credit—three hours.
Three lectures a week.
Spring term.
Mr. Bannister

*Part-time.
272. **Comparative Microbiology.** An analysis of the physiological patterns of certain algae, bacteria and protozoa, and the evolutionary trends in these patterns. Topics considered are growth curves and their interpretation, adaptation and mutation, the evolution of metabolic pathways, the limitation imposed by size, and the evolution of structure. Biology 221, Biology 265 and Chemistry 161–162 (which may be taken concurrently) are prerequisite. Biology 131 is strongly recommended.

*Credit—three hours.*
Three lectures, three hours lab a week.
Mr. Punnett, Mr. Ravin

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 101–102 prerequisite.

*Hours and credits to be arranged.*
Fall term.
Staff

292. **Readings in Biology.** (Same as preceding semester.)

*Credits to be arranged.*
*Hours to be arranged.*
Spring term.
Staff

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 101–102 prerequisite.

*Hours and credits to be arranged.*
Staff

294. **Problems in Biology.** (Same as preceding semester.)

*Credit to be arranged.*
*Hours to be arranged.*
Spring term.
Staff

295–296. **Senior Seminar.** A required course for all senior students concentrating in Biology, in which several questions related to important problems in modern biology will be considered. After a series of conferences and seminars with the staff, each senior is expected to write essays which will evaluate the significance of these problems and the methods by which the problems are being or may be explored.

*No credit.*
One hour per week.
Fall through Spring.
Staff

272. **Comparative Microbiology.** An analysis of the physiological patterns of certain algae, bacteria and protozoa, and the evolutionary trends in these patterns. Topics considered are growth curves and their interpretation, adaptation and mutation, the evolution of metabolic pathways, the limitation imposed by size, and the evolution of structure. Biology 221, Biology 265 and Chemistry 161–162 (which may be taken concurrently) are prerequisite. Biology 131 is strongly recommended.

*Credit—three hours.*
Three lectures, three hours lab a week.
Mr. Punnett, Mr. Ravin

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 101–102 prerequisite.

*Hours and credits to be arranged.*
Fall term.
Staff

292. **Readings in Biology.** (Same as preceding semester.)

*Credits to be arranged.*
*Hours to be arranged.*
Spring term.
Staff

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 101–102 prerequisite.

*Hours and credits to be arranged.*
Staff

294. **Problems in Biology.** (Same as preceding semester.)

*Credit to be arranged.*
*Hours to be arranged.*
Spring term.
Staff

295–296. **Senior Seminar.** A required course for all senior students concentrating in Biology, in which several questions related to important problems in modern biology will be considered. After a series of conferences and seminars with the staff, each senior is expected to write essays which will evaluate the significance of these problems and the methods by which the problems are being or may be explored.

*No credit.*
One hour per week.
Fall through Spring.
Staff

**COURSES OFFERED IN THE SCHOOL OF MEDICINE, with approval for college credit in certain cases.**

111. **Mammalian Physiology.** An introductory course with emphasis on human physiology. Human as well as other vertebrate subjects are used in the laboratory to demonstrate the principles involved. This course is open to students who have taken Biology 101–102 and Chemistry 121 and 122. A knowledge of elementary physics is desirable.

*Credit—three hours.*
Two lectures, two labs a week.
Medical School, G-405.
Fall term.
Dr. Heggeness

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 101–102 and Chemistry 121 and 122 or 123 and 124 prerequisite.

*Credit—three hours.*
Lectures, two three-hour labs a week.
Medical School.
Fall term.
Dr. Ritterson

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

US115. **Genetics and Human Heredity.** A study of the principles of inheritance with emphasis on genetically-determined human characteristics. Prerequisite: Biology 101–102 or the instructor's permission.

*Credit—two hours.*
Two lectures a week.
Mrs. Punnett

US116. **Survey of Mammalian Embryology.** A study of the normal embryonic development of mammals, including consideration of the mechanisms of development. Illustrations will be drawn largely from the normal and abnormal development of man, although other species will be used to illustrate the evolutionary and experimental aspects of embryology. Prerequisite: Biology 101–102 or the instructor's permission.

*Credit—two hours.*
Two lectures a week.
Mr. and Mrs. Berg
Chemistry

Professors Wiig, Boekelheide, Duncan, *Gates, Noyes, Tarbell, Walters; Associate Professors Buff (on leave), French; Assistant Professor Saunders; Instructors Autrey, Trumbore, Wilson.

Students planning to enter the Chemistry Course should present high school chemistry for admission in order to be prepared to take Chemistry 123 and 124 in the freshman year. If high school chemistry is not offered for admission, the student may find it necessary to take additional work in the subject in the Summer Session following the freshman year. A breakage deposit of $10.00 each semester is required for all laboratory courses in Chemistry except Chemistry 161-162 for which the breakage deposit is $12.00 per semester. Any surplus over the actual amount charged for breakage will be refunded.

**SAMPLE A.B. PROGRAM IN CHEMISTRY**

Note: Students concentrating in Chemistry for the A.B. degree will take, as a minimum requirement, courses 121 and 122 or 123 and 124, 141, 142 and 214 or 213 and 214, 161, 162, 251 and 252. The program of the junior and senior years should include approximately six year courses in the main field or fields of concentration and should meet all other general requirements for concentration stated on page 111. If a student wishes to meet the requirements for membership in the American Chemical Society upon graduation he should take, in addition to the minimum requirements, an advanced lecture course and an advanced laboratory course in chemistry.

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 123, 124¹</td>
<td>4</td>
</tr>
<tr>
<td>Math. 100, 101</td>
<td>4</td>
</tr>
<tr>
<td>Math. 110, 111</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 101-102</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>1</td>
</tr>
</tbody>
</table>

¹If Chemistry 121, 122 is taken, this is to be followed by Chemistry 141, 142; Chemistry 161-162; Chemistry 214; Chemistry 251, 252.

To satisfy the A.B. concentration requirement two year courses in Chemistry or related fields must be elected during the junior and senior years.
### Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 161-162</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Phys. 101-102</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Math. 150, 151</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or Math. 160, 161</td>
<td></td>
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</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
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</table>

### Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. 103-104</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chem. 213, 214</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chem. 251, 252</td>
<td>4 or 0</td>
<td>4 or 0</td>
<td></td>
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<tr>
<td>Elective</td>
<td>3</td>
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<tr>
<td>Electives</td>
<td>3 or 6</td>
<td>3 or 6</td>
<td></td>
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<td></td>
<td>17 or 16</td>
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### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
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<tbody>
<tr>
<td>Chem. 251, 252</td>
<td>0 or 4</td>
<td>0 or 4</td>
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</tr>
<tr>
<td>Chem. 295-296</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Electives</td>
<td>15 or 12</td>
<td>15 or 12</td>
<td></td>
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<tr>
<td></td>
<td>15 or 16</td>
<td>15 or 16</td>
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</tr>
</tbody>
</table>

### B.S. in Chemistry

The B.S. in Chemistry devotes about one-half the time to required work in chemistry and closely related subjects, one-fourth to general college subjects, and leaves about one-fourth to be elected by the student. It is distinctly a professional course in chemistry, but may be taken with advantage by those wishing a broad education with the emphasis laid on this science. The synopsis of the course follows:

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 123, 124</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Engl. 101-102</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Math. 100 and 101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>or Math. 110 and 111</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Physics 101-102</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or Physics 107-108</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Phys. Ed.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
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</table>
Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 161-162</td>
<td>Organic Chemistry</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>German 101-102</td>
<td>Elementary German</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or German 105, 106</td>
<td>Scholarly and Technical Prose, Special Technical Readings</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math. 150, 151</td>
<td>Intermediate Calculus</td>
<td>4</td>
<td>4</td>
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<tr>
<td>or Math. 160, 161</td>
<td>Analytic Geometry, Calculus and Differential Equations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics 111-112</td>
<td>General Physics B</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>or Physics 117-118</td>
<td>Physics II</td>
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</tr>
<tr>
<td>Elective</td>
<td>Group I (English 304)</td>
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<tr>
<td>Phys. Ed.</td>
<td>Physical Education</td>
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<td>1</td>
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<td></td>
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<td>19</td>
<td>19</td>
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</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 213, 214</td>
<td>Quantitative Analysis I and II</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 251, 252</td>
<td>Physical Chemistry</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>German 105, 106</td>
<td>Scholarly and Technical German Prose, Special Technical Readings</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>At least one Group II</td>
<td>6</td>
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<tr>
<td></td>
<td></td>
<td>17</td>
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Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 295, 296</td>
<td>Seminar</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chem. 291, 292</td>
<td>Thesis (research)</td>
<td>3</td>
<td>5</td>
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<tr>
<td>One of the following:</td>
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<td></td>
<td></td>
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<tr>
<td>Chem. 415</td>
<td>Advanced Analytical Lab.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Chem. 435</td>
<td>Advanced Organic Lab.</td>
<td>4</td>
<td></td>
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<tr>
<td>Two of the following:</td>
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<td></td>
<td></td>
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<tr>
<td>Chem. 412</td>
<td>Advanced Inorganic Chemistry</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Chem. 431</td>
<td>Advanced Organic Chemistry</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chem. 451</td>
<td>Advanced Physical Chemistry I</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Electives³</td>
<td>Complete Group II requirements</td>
<td>3-7</td>
<td>7-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15-16</td>
<td>15-16</td>
</tr>
</tbody>
</table>

¹In the second term of the junior year, each student should select a thesis advisor and possibly the general area in which he will plan to do his thesis research. His advisor should be consulted with regard to registration for the senior year.

²Courses in Biology, Mathematics or Physics approved by the Department of Chemistry may be substituted.

³Students who intend doing graduate work in Physical Chemistry should make every effort to include Mathematics 135 and Physics 131 (Senior Year). For students planning to do graduate work in Organic Chemistry, Biochemistry 101 is recommended.
101. Introductory General Chemistry I. A terminal course for students who do not intend to continue with the study of Chemistry. The fundamental principles of Chemistry are developed and illustrated by application to the more common elements and compounds. The relationship of Chemistry to the other sciences and to the arts, history, economics, etc. is shown. This course is not an acceptable prerequisite for advanced courses.

Credit—three hours.
Two lectures, one recitation, one two-hour lab a week.
Mr. Noyes and assistants

102. Introductory General Chemistry II. A continuation of Chemistry 101. That course or its equivalent prerequisite.

Credit—three hours.
Two lectures, one recitation, one two-hour lab a week.
Omitted 1959–60.

111. Elementary Chemistry. An introduction to basic chemical theories and the chemistry of the important common elements and their compounds. The course is designed specifically for students in the Course in Nursing.

Credit—four hours.
Three hours, one lab a week.
Fall term.
Miss French and assistants

112. Elementary Organic Chemistry. An introduction to the more important classes of organic compounds and reactions with special attention to those of biological interest. The course is designed specifically for students in the Course in Nursing but does meet the Organic Chemistry requirements of some dental schools. Prerequisite: Chemistry 101, or 111, or 121 or 123.

Credit—four hours.
Three hours, one lab a week.
Spring term.
Mr. Saunders and assistants

121. General Chemistry I. A careful study of the fundamental principles of chemical science and of 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, 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.

Credit—four hours.
Two lectures, two recitations, one lab a week.
Fall term.
Mr. Trumbore, Mr. Autrey and assistants

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.

Credit—four hours.
Two lectures, two recitations, one two-hour lab a week.
Spring term.
Mr. Trumbore, Mr. Autrey and assistants

123. General Inorganic Chemistry. A more advanced course than Chemistry 121 designed primarily for students majoring in Chemistry, Chemical Engineering and Physics. The general principles underlying chemistry and some of the important non-metals and their compounds are considered. Upon recommendation of the department, students may be transferred to Chemistry 121 during the semester. Entrance Chemistry prerequisite.

Credit—four hours.
Two lectures, two recitations and two labs a week.
Fall term.
Mr. Wiig, assistants

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 are studied. 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.

Credit—four hours.
Two lectures, two recitations and two lab periods a week.
Spring term.
Mr. Wiig, assistants

141. Qualitative Analysis. A study of the physio-chemical principles of aqueous solutions of electrolytes which are of importance in qualitative analysis. Semi-micro methods
are used in the laboratory. Chemistry 121 or 123 and Chemistry 122 prerequisite.

Credit—four hours.
Two hours, two labs a week.
Fall term.
Miss French and assistants

142. 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.

Credit—four hours.
Two hours, two labs a week.
Spring term.
Miss French and assistants

161-162. Organic Chemistry. 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.

Credit—four hours.
Three hours, two labs a week.
Fall through Spring.
Mr. Tarbell and assistants

213. Quantitative Analysis I. A course 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. The course is more rigorous and exacting than Chemistry 142. Chemistry 123 and 124 prerequisite.

Credit—four hours.
Two lectures and two labs a week.
Fall term.
Mr. Wilson, assistants

214. Quantitative Analysis II. This course is a continuation of Quantitative Analysis I. A more comprehensive study is made of the principles of the science. Some of the laboratory work will involve the quantitative separation and determination of constituents in materials of industrial importance. Electrochemical, colorimetric, and other photometric methods will be included.

Credit—four hours.
Two lectures and two labs a week.
Spring term.
Mr. Walters, assistants

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 (111-112 or 117-118); Mathematics (115-116 or 117-118). Students who do not meet these prerequisites must obtain the permission of the instructor.

Credit—four hours.
Three lectures, one lab a week.
Fall term.
Mr. Duncan, Mr. Noyes, assistants

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.

Credit—four hours.
Three lectures, one lab a week.
Spring term.
Mr. Duncan, Mr. Noyes, assistants

*261. Science in National and International Affairs. The way important scientific advances have affected national affairs and international relations will be illustrated by selected examples. The scientific activities of the United States government and their relation to the national economy and the national defense will be discussed. The relation of government agencies to industry and to education will be emphasized. The scientific activities of the United Nations and its spe-

*Taken with the consent of the instructor.
cialized agencies and their relation to the foreign policy of the United States will be considered. Without restriction for juniors and seniors; does not carry graduate credit.

**Credit—one hour.**
One hour a week.
Mr. Noyes

**291-292. Laboratory Problems in Chemistry.**
Each student is assigned a topic the investigation of which will teach him how to attack a problem involving laboratory and library work. Chemistry 415 or 435 prerequisite for Chemistry 292.

**Credit—six hours.**
One hour first semester,
five hours second semester.
For 1960-1961, three hours first semester,
five hours second semester.
Fall through Spring.
Staff

**293. Senior Reading Course in Chemistry.**
Students majoring in chemistry who are unable to register for other regularly scheduled, advanced courses may with special permission of the department register for this course.

**Credit—three hours.**
Three hours a week.
Fall term.
Staff

**294. Senior Reading Course in Chemistry.**
A continuation of 293.

**Credit—three hours.**
Three hours a week.
Spring term.
Staff

**295-296. Senior Seminar.** A seminar 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 in this seminar is the approved substitute for a comprehensive examination in chemistry.

No credit.
One hour a week.
Fall through Spring.
Mr. Noyes, Mr. Boekelheide

**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—three hours.**
Three hours a week.
Spring term.
Mr. Trumbore

**415. Advanced Analytical Laboratory.** The study of recently developed analytical procedures, colorimetry, spectrophotometry, spectroscopy, electrical methods, and other physico-chemical methods of analysis. The lectures, credit one hour, may be taken by graduate students who are not registered for the laboratory.

**Credit—four hours.**
Mr. Walters


**Credit—three hours.**
Three hours a week.
Fall term.
Mr. Tarbell

**435. 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 451.

**Credit—four hours.**
Mr. Saunders

**451. Advanced Physical Chemistry I.** Thermodynamics and its application to chemical systems.

**Credit—two hours.**
Two hours a week.
Fall term.
Mr. Duncan

**452. Advanced Physical Chemistry II.** Special topics in physical chemistry, such as atomic spectra, nuclear chemistry and reaction kinetics.

**Credit—two hours.**
Two hours a week.
Mr. Noyes

For Industrial Chemistry and other courses in Chemical Engineering see pages 257, 255-256.
Economics

Professors McKenzie, Dunkman, Eckstein; Associate Professor France; Assistant Professors Jones, Rosett, Zabel; Visiting Assistant Professor Choudhry.

The Department of Economics offers a program of study for Bachelor of Arts candidates. Students wishing to major in economics will normally be expected to have completed Economics 101–102 with a grade of C or better. This will not, however, assure admission to a concentration program unless the Department is confident that the student shows promise of successful academic work in this field of study.

Departmental requirements for concentration in economics include Economics 207, 209, 231, 291 and 293 which together with other courses in economics make a total of 27 semester hours. Economics 101–102 is prerequisite for all other courses in economics except with the special approval of the Department. In lieu of the comprehensive examination, all majors are required to submit essays in their junior and senior years.
# SAMPLE A.B. PROGRAM IN ECONOMICS

## Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
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<tbody>
<tr>
<td>*Engl. 101-102</td>
<td>English Composition</td>
<td>6</td>
</tr>
<tr>
<td>Math. 100, 101</td>
<td>Introduction to College Mathematics, Elementary Calculus</td>
<td>6</td>
</tr>
<tr>
<td>German 103-104</td>
<td>Introduction to German Civilization</td>
<td>6</td>
</tr>
<tr>
<td>Phil. 101, 102</td>
<td>Introduction to Philosophy, Ethics</td>
<td>6</td>
</tr>
<tr>
<td>Gov. 101, 102</td>
<td>European Political Systems</td>
<td>6</td>
</tr>
<tr>
<td>*Phys. Ed.</td>
<td>Physical Education</td>
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## Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>*Econ. 101-102</td>
<td>Principles of Economics</td>
<td>6</td>
</tr>
<tr>
<td>Germ. 269</td>
<td>Goethe I</td>
<td>6</td>
</tr>
<tr>
<td>Germ. 286</td>
<td>Modern German Prose Literature II</td>
<td>6</td>
</tr>
<tr>
<td>Physics 101-102</td>
<td>General Physics A</td>
<td>6</td>
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<tr>
<td>Hist. 101-102</td>
<td>Introduction to Contemporary Civilization</td>
<td>6</td>
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<tr>
<td>Math. 150, 151</td>
<td>Intermediate Calculus</td>
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## Junior Year

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<thead>
<tr>
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<th>Hours</th>
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<tbody>
<tr>
<td>*Econ. 207</td>
<td>Intermediate Economic Theory</td>
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<tr>
<td>*Econ. 209</td>
<td>National Income Analysis</td>
<td>6</td>
</tr>
<tr>
<td>*Econ. 231</td>
<td>Economic Statistics</td>
<td>6</td>
</tr>
<tr>
<td>*Econ. 291</td>
<td>Junior Reading Course</td>
<td>6</td>
</tr>
<tr>
<td>Econ. 213</td>
<td>Monetary and Central Banking Policy</td>
<td>6</td>
</tr>
<tr>
<td>Phil. 216</td>
<td>Formal Logic</td>
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<tr>
<td>Phil. 232</td>
<td>Philosophy of Science</td>
<td>6</td>
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<tr>
<td>Hist. 233, 234</td>
<td>American Economic History</td>
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<tr>
<td>Music 101, 102</td>
<td>Music Appreciation</td>
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## Senior Year

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<th>Course</th>
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<tr>
<td>*Econ. 293</td>
<td>Senior Reading Course</td>
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<td>Econ. 225</td>
<td>Economic Development</td>
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<tr>
<td>Econ. 269</td>
<td>International Economic Relations</td>
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<tr>
<td>Econ. 223</td>
<td>Labor Problems</td>
<td>6</td>
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<td>Econ. 267</td>
<td>Business Cycles</td>
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<tr>
<td>Math. 231</td>
<td>Vectors &amp; Matrices</td>
<td>6</td>
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<tr>
<td>Hist. 266</td>
<td>The History of Russia II</td>
<td>6</td>
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<tr>
<td>Gov. 251, 252</td>
<td>International Politics</td>
<td>6</td>
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<tr>
<td>Engl. 163</td>
<td>18th Century English Novel</td>
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<tr>
<td>Engl. 164</td>
<td>19th Century English Novel</td>
<td>6</td>
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</table>

*Required courses for Economics majors.

*Credit—six hours.*
Three hours a week.
Fall through Spring.
Mr. Dunkman, Mr. Jones, Mr. Rosett, Mr. Zabel, Mr. France, Mr. Choudhry

207. Intermediate Economic Theory. An analysis of the theories of value, production, prices and the determination of economic equilibrium. Analyses will include conditions of free competition and various degrees of monopoly control. Some attention also is given to the theory of distribution dealing with wages, rent, interest, and profits.

*Credit—three hours.*
Three hours a week.
Fall term.
Mr. Zabel

209. National Income Analysis. The family of national income concepts, the distinction between intermediate and final products, the social accounting framework and approach, and national income as a measure of economic structure and growth will be analyzed. National income accounts will be used as a tool for examining the economic structure and rates of growth of the United States and other countries.

*Credit—three hours.*
Three hours a week.
Spring term.
Mr. Zabel

211. Money, Credit and Banking. An 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. Economics 101–102 prerequisite.

*Credit—three hours.*
Three hours a week.
Fall term.
Mr. Dunkman

221. Labor and the Government. A study of the growth and development of trade unions and legislation concerning their activities. Attention is given to both state and federal control of unionization, collective bargaining, and labor disputes. Social security, wages and hours regulation, and antidiscrimination legislation are also covered.

*Credit—three hours.*
Three hours a week.
Fall term.
Mr. Dunkman

223. Labor Problems. An analysis of the problems raised in the process of determining wages and other conditions of employment in an industrial society. Emphasis is placed on the impact of the policies and practices of unions on workers, management and the public. Consideration is given to economic factors and other issues involved.

*Credit—three hours.*
Three hours a week.
Fall term.
Mr. France

225. Economic Development. Part I of this course will deal with problems of underdeveloped areas and with the strategy of development. This will involve an examination of the stimulants to economic change and growth, and the conditions and prerequisites for industrialization. Part II will survey and appraise contemporary development theories against the background of factors discussed in Part I. Prerequisite Economics 207 or the permission of the instructor.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.
Mr. Eckstein

231. Economic Statistics. The basic ideas and methods of descriptive statistics and statistical inference. Subjects covered are sampling distributions, statistical tests, estimation of parameters, regression, and time series. The size of this class may not exceed 25.

*Credit—three hours.*
Three hours a week.
Fall and Spring terms.
Mr. Rosett
245. Government and Business. This course examines, against the historical background and in relation to general economic theory, the problems created for the American economy by the intervention of government in the workings of the free enterprise system especially in the fields of business enterprise, finance, foreign trade, labor, and agriculture. Particular attention is given to recent legislation and judicial decisions.

*Credit—three hours.*
Three hours a week.

Omitted 1959-60.

249. Comparative Economic Systems. Analysis of the functioning and comparative performance of the American and Soviet economies in terms of the pattern of resource allocation, degree of economic control and planning, market structure, and stagnation or growth. This will involve the definition of theoretical criteria for model economic systems by which the actual American and Soviet experience may be appraised.

*Credit—three hours.*
Three hours a week.

Fall term.
Mr. Eckstein

253. The Canadian Economy. This course, conducted by the seminar method, will study the development and structure of the expanding Canadian economy in terms of population growth, gross product and other basic characteristics. The critically important economic relations of the United States and Canada will receive special attention. With consent of the instructor.

*Credit—three hours.*
Three hours a week.

Omitted 1959-60.


*Credit—three hours.*
Three hours a week.

Omitted 1959-60.

Mr. Dunkman

267. Business Cycles. A course in the history and theory of business cycles. Some knowledge of statistical methods is desirable but not prerequisite. Special consideration is given to present conditions and the control of future cycles.

*Credit—three hours.*
Three hours a week.

Spring term.
Mr. Choudhry


*Credit—three hours.*
Three hours a week.

Fall term.
Mr. Jones

291. Junior Reading Course. By arrangement with the department to permit work beyond regular course offerings and to prepare junior majors for completion of the junior essay.

*Credit—one to three hours.*

Spring term.

293. Senior Reading Course. By arrangement with the department to permit work beyond regular course offerings and to prepare senior majors for completion of the senior essay.

*Credit—two to three hours.*

Fall term.

471-472. Modern Value Theory. A treatment of leading topics in value theory since 1870 with attention to the theories of pure competition, monopolistic competition, oligopoly, and general equilibrium. The works of major economists are given special emphasis. The subjects are developed to their present state in economic theory. Prerequisites: Economics 207 and 209.

*Credit—three hours.*
Three hours a week.

Fall through Spring.

Mr. McKenzie

481. Introduction to Mathematical Economics. An elementary survey of topics in economic theory. Mathematical concepts are used to facilitate the understanding of these topics. Macro-economic as well as micro-economic models but an introduction to dynamic models is also presented. Prerequisites: Mathematics 151, Economics 207, Economics 209.

*Credit—three hours.*
Three hours a week.

Fall term.

Mr. Zabel


*Credit—three hours.*
Three hours a week.

Spring term.

Mr. Rosett
Clear and correct English is expected of students in papers and examinations throughout the college course. Students notably defective in English may be reported by any department to the Chairman of the Department of English for corrective work.

Students who expect to concentrate in English are advised to take History 221, 222. (The History of England and Greater Britain), preferably in the sophomore year. Other allied courses for juniors and seniors concentrating in English are History 231, 232, 245, 246, and 251, 252, Philosophy 103, 104, 241, 242, 282, Fine Arts 101, 102, 121, 205-206, 231-232, 241, 242, 244 and advanced courses in German, French, classical, and comparative literature.

In the junior and senior years English majors select not less than twenty-four credit hours from English and American literature and six or twelve hours from the allied fields of history, philosophy, fine arts, and foreign literatures. In addition to Shakespeare (six hours), majors take one course (three hours) from each of the following periods of literature: (1) medieval or renaissance, (2) restoration or eighteenth century, and (3) nineteenth century. Concentrators thus have an opportunity to emphasize earlier or later periods and also to select courses in the drama, novel, and American literature in accord with their individual interests.
# A SAMPLE A.B. PROGRAM IN ENGLISH

## Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>1st Term</th>
<th>2nd Term</th>
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<tbody>
<tr>
<td>Engl. 101-102</td>
<td>English Composition</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Hist. 101-102</td>
<td>Introduction to Contemporary Civilization</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Phil. 101</td>
<td>Introduction to Philosophy</td>
<td>3</td>
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<tr>
<td>Phil. 102</td>
<td>Ethics</td>
<td></td>
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<tr>
<td>Elective</td>
<td>Group I (Foreign Language)</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td>Group III (Laboratory Science)</td>
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## Sophomore Year

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<tbody>
<tr>
<td>Engl. 111-112</td>
<td>Survey of English Literature</td>
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<tr>
<td>Engl. 103-104</td>
<td>Introduction to Literature</td>
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<td>3</td>
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<tr>
<td>Hist. 121, 122</td>
<td>History of England and Greater Britain</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Hist. 131, 132</td>
<td>The History of the United States</td>
<td>3</td>
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<tr>
<td>Phil. 103</td>
<td>Plato</td>
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<tr>
<td>Phil. 104</td>
<td>History of Modern Philosophy</td>
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<tr>
<td>Fine Arts 101, 102</td>
<td>Introduction to the History of Art</td>
<td>3</td>
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## Junior Year

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<tbody>
<tr>
<td>Engl. 231-232</td>
<td>Shakespeare</td>
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<td>Engl. 226</td>
<td>Chaucer</td>
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<td>Engl. 234</td>
<td>Seventeenth Century Literature</td>
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<td>Engl. 117, 118</td>
<td>Survey of American Literature</td>
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<td>Engl. 261</td>
<td>Renaissance Drama</td>
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<td>Engl. 262</td>
<td>Modern Drama</td>
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<td>Engl. 263</td>
<td>Eighteenth Century English Novel</td>
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<td>Engl. 243</td>
<td>Nineteenth Century English Novel</td>
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## Senior Year

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<tr>
<td>Engl. 237</td>
<td>Dryden and the Restoration</td>
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<td>Engl. 241</td>
<td>Eighteenth Century Literature</td>
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<tr>
<td>Engl. 251</td>
<td>Romantic Poetry</td>
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<td>Engl. 253</td>
<td>Victorian Poetry</td>
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<td>English</td>
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<td>Allied fields (Group III if requirements not already satisfied)</td>
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</table>
101-102. English Composition. Instruction and practice in expository, argumentative, and critical writing, including the preparation of research papers; a study of discursive prose with exercises in logic and critical analysis of essays; introduction to forms and types of creative literature. Required of all freshmen except those exempted by the department on the basis of previous school record and high standing in placement tests. A few students who have shown marked improvement in the first term may be exempted from the second term’s work.

Credit—six hours.
Three hours a week. Fall through Spring.

The staff

103-104. Introduction to Literature. English 103-104 is an introduction to the understanding and enjoyment of literature through the reading of great works. It considers them not only for their expression of the enduring problems of mankind but also for their structure and style. Open to all freshmen and sophomores, and to upperclass students concentrating in departments other than English. Either English 103-104 or English 111-112 is prerequisite to all other literature courses in the department except for students who have had equivalent preparation elsewhere.

Credit—six hours.
Three hours a week. Fall through Spring.

The staff

111-112. Survey of English Literature. A historical survey of English literature from the beginning to 1900. Recommended but not required as an alternative to English 103-104 for freshmen or sophomores planning to concentrate in departments other than English. Either English 103-104 or English 111-112 is prerequisite to all other literature courses in the department except students who have had equivalent preparation elsewhere.

Credit—six hours.
Three hours a week. Fall through Spring.

Miss Koller

113. Speech. A “fundamentals course,” designed especially to clarify the principles underlying sound and effectual speaking of all sorts, in all circumstances. Supervised practice in, for example, group discussion, individual speeches, and reading aloud. Each section is limited to 15 students.

Credit—three hours.
Three hours a week. Fall and spring terms.

Miss Rauschenbusch

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 juniors and seniors with grades of B or better in English 101-102, sophomores by special arrangement with the instructor.

Credit—three hours.
Three hours a week. Fall term.
Mr. Hadas

116. Advanced Narrative Writing. Short story workshop. Each student will be expected to write from 18,000 to 20,000 words during the term. The class will meet once a week for three hours for criticism and discussion. Frequent conferences with individual students will be held. The student will be encouraged to improve by constant comparison of his work with the best achievements in fiction. May be repeated for credit with the consent of the instructor. English 115 prerequisite.

Credit—three hours.
Three hours a week. Spring term.
Mr. Plutzik

117. A Survey of American Literature from Colonial Times to 1865. A historical survey of American literature from the beginning to 1865. English 117 is a prerequisite for English concentrators. (Offered in alternate years with English 119.)

Credit—three hours.
Three hours a week. Fall term.
Mr. Gilman

118. A Survey of American Literature from 1865 to 1920. English 117 is a prerequisite for English concentrators. (Offered in alternate years with English 119.)

Credit—three hours.
Three hours a week. Spring term.
Mr. Gilman

119. A Survey of American Literature from 1920 to the Present. English 117 is a prerequisite for English concentrators. (Offered in alternate years with English 118.)

Credit—three hours.
Three hours a week. Spring term.
Mr. Gilman

122. 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 stu-
dents and discussion of the relations of the written drama to its suitable production.

220. Modern English Literature. A study of modern English literature from 1914 to the present.

Credit—three hours.
Three hours a week.
Spring term.
Miss Rauschenbusch

221. Modern Poetry. A brief introduction to the background of contemporary poetry, followed by intensive study of the major figures from Gerard Manley Hopkins to Dylan Thomas.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Frank

222. Modern Prose. A close study of representative authors who have been particularly significant in expressing the consciousness of our time. Selected fiction and criticism, and also works of scientific prose important for their impact on imaginative writing.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Plutzik

225. Medieval Literature. A study of the principal English poems and prose works (exclusive of Chaucer) from the beginnings of English literature to 1500.

Credit—three hours.
Three hours a week.
Omitted 1959-60.

226. Chaucer. The works of Chaucer, principally the Canterbury Tales and Troilus and Criseyde, and their linguistic and literary background.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Cross

231-232. Shakespeare. Required for all students concentrating in English, and open to all sophomores, juniors, and seniors who have had English 103-104 or its equivalent. Students expecting to enter honors work in English in the junior year are advised to take Shakespeare in the sophomore year.

Credit—six hours.
Three hours a week.
Mr. Dunkel

233. Sixteenth Century Literature. A study of non-dramatic literature from More and Erasmus to Edmund Spenser. (To be offered in alternate years with English 234.)

Credit—three hours.
Three hours a week.
Spring term.
Miss Koller

234. Seventeenth Century Literature. A study of the leading poets and prose writers from the time of Spenser to 1660.

Credit—three hours.
Three hours a week.
Fall term.
Miss Koller


Credit—three hours.
Three hours a week.
Fall term.
Mr. Johnson


Credit—three hours.
Three hours a week.
Fall term.
Mr. Johnson

247. Study in the History of Ideas. This course is designed to present those works of literature which reveal man's changing attitudes toward various ideas which have affected his destiny or revealed his nature.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Johnson


Credit—three hours.
Three hours a week.
Omitted 1959-60.


Credit—three hours.
Three hours a week.
Spring term.
Mr. Ford
255. Nineteenth Century Prose. A study of the most significant prose works of the century, not including the novel.

Credit—three hours.

Three hours a week.

Fall term.

257. The Concept of the Comic Spirit. The concepts of the comic spirit in great literature from the classics to the present.

Credit—three hours.

Three hours a week.

Omitted 1959-60.

Mr. Schilling

258. The Concept of the Tragic Spirit. The concepts of the tragic spirit in great literature from the classics to the present.

Credit—three hours.

Three hours a week.

Omitted 1959-60.

Mr. Schilling

259. The Greek Classics in Translation. The Greek classics in translation with special emphasis on their humanistic influence on later literature.

Credit—three hours.

Three hours a week.

Fall term.

Mr. Schilling

260. The Roman Classics in Translation. The Roman classics in translation with special emphasis on their humanistic influence on later literature.

Credit—three hours.

Three hours a week.

Spring term.

Mr. Schilling

261. Renaissance Drama. A study of the great period of English drama from Marlowe to Dryden, with special attention to varieties of tragic experience.

Credit—three hours.

Three hours a week.

Fall term.

Mr. Kaufmann

262. Modern Drama. A study of great modern dramas from Ibsen to Eliot as reflectors of the main currents in modern thought and feeling.

Credit—three hours.

Three hours a week.

Spring term.

Mr. Kaufmann

263. The Eighteenth Century English Novel. A study of the major novels of the period.

Credit—three hours.

Three hours a week.

Fall term.

Miss Adams


Credit—three hours.

Three hours a week.

Spring term.

Miss Adams

265. History of the English Language. This course is intended to acquaint the student with the methods and results of modern linguistic study, with special emphasis upon the nature of present-day English. Recommended for all students preparing to teach English.

Credit—three hours.

Three hours a week.

Fall term.

Mr. Cross

267. The Nineteenth Century American Novel. An historical and critical study of the American novel from the beginning through Henry James, with attention to technique and form as well as to theme and social context.

Credit—three hours.

Three hours a week.

Omitted 1959-60.

Mr. Gilman

272. The Modern American Novel. An historical and critical study of the American novel from the rise of naturalism to the present, with attention to technique and form as well as to theme and social context.

Credit—three hours.

Three hours a week.

Spring term.

Mr. Gilman

273. Special Studies in American Literature. A critical and historical examination of the literature of special periods, topics or genres, such as colonial literature, poetry, criticism, and Transcendentalism.

Credit—three hours.

Three hours a week.

Omitted 1959-60.

For Honors Seminars in English, see page 127.
Fine Arts

Professors Hersey, Suhr; Associate Professor Merritt; Assistant Professors Ehrich, Menihan.

A concentration program in Fine Arts consists of from eighteen to thirty hours of Fine Arts courses, not including Fine Arts 101, 102, plus approved related courses to make a total of thirty-six hours. Of these, six hours may be in creative art. Fine Arts 101, 102 are prerequisite to all concentration programs and should be taken not later than the sophomore year.

*Part-time.
### SAMPLE A.B. PROGRAM IN FINE ARTS

#### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
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<th>2nd Term</th>
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<tbody>
<tr>
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<td>3</td>
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<tr>
<td>Fine Arts 102&lt;sup&gt;2&lt;/sup&gt;</td>
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<tr>
<td>Engl. 101-102</td>
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<td><strong>Total</strong></td>
<td>16 or 17</td>
<td>16 or 17</td>
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<sup>1</sup>May in some cases be postponed until the second year, with substitution of Fine Arts 109-110, Representation and Design with Studio Practice; or Fine Arts 111-112, Creative Sculpture; or Fine Arts 109 and Fine Arts 200, Classical Mythology.

<sup>2</sup>Required if not taken in first year.

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### Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Fine Arts 111-112</td>
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<tr>
<td>Fine Arts 113-114</td>
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<tr>
<td>Fine Arts 101, 102&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>Engl. 103-104</td>
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<td>Elective</td>
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### Junior Year

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<tbody>
<tr>
<td>Fine Arts 231-232</td>
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<td>Fine Arts 205-206</td>
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<td>Fine Arts 203-204</td>
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<tr>
<td>Fine Arts 239-240</td>
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<tr>
<td>Fine Arts 111-112</td>
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<td>Fine Arts 113-114</td>
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<tr>
<td>Electives</td>
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### Senior Year

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<td>Fine Arts 201, 202</td>
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<td>Fine Arts 215, 216</td>
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<td>Fine Arts 142</td>
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<tr>
<td>Electives</td>
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<tr>
<td><strong>Total</strong></td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
101. Introduction to Ancient and Medieval Art. This course and its sequel aim to introduce the student to the subject of 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. The aesthetic and expressionistic aspects of the visual arts are stressed, as well as their historical development. This course is devoted to Egyptian, Greek, Roman, Early Christian and Medieval art.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Hersey

102. Introduction to Renaissance and Modern Art. This course is a general introduction to Renaissance and modern art with special emphasis on the Italian, Flemish, Dutch and French schools of painting. It is a sequel to Fine Arts 101, but may be taken separately.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Hersey

109-110. Representation and Design with Studio Practice. Lectures on the theory of design and on the modes of drawing and painting, supplemented by actual practice in drawing and painting, including a systematic study of color relations. The course is concerned with the analysis of different methods of artistic expression, and seeks to develop personal standards for judging quality. It is designed primarily for freshmen. No previous art training is necessary.

Credit—six hours.
Two labs of two hours and one lecture a week.
Fall term (109).
Mr. Merritt

111-112. Creative Sculpture. An introductory course in modelling and sculpture based upon a study of the living model. Consideration is given to such fundamentals as space relations, rhythm, plasticity, and the relation of material to the sculptural art. The course includes work in clay, wood, stone, and ceramic media. No previous experience is necessary. Registration is limited to fifteen students.

Credit—six hours.
Two three-hour studio periods a week.
Fall through Spring.
Mr. Ehrich

113-114. Drawing and Painting. An opportunity to practice basic principles of drawing and painting in various media. The development of natural ability, often present but not recognized, is encouraged. The course consists mainly of studio work from life, supplemented by field trips. Emphasis in the first term is on various phases of line drawing; the second term is devoted mainly to water color. Previous experience in art is not prerequisite. Registration is limited to eighteen students.

Credit—six hours.
Two three-hour studio periods a week.
Fall through Spring.
Mr. Menihan

200. Classical Mythology. A 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 will also be stressed. Slides and photographs will be used in the classroom for illustration. Prerequisite: Fine Arts 101, English 103-104, or History 101-102, or the equivalent. No graduate credit.

Credit—three hours.
Two hours a week.
Fall and spring terms.
Mr. Suhr

201. The Art of Early Civilizations. The course is devoted to a review of painting, sculpture, and architecture of the Stone Ages, the Aztec, Mayan and Incan civilizations of our own hemisphere, and of Egyptian, Mesopotamian, Persian and Minoan peoples. The lectures, which are illustrated, are designed to throw light on the religion, traditions, society, and cultural values of ancient peoples as they are expressed in their art forms. Prerequisite: Fine Arts 101, or History 101-102, or the equivalent.

Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Suhr

202. Greek and Roman Art. The course is devoted to a review of the painting, sculpture and architecture of ancient Greece and Rome. The lectures, which are illustrated, are designed to throw light on the religion, traditions, society, and cultural values of the Greeks and Romans as they are expressed in their art forms. Prerequisite, one of the following: Fine Arts 101, 200, History 101-102, Classics 251, 252, or the equivalent.

Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Suhr

203-204. Medieval Art. The first semester deals with the origin and development of Romanesque art in Italy, France, Spain, Germany, and England, with emphasis on archi-
205-206. Renaissance and Modern Architecture. The course aims to develop a knowledge of the theory and problems of Renaissance and modern architectural design and to trace the development of architecture in Europe from the beginning of the Renaissance through the baroque and modern periods. Fine Arts 101, 102 or History 101-102 prerequisite.

Credit—six hours.
Three hours a week.
Omitted 1959-60.
Mr. Hersey

215. Interrelations of Art, Literature, and Philosophy. The motivating ideals in the viewpoints of the Egyptian, Mesopotamian, Hebrew, Hindu, Chinese, and Greek cultures will be sought through an examination of the interplay of the art, literature, and philosophy of these peoples. Prerequisite, one of the following: History 101-102, Fine Arts 101, 102 or Philosophy 101, 102. No graduate credit.

Credit—three hours.
Two periods a week.
Mr. Hersey

216. Interrelations of Art, Literature, and Philosophy. The motivating ideals in the viewpoints of the Roman, Medieval, and Modern cultures will be sought through an examination of the interplay of the art, literature, and philosophy of these peoples. Prerequisite, one of the following: History 101-102, Fine Arts 101, 102, or Philosophy 101, 102. No graduate credit.

Credit—three hours.
Two periods a week.
Spring term.
Mr. Suhr

231-232. Italian Painting. A survey of the principal schools of painting in Italy from the late thirteenth century to the eighteenth century. During the first term emphasis is initially placed on the late medieval artists Giotto, Duccio, and Ambrogio Lorenzetti, and subsequently on the Florentine school of the fifteenth century, where Masaccio, Piero della Francesca, Botticelli, and Leonardo da Vinci receive special consideration. The second term is given to a survey of High Renaissance art, Mannerism, and Baroque painting, as seen especially in the works of Raphael, Michelangelo, Titian, Pontormo, and Carravaggio. Fine Arts 102 or History 101-102 prerequisite.

Credit—six hours.
Three hours a week.
Omitted 1959-60.
Mr. Merritt

239-240. Northern European Painting. A study of the development of painting in Europe from about 1400 to 1800. The first term
will be devoted to the fifteenth and sixteenth centuries, particularly in the Netherlands, Germany, and France. The second term will deal with baroque and rococo painting in the north, including Spain. The work of El Greco, Rubens, Rembrandt, Poussin, and Watteau will receive particular emphasis. Fine Arts 101, 102 or History 101–102 prerequisite.

**Credit—six hours.**
Three hours a week.
Fall through Spring.
Mr. Merritt

**241. Modern European Painting to 1885.** A study of the 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. Emphasis is placed on outstanding artistic personalities such as David, Delacroix, Goya, Daumier, Manet, Renoir, Degas, Monet, and Seurat. Fine Arts 102 or History 101–102 prerequisite.

**Credit—three hours.**
Three hours a week.
Fall term.
Mr. Merritt

**242. Modern European Painting Since 1885.** A study of European painting from about 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. The works of Cézanne, Gauguin, Vincent van Gogh, Munch, Matisse, and Picasso receive special emphasis. Fine Arts 102 or History 101–102 prerequisite.

**Credit—three hours.**
Three hours a week.
Spring term.
Mr. Merritt

**245. American Architecture.** A study of the colonial, Early Republican, eclectic, and modern styles of American architecture from the seventeenth century to the present, with reference to the historical and cultural background which explains their character. Special attention will be given to the English colonial tradition, to the spirit of nationalism underlying the architecture of the Early Republic, and to the American contributions to the development of modern architecture. Study will be made of structures in Roche-
Foreign Languages

Professors CANFIELD, HILL, HANHARDT, HARVEY; Associate Professors CLARK, MOSCRIP, TOPAZIO; Assistant Professors BETORET-PARIS, BRAUN, KLIMAS, WHITTEMORE; Instructors, DR. GIUFFRIDA, MR. OBRECHT.

Students who enter the University with previous foreign language experience will be placed in courses in which they can make the most satisfactory progress on the basis of demonstrated aptitude and proficiency.

Language laboratories, conducted by native assistants, and limited to groups of about ten students, offer special opportunities for intensive oral-aural training at several levels, and laboratory exercises constitute an integral part of the language and linguistics courses.

The Department of Foreign Languages offers programs of concentration leading to the degree Bachelor of Arts in Classics or Latin, French Language or French Literature, German Language or German Literature and Spanish Language or Spanish Literature. For concentration in either a modern language or a modern literature, both the Composition-Conversation course and the Survey of Literature are required. For concentration in a modern language the course in the History of that Language will be required.

A concentration program in a literature will normally include at least three advanced courses in that literature, and concentration in a language, at least three advanced language-linguistics courses. Allied courses for concentration may be suggested from other foreign languages or literatures, or from the Departments of English, Philosophy, Fine Arts, History or Government.

JUNIOR YEAR ABROAD. Recognizing the increasing number of opportunities for study in foreign universities, and in the belief that the interchange of students between the United States and other countries is a contribution to international
understanding as well as to the enrichment of the individual, The University of Rochester recognizes the Junior Year Abroad for qualified students of French, German and Spanish. Application should be made in the Office of the Dean of Students.

The courses in Foreign Languages prepare a student to undertake graduate work in French, German, Spanish or Latin, or, in combination with certain courses in Education, to meet certification requirements for teaching these languages at the secondary-school level.

It is recommended that all students who plan to concentrate in a foreign language take language laboratory courses during their entire college course, and that they consider the advantages of the Junior Year abroad. For suggestions for Latin concentration, see Departmental Section of Bulletin.

**A SAMPLE A.B. COURSE IN FOREIGN LANGUAGES**

**Freshman Year**

<table>
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<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Engl. 101-102</td>
<td>3rd</td>
</tr>
<tr>
<td>Fr., Ger., or Span. 103-104</td>
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<tr>
<td>or</td>
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<tr>
<td>Fr., Ger., or Span. 121, 122</td>
<td>3rd</td>
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<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>Fr., Ger., or Span. 131, 132</td>
<td>3rd</td>
</tr>
<tr>
<td>Fr., Ger., or Span. 113-114</td>
<td>3rd</td>
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<tr>
<td>Elective</td>
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<td>Phys. Ed.</td>
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<td>Freshman English Composition</td>
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<tr>
<td>Introduction to French, German, or</td>
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<tr>
<td>Hispanic Civilization(^1)</td>
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<tr>
<td>Composition and Conversation</td>
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<td>Survey of Literature</td>
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<td>Spoken French, German, or Spanish(^2)</td>
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<td>Group II</td>
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<td>A laboratory science</td>
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<td>Physical Education</td>
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**Sophomore Year**

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<th>Course</th>
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<tbody>
<tr>
<td>Engl. 103-104</td>
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<tr>
<td>Psych. 101-102</td>
<td>3rd</td>
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<tr>
<td>Fr., Ger., or Span. 121, 122</td>
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<td>or</td>
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<tr>
<td>Fr., Ger., or Span. 131, 132</td>
<td>3rd</td>
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<tr>
<td>Fr., Ger., or Span. 117-118</td>
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<td>Phys. Ed.</td>
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<td>Introduction to Psychology</td>
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<td>Composition and Conversation</td>
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<td>Survey of Literature</td>
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<td>Advanced Course in Literature or Linguistics</td>
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<tr>
<td>Advanced Spoken Languages</td>
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\(^1\)Students who have had more than two years of high school foreign language, and score well on the placement examination will enroll for French, German or Spanish 121, 122 or 131, 132.

\(^2\)The laboratory course will correspond to the student’s previous training and placement test score.
FOREIGN LANGUAGES: CLASSICS  |  161

Junior Year

<table>
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<tr>
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<th>1st Term</th>
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<td>Elective (In education, for prospective teachers)</td>
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<td>Group III</td>
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Senior Year

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<td>Fr., Ger., or Span.</td>
<td>119-120</td>
<td>119-120</td>
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<td>Advanced Courses in Literature and Linguistics</td>
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<td>Elective (In education, for prospective teachers)</td>
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</tr>
<tr>
<td></td>
<td>15</td>
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</tr>
</tbody>
</table>

Classics

Associate Professor Moscrip.

Latin

Note: Latin 105 and Latin 104 or its equivalent, are prerequisite to further work in Latin. Allied courses for students concentrating in Classics or in Latin may be chosen from such courses as Art 101, 102, 115-116, 201, 202, Government 285, History 221, 241 or 242, Philosophy 105, and from advanced courses in literature, in English and in modern languages.

104. The Aeneid of Vergil. An introduction to epic literature, open to students entering college with three years of Latin.

Credit—three hours.
Three hours a week.
Spring term.
Miss Moscrip

105. An Introduction to Latin Literature.
Selections from various Latin writers.

Credit—three hours.
Three hours a week.
Fall term.
Miss Moscrip


Credit—three hours.
Three hours a week.
Fall term.
Miss Moscrip


Credit—three hours.
Three hours a week.
Omitted 1959-60.
Miss Moscrip

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Miss Moscrip

227. *Tacitus.* Selections from the *Annales* and the essays, *Agricola* and *Germania*; a study of the first century of the Roman Empire.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Miss Moscrip

228. *Roman Comedy.* A study of the ancient drama with special reference to the New Comedy of the Greeks and its Roman imitations. Several plays of Plautus and Terence will be read.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Miss Moscrip


*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Spring term.
Miss Moscrip

233. *Roman Satire.* A study of satire in Roman literature as illustrated by selections from Horace and Juvenal.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Miss Moscrip

251. *Classical Civilization I.* A survey of the civilizations of Greece and Rome in the

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**Greek**

**Note 1:** It is recommended that students who are preparing to teach Latin in the secondary schools take two years' work in Greek.

**Note 2:** Advanced courses other than those listed below will be offered by members of the department as the occasion for such courses arises.

101-102. *Elementary Greek.* Easy selections from Greek authors will be read in class.

*Credit—six hours.*
Three hours a week.
Fall through Spring.
Miss Moscrip

211-212. *Introduction to Greek Literature.* More extensive reading in a variety of Greek authors including Homer and Plato.

*Credit—three hours.*
Three hours a week.
Fall through Spring.
Miss Moscrip

221. *Greek Drama.*

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Suhr

222. *Greek History.*

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Miss Moscrip

231. *Greek Philosophy.*

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Suhr


*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Suhr
fields of literature, philosophy, history, science, politics, and art. A knowledge of Greek and Latin is not requisite; translations are used. Designed for all students who are interested either in the study of origins or in the Greek and Roman elements in our own civilization. Greece is studied.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Suhr

252. Classical Civilization II. A continuation of 251 with emphasis on Rome.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Suhr

Interrelations of Art, Literature and Philosophy
(See Fine Arts, p. 157)

285. Modern European Novel and Drama from 1850–1900. Readings in English translation of such representative authors as: Flaubert, Zola, Tolstoy, Dostoyevsky, Ibsen, Strindberg, Hauptmann.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Topazio and staff

286. Modern European Novel and Drama Since 1900. Readings in English translation of such representative authors as: Chekov, Gide, Mauriac, Sartre, Camus, Pirandello, Sione, Garcia Lorca, Mann.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Topazio and staff

French

Professors Hill and Harvey; Associate Professor Topazio; Assistant Professor Whittemore.


Credit—six hours.
Three hours a week.
Fall term.
Mr. Harvey, Mr. Whittemore

103–104. Introduction to French Civilization. A study of the important trends in the development of the civilization of France as reflected in representative works of French literature. Prerequisite: French 101–102 or equivalent.

Credit—six hours.
Three hours a week.
Fall through Spring.
Miss Hill, Mr. Topazio, Mr. Whittemore


Credit—three hours.
Three hours a week.
Omitted 1959–60.

106. Specialized Technical Readings. French readings in specialized areas of interest. Prerequisite: French 105 or equivalent.

Credit—three hours.
Three hours a week.
Omitted 1959–60.


Credit—two hours.
Two labs a week.
Fall through Spring.
Mr. Whittemore, assistants

113–114. Spoken French. Intensive training in the oral aspects of the language toward the achievement of practical fluency in the French of everyday situations. Recommended for students at the French 103–104 level and for other qualified students by permission of the instructor.

Credit—two hours.
Two labs a week.
Fall through Spring.
Mr. Whittemore, assistants

117–118. Advanced Spoken French. This course aims toward the achievement of fluency within an extended range of vocabulary and idiom. Recommended for students in French 131, 132 and in French 121, 122 and
for other qualified students by permission of the instructor.

_Credit—two hours._
Two labs a week.
Mr. Whittemore, assistants

119–120. _French Diction and Discussion._ Assignment and discussion of topics from currently pertinent areas of interest. Recommended for juniors and seniors who are concentrating in French, and for other qualified students with permission of the instructor.

_Credit—two hours._
Two labs a week.
Mr. Whittemore, assistants

121. _French Composition and Conversation._ A practical course in both oral and written composition. Analysis and application of acceptable usage.

_Credit—three hours._
Three hours a week.
Fall term.
Mr. Whittemore

122. _French Composition II._ A continuation of 121.

_Credit—three hours._
Three hours a week.
Spring term.
Mr. Whittemore

131. _Survey of French Literature before 1700._ Main currents of French literature from its beginnings to the end of the 17th century. Reading and appraisal of poetry, drama and novels typical of each period.

_Credit—three hours._
Three hours a week.
Fall term.
Mr. Topazio, Mr. Harvey

132. _Survey of French Literature from 1700 to 1950._ Main currents of French literature of the 18th, 19th and 20th centuries. Reading and appraisal of poetry, drama and novels typical of each period.

_Credit—three hours._
Three hours a week.
Spring term.
Mr. Topazio, Mr. Harvey

211. _The Linguistic Structure of French I._ Objective analysis of the phonemic, syntactical and semantic features of present-day French. Dialectal variations.

_Credit—three hours._
Three hours a week.
Fall term.
Miss Hill

212. _The Linguistic Structure of French II._ A continuation of 211.

_Credit—three hours._
Three hours a week.
Spring term.
Miss Hill

235. _History of the French Language I._ A study of the formation, development and present state of French as one of the Romance Languages. Examination of Old French texts.

_Credit—three hours._
Three hours a week.
Omitted 1959–60.

236. _History of the French Language II._ A continuation of 235.

_Credit—three hours._
Three hours a week.
Omitted 1959–60.

237. _Introduction to Romance Philology._ A comparative study of the development of the principal Romance Languages from their Latin origins.

_Credit—three hours._
Three hours a week.
Fall term.
Mr. Canfield

238. _Examination of Romance Texts._ A study of writings in Old French, Provençal, Italian, Spanish and Portuguese.

_Credit—three hours._
Three hours a week.
Spring term.
Mr. Canfield

241. _Practicum in French._ Investigation of special linguistic problems under the direction of a member of the departmental staff.

_Credit—three hours._
Three hours a week.
Omitted 1959–60.

251. _French Literature Before 1500._ Chan- sons de geste, fabliaux, miracle and mystery plays, the Arthurian cycle, Villon.

_Credit—three hours._
Three hours a week.
Omitted 1959–60.
Miss Hill

252. _The Renaissance._ Rabelais, Ronsard, Montaigne and other humanists of the sixteenth century. Prose, poetry and theater.

_Credit—three hours._
Three hours a week.
Omitted 1959–60.
Mr. Harvey
255. Seventeenth Century Prose and Poetry. Malherbe, Descartes, La Rochefoucauld, Mme de La Fayette, Mme de Sévigné, La Fontaine, Boileau, Pascal, Bossuet, La Bruyère, Saint Simon.

_Credit—three hours._
Three hours a week.
Fall term.
Mr. Whittemore

256. The Classical Drama. The principal plays of Corneille, Molière, Racine.

_Credit—three hours._
Three hours a week.
Spring term.
Mr. Harvey


_Credit—three hours._
Three hours a week.
Omitted 1959-60.
Mr. Topazio


_Credit—three hours._
Three hours a week.
Fall term.
Mr. Topazio


_Credit—three hours._
Three hours a week.
Spring term.
Mr. Topazio

260. The Twentieth Century I. French literature from 1900 to 1930: the novels of Gide, Proust, Duhamel; the drama of Claudel, Lenormand; the poetry of La Forgue, Apollinaire, Valéry.

_Credit—three hours._
Three hours a week.
Fall term.
Miss Hill

261. Senior Reading Course I. Study of special literary problems under the direction of a member of the departmental staff.

_Credit—three hours._
Three hours a week.
Fall term.

262. Senior Reading Course II. A continuation of 251.

_Credit—three hours._
Three hours a week.
Spring term.

German

Professor Hanhardt; Associate Professor Clark; Assistant Professors Braun and Klimas; Instructor Dr. Giuffrida.

101-102. Elementary German. An introductory study of the structure of the German language and its basic vocabulary. Reading of selected graded texts.

_Credit—six hours._
Three hours a week.
Fall through Spring.
Staff

103-104. Introduction to German Civilisation. A study of the important trends in the development of German civilization as reflected in representative works of German literature. Prerequisite: German 101-102 or equivalent.

_Credit—six hours._
Three hours a week.
Fall through Spring.
Staff

105. Readings in Scholarly and Technical German Prose. Controlled readings in technical prose as a preparation for specialized use of the language. In the second semester students will read in their special fields of interest. Prerequisite: German 101-102 or equivalent.

_Credit—three hours._
Three hours a week.
Fall term.
Mr. Clark, Mr. Braun, Mr. Giuffrida

106. Specialized Technical Readings. German readings in specialized areas of interest. Prerequisite: German 105 or its equivalent.

_Credit—three hours._
Three hours a week.
Spring term.
Mr. Giuffrida, Mr. Braun
111–112. Elementary German Conversation. An oral approach to basic German. Laboratory exercises in pronunciation, intonation, and general fluency.

Credit—two hours.
Two labs a week.
Fall through Spring.
Mr. Hanhardt, assistants

113–114. Spoken German. Intensive training in the oral aspects of the language toward the achievement of practical fluency in the German of everyday situations. Recommended for students at the German 103–104 level and for other qualified students by permission of the instructor.

Credit—two hours.
Two labs a week.
Fall through Spring.
Mr. Hanhardt, assistants

117–118. Advanced Spoken German. The aim of this course is the achievement of fluency within an extended range of vocabulary and idiom. Recommended for students in German 131, 132 and in German 121, 122 and for other qualified students by permission of the instructor.

Credit—two hours.
Two labs a week.
Fall through Spring.
Mr. Hanhardt, assistants

119–120. German Diction and Discussion. Assignment and discussion of topics from currently pertinent areas of interest. Recommended for juniors and seniors who are concentrating in German, and for other qualified students by permission of the instructor.

Credit—two hours.
Two labs a week.
Fall through Spring.
Mr. Hanhardt, assistants

121. German Composition and Conversation I. A practical course in both oral and written composition. Analysis and application of acceptable usage.

Credit—three hours each term.
Three hours a week.
Fall term.
Mr. Hanhardt

122. German Composition and Conversation II. A continuation of 121.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Hanhardt

131. Survey of German Literature to 1800. The main currents of German Literature from its beginnings to the present day. Reading and appraisal of poetry, novels and plays typical of each period.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Clark, Mr. Braun

132. Survey of German Literature from 1800 to the present. A continuation of German 131.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Clark

211. The Syntactic Structure of the German Language. Objective analysis of the phonemic, syntactical and semantic features of present-day German.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Hanhardt

212. Regional Variations of German. Dialectal variations in German-language areas of Europe.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Hanhardt

235. History of the German Language to 1500. A study of the formation, development and present state of German as one of the Germanic Languages. Examination of old German texts.

Credit—three hours.
Three hours a week.
Omitted 1959–60.
Mr. Hanhardt

236. History of the German Language from 1500. A study of the German Language since 1500.

Credit—three hours.
Three hours a week.
Omitted 1959–60.
Mr. Hanhardt

241. Practicum in German. Investigation of special linguistic problems under the direction of a member of the departmental staff.

Credit—three hours.
Three hours a week.
Omitted 1959–60.
265. *Eighteenth Century Literature I.* A study of the development of German literature during the eighteenth century with emphasis on the works of Lessing and Schiller. Given in University School.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Clark

266. *Eighteenth Century Literature II.* A continuation of German 265.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Clark


*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Clark, Mr. Braun

270. *Goethe II.* A continuation of German 269.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Braun

275. *Nineteenth Century Drama and Poetry.*
A study of the most important writers of German Romanticism and Realism with emphasis on the works of Kleist, Grillparzer, and Hebbel.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Braun


*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Braun

277. *The German Novella I.* The history and development of the German novella, with special emphasis on the nineteenth century and including works of E.T.A. Hoffmann, Eichendorff, Keller, C. F. Meyer, Storm, Thomas Mann, and Hesse.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Braun

278. *The German Novella II.* A continuation of German 277.

The development of German literature since 1880 with emphasis on the works of Hauptmann, Thomas Mann, Hofmannsthal, Rilke, George and Kafka.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Braun


*Credit—three hours.*
Three hours a week.
Spring term.
Mr. Braun

291. *Senior Reading Course I.* For seniors concentrating in German. The character and scope of these courses are determined by special needs and interests of the individual students. By special permission only.

*Credit to be arranged.*
Fall term.

292. *Senior Reading Course II.* A continuation of German 291.

*Credit to be arranged.*
Hours to be arranged.
Spring term.
Staff

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**Russian**


*Credit—six hours.*
Three hours a week.
Fall through Spring.
Mr. Klimas

103-104. *Introduction to Russian Civilisation.*
A study of the important trends in the development of the civilization of Russia as reflected in representative works of Russian literature. Prerequisite: Russian 101-102 or equivalent.

*Credit—six hours.*
Three hours a week.
Fall through Spring.
Mr. Klimas
Spanish

Professor Canfield; Assistant Professor Betoret-Paris; Instructor Obrecht.


Credit—six hours.
Three hours a week.
Fall through Spring.
Mr. Betoret-Paris, Mr. Obrecht

103-104. Introduction to Hispanic Civilization. A study of the important trends in the development of the civilization of Spain and Hispanic America as reflected in representative works of Hispanic literature. Prerequisite: Spanish 101-102 or equivalent.

Credit—six hours.
Three hours a week.
Fall through Spring.
Mr. Betoret-Paris, Mr. Obrecht

105. Readings in Scholarly and Technical Spanish Prose. Controlled readings in technical prose as a preparation for specialized use of the language. In the second semester students will read in their special fields of interest. Prerequisite: Spanish 101-102 or equivalent.

Credit—three hours.
Three hours a week.
Omitted 1959-60.

106. Specialized Technical Readings. Spanish readings in specialized areas of interest. Prerequisite: Spanish 105 or its equivalent.

Credit—three hours.
Three hours a week.
Spring term.


Credit—two hours.
Two lab hours a week.
Fall through Spring.
Mr. Obrecht, assistants

113-114. Spoken Spanish. Intensive training in the oral aspects of the language toward the achievement of practical fluency in the Spanish of everyday situations. Recommended for students at the 103-104 level and for other qualified students by permission of the instructor.

Credit—two hours.
Two lab hours a week.
Fall through Spring.
Mr. Obrecht, assistants

117-118. Advanced Spoken Spanish. This course aims at the achievement of fluency within an extended range of vocabulary and idiom. Recommended for students in Spanish 131, 132 and in Spanish 121, 122 and for other qualified students by permission of the instructor.

Credit—two hours.
Two lab hours a week.
Fall through Spring.
Mr. Obrecht, assistants

121. Spanish Composition and Conversation I. A practical course in both oral and written composition.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Obrecht

122. Spanish Composition and Conversation II. Analysis and application of acceptable usage.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Obrecht

131. Survey of Hispanic Literature I. The main currents of Spanish literature from its beginnings to the present day. Reading and appraisal of poetry, novels and plays typical of each period.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Canfield


Credit—three hours.
Three hours a week.
Spring term.
Mr. Canfield

211. The Linguistic Structure of Spanish I. Objective analysis of the phonemic, syntactical and semantic features of present-day Spanish. Dialectal variations of Spain and Hispanic America.

Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Canfield
212. The Linguistic Structure of Spanish II. A continuation of Spanish 212.
Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Canfield

235. History of the Spanish Language. A study of the formation, development and present state of Spanish as one of the Romance Languages.
Credit—three hours.
Three hours a week.
Fall term.
Mr. Canfield

236. Old Spanish Texts. Examination of old Spanish texts.
Credit—three hours.
Three hours a week.
Spring term.
Mr. Canfield

237. Introduction to Romance Philology. A comparative study of the development of the principal Romance Languages from their Latin origins.
Credit—three hours.
Three hours a week.
Fall term.
Mr. Canfield

255. Spanish Literature of the Golden Age I. A critical study of the picaresque novel, the Quijote and other works of Cervantes, and the drama and poetry of Spain's Siglo de Oro.
Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Betoret-Paris

256. Spanish Literature of the Golden Age II. A continuation of Spanish 255.
Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Betoret-Paris

275. Spanish Literature of the Nineteenth Century. Romanticism, Realism and Naturalism in Spain, with special reference to the costumbriismo movement and its significance.
Credit—three hours.
Three hours a week.
Omitted 1959-60.

276. Spanish Literature of the Nineteenth Century II. A continuation of Spanish 275.
Credit—three hours.
Three hours a week.
Omitted 1959-60.

281. Spanish-American Literature I. A review 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.
Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Betoret-Paris

Credit—three hours.
Three hours a week.
Spring term.
Mr. Betoret-Paris

Credit—three hours.
Three hours a week.
Fall term.
Mr. Betoret-Paris

286. Spanish Literature of the Twentieth Century II. A continuation of Spanish 285.
Credit—three hours.
Three hours a week.
Spring term.
Mr. Betoret-Paris

291. Senior Reading Course I. Studies in special literary problems under the direction of a member of the departmental staff.
Credit—three hours.
Three hours a week.
Fall term.

292. Senior Reading Course II. A continuation of Spanish 291.
Credit—three hours.
Three hours a week.
Spring term.
Staff
Geology and Geography
Professor Hoffmeister; Associate Professors Hall, Sutton; Assistant Professor Lundgren; and Assistants.

Geology

Concentration Program in Geology. Students who concentrate in geology should become well grounded in the fundamentals of chemistry, physics, and mathematics. Some geography and a reading knowledge of a foreign language are of value.

Geology 101–102 is a prerequisite for all other courses in geology, except in the case of students majoring in other fields.

Students working for the A.B. degree in the department should take Geology 101–102 as early in their program as possible. This should be followed by Geology 121 and Geology 124.

Departmental advisers will aid students to select courses beyond the elementary level from within the department and in related fields.

For information concerning the degree Bachelor of Science with major in Geology see p. 171.

A SAMPLE A.B. PROGRAM IN GEOLOGY

Freshman Year

<table>
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<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
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<tr>
<td>Geol. 101-102 *</td>
<td>Introductory Geology</td>
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<td>Math.—1 year *</td>
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<td>Eng. 101-102</td>
<td>English Composition</td>
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<td>Phys. Ed.</td>
<td>Physical Education</td>
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Sophomore Year

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Geol. 121 *</td>
<td>Introductory Paleontology</td>
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<tr>
<td>Geol. 124 *</td>
<td>Rocks and Minerals</td>
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<td>Engl. 103-104</td>
<td>Introduction to Literature</td>
<td>4</td>
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<td>Chemistry—1 year *</td>
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<td>6</td>
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<tr>
<td>Electives</td>
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<td>Phys. Ed.</td>
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Total: 17

*Courses required by department.
### Junior Year

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<tr>
<td>Geol. 227*</td>
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<td>Geol. 235*</td>
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<td>Geol. 246*</td>
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<td>Electives</td>
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### Senior Year

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<td>Geology and related*</td>
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<td>Electives</td>
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*Recommended courses are: Geology 241, 252, 274; Geography 207, 208.

### B.S. IN GEOLOGY

This is distinctly a professional program aimed at training students for professional positions in industry, teaching, and survey work, as well as preparing them for graduate work.

In addition to the essential courses in Geology, courses in other basic sciences are stressed. The program also permits a relatively wide selection of courses from the Social Sciences and the Humanities.

### Freshman Year

<table>
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<tr>
<th>Course</th>
<th>Hours</th>
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<tr>
<td>Geol. 101-102</td>
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<td>Engl. 101-102</td>
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<td>Math. 110, 111</td>
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### Sophomore Year

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<td>Geol. 121</td>
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<td>Geol. 124</td>
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101–102. *Introductory Geology.* A cultural course giving an insight into the composition, structure, and origin of the earth as revealed by the rocks, minerals, and land forms, and the history of its inhabitants as shown by the fossils preserved in the rocks. *First term:* Physical Geology. A study of the materials composing the earth and of the geologic agents and processes which have produced the present topographic and structural features. Several field trips. *Second term:* Historical Geology. The history and development of the earth as interpreted from the geologic record. The local rocks and fossils are studied both in the field and in the laboratory as illustrating the principles of geology. Several field trips.

*Credit—six hours.*

Two lectures, one lab a week.

Fall through Spring.

Mr. Hoffmeister and assistants

121. *Introductory Paleontology.* A course designed to introduce the student to the subject by an examination of the principles of Paleontology and by a review of the invertebrate faunas of the past. Field trips.

*Credit—three hours.*

Two lectures, one lab a week.

Fall term.

Mr. Hoffmeister

124. *Rocks and Minerals.* An introduction to the study of the geologically common and economically important rocks and minerals. Emphasis will be placed on the manner in which modern development of experiment and theory has influenced geological concepts deduced from controlled observations. The course is prerequisite to continued work in geology but is designed to be readily accessible to nonscience majors. Laboratory: Megascopic study of rocks and minerals.

*Credit—three hours.*

Two lectures, one lab a week.

Spring term.

Mr. Lundgren

227. *Advanced Mineralogy.* The optical properties, crystallography, and atomic structure of minerals are discussed. The laboratory is devoted to solving crystallographic problems and to the measurement of optical properties of minerals with the polarizing microscope. Analytic geometry, Chemistry 121, 124 and Physics 101–102 prerequisite.

*Credit—three hours.*

Two lectures, one lab a week.

Fall term.

Mr. Lundgren
231. Economic Geology I. The geology of petroleum and natural gas.

Credit—three hours.
Three lectures a week.
Fall term.
Mr. Sutton

232. Economic Geology II. The geology of metalliferous ore deposits: fundamental principles of ore deposition combined with a study of specific mining districts. Geology 227 prerequisite.

Credit—three hours.
Two lectures, one lab a week.
Omitted 1959–60.
Mr. Lundgren

233. Pleistocene Geology. Study of the topography and sediments associated with continental glaciation. Pleistocene deposits in nonglaciated regions are also considered. Local glacial phenomena are studied by means of short field trips.

Credit—three hours.
Three lectures a week.
Omitted 1959–60.


Credit—three hours.
Three lectures a week.
Omitted 1959–60.

235. Stratigraphy. A study of the principles of stratigraphy including the application of fundamental principles of physical geology and paleontology to problems of stratigraphy and paleogeography.

Credit—three hours.
Three lectures a week.
Fall term.
Mr. Sutton

241. Introductory Petrology. This course includes discussions of the occurrence and classification of igneous and metamorphic rocks and an introduction to the study of these rocks as chemical systems. Laboratory work consists of a study of rocks in thin section. Geology 227 prerequisite.

Credit—three hours.
Two lectures, one lab a week.
Spring term.
Mr. Hoffmeister

246. Structural Geology. The attitude of rocks in the earth's crust. The classification and origin of folds, faults, joints, and related features are discussed and shown in laboratory experiments. The geometric solution of structure problems is carried on in the winter months and the recognition and interpretation of structures are emphasized in the field.

Credit—three hours.
Two lectures, one lab a week.
Spring term.
Mr. Sutton

248. Geochemistry. An introductory survey of geochemistry. The course is designed to present a review of the contributions of chemistry, physics, and the other sciences to our understanding of the evolution of the earth. The following topics will be discussed: the internal constitution of the earth, the relationship between the chemistry of the earth and the planets, measurement of geologic time and temperature, and isotope geology. The latter half of the course will include discussions of the principles of the geochemical separation of the elements and the processes by which this separation is effected. Chemistry 121, 122 or 123, 124 and Physics 101–102 prerequisite.

Credit—three hours.
Three lectures a week.
Fall term.
Mr. Lundgren

252. Regional Geology. Study of geologically strategic regions in the United States. In addition, the course emphasizes the interrelationships of the geological sciences as applied to regional studies. Geology 235 and 246 prerequisite.

Credit—three hours.
Two lectures, one lab a week.
Spring term.
Mr. Sutton

274. Advanced Paleontology. A detailed study of the several invertebrate groups most important to the geologist. Stress will be placed on origin, evolution, and comparison with recent organisms. Field trips.

Credit—three hours.
Two lectures, one lab a week.
Spring term.
Mr. Hoffmeister

295. Senior Reading Course.

Credit to be arranged.
The Staff

296. Senior Reading Course.

Credit to be arranged.
The Staff
Geography

Concentration Program. Students who propose to concentrate in geography are urged to take selected courses in geology, biology, history, economics, and government. Geography 101-102 is a prerequisite for all other courses in geography, except in the case of students majoring in other fields of concentration. Credit obtained in Geology 233 and Geology 234 may be counted toward a major in Geography.

101-102. Introductory Geography. A survey of the world regions as a human habitat. Emphasis will be placed on the relations between the natural environment and the various activities of man, such as agriculture and industries. Included are discussions on the major features of the continents and oceans.

Credit—six hours.
Three hours a week.
Fall through Spring.
Mr. Hall

207. Economic Geography I. A presentation of the world’s most important agricultural resources and the environmental factors that control their production. Included are discussions on domestic animals, forests, and the major agricultural patterns as they occur in different parts of the world.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Hall

208. Economic Geography II. A study of the world’s important mineral resources dealing principally with factors controlling regional distribution, production, conservation, transportation, and consumption. The bearing of these factors on economic and political problems and on future regional changes is considered.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Hall

220. Cartography. A course in the basic principles of map-making and map interpretation, including work with aerial photographs and elementary field mapping.

Credit—three hours.
Three hours a week.

Omitted 1959-60.

250. Geography of the U.S.S.R. A geographical study of the Soviet Union with emphasis on the development of agriculture and industry in relation to the physical environment and natural resources.

Credit—three hours.
Three hours a week. Omitted 1959-60.

252. Geography of South America. An introduction to the most recent developments in South America with emphasis on economic features and population problems as they occur in their natural environment.

Credit—three hours.
Three hours a week. Omitted 1959-60.

253. Geography of Europe. A study of the physical and cultural geography of the continent of Europe.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Hall

258. Geography of North America. A study of the physical, cultural, and economic aspects of the geography of the United States and Mexico.

Credit—three hours.
Three hours a week.

260. Geography of Asia. A geographical study of the continent of Asia, including China, Japan, southeast Asia, India, and the Soviet Far East. Stresses the influence of the physical environment on the cultural and economic development of the various regions.

Credit—three hours.
Three hours a week.

Spring term.

Omitted 1959-60.

264. Geography of Canada. A geographical study of Canada, stressing the influence of the physical environment on the economic and cultural development of the various parts of the country. Special emphasis is placed on the problems of resource development, transportation, and industrialization.

Credit—three hours.
Three hours a week. Omitted 1959-60.
History

Professors Van Deusen, Coates, May; Associate Professors Christopher, M. Wade, R. Wade; Assistant Professors Harootunian, White; Assistants.

Note: History 101-102 is considered prerequisite to all other courses in history except by special permission of the department. Graduate students are admitted to advanced courses in history only with the consent of the department, and graduate credit will be given only upon the performance of additional work.

A program of concentration in history includes the satisfactory completion of thirty-six hours beyond History 101-102. Of these not less than twenty-four or more than thirty may be taken in the history department, the remainder in allied fields. History majors should consult the departmental representative in making out their program.

Students concentrating in history are required to distribute their work in such a way as to include either History 291-292 or a minimum of six hours in the following pre-nineteenth century history courses: 211, 221, 227, 237, 241, 245, 246, 251.

The history department recognizes the value, for qualified history majors, of the Junior Year Abroad.

SAMPLE A.B. PROGRAM IN HISTORY
Freshman Year

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Sophomore Year

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<td>Hist. 231, 232</td>
<td>The History of the United States</td>
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<td>Psych. 101-102</td>
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<td>Principles of Economics</td>
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Junior Year

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<td>Hist. 251, 252</td>
<td>European Thought and Institutions</td>
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Senior Year

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<td>History of England and Greater Britain</td>
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NOTE: This program of study provides for completion of the thirty hours of history beyond the introductory course as well as the six hours of study in an allied field beyond the introductory course in that field. Furthermore, the student concentrating in history will have completed the five fields of study and the allied field demanded for admission to the comprehensive examinations in history given in the senior year. Concentrators are urged to choose electives in the literature of related periods in English, German, French, Spanish or Classics or to pursue further work in foreign languages if their ultimate goal is graduate work in history.

101-102. Introduction to Contemporary Civilization. A broad survey of the European background of western civilization from ancient times to the present day. Intellectual, religious, social, economic, and scientific developments are considered, as well as political evolution and international affairs.

Credit—six hours.
Three hours a week.
Fall through Spring.
Mr. Christopher, Mr. White, Assistants

211. The Graeco-Roman World. A study of the basic ideas, institutions and problems of Graeco-Roman civilization during the transition from tribe to city-state to empire. Particular attention is given to Athenian culture of the fifth century B.C. and the unification of the Mediterranean world under Rome.

Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. White

221. The History of England and Greater Britain I. A historical survey of the development of British civilization from its beginnings to 1685 with the emphasis on England.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Coates

222. The History of England and Greater Britain II. A historical survey of the development of British civilization since 1685, including the development of the Empire and Commonwealth with the emphasis on England.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Coates

For Honors Seminars in History see pages 128-129, and for Ancient History see Classics 251, 252.
223. The History of Canada, 1490–1867. A general course in Canadian history from the age of discovery until Confederation. Canadian developments are related to those in the United States, Great Britain, and France. Emphasis is given to the establishment of British rule and the evolution of responsible government.

Credit—three hours.
Three hours a week.
Fall term.
Mr. M. Wade

224. The History of Canada, 1867–1959. A general course in Canadian history from the beginnings of the Dominion until the present day. Canadian developments are related to those in the United States, Great Britain and France. Emphasis is given to the rise of national feeling and relations with the United States.

Credit—three hours.
Three hours a week.
Spring term.
Mr. M. Wade

225. The History of French Canada. A study of French-Canadian culture, analyzing the evolution of the French traditions in the North American environment. Political, economic, social, and cultural developments will be examined.

Credit—three hours.
Three hours a week.
Fall term.
Mr. M. Wade

227. Seventeenth Century England. A study of the political, social, economic, religious, and intellectual aspects of English history during a most critical and decisive phase, and in the context of the expanding Western European civilization. The course will begin with the Tudor background of the period. History 221 or 246 prerequisite or by permission of the instructor.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Coates

229. The City in American History. A study of the origins and growth of urbanism in the United States. Special emphasis will be placed on the impact of the city on the economic, political, and cultural development of the nation. The course will also include a discussion of the emergence of urban problems, the rise of the city political machine and boss, the growth of satellite towns and suburbia, and an analysis of urban institutions.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Wade

231. The History of the United States I. A general history of the United States from 1760 to 1865.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Wade

232. The History of the United States II. A general history of the United States from 1865 to the present.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Wade

233. American Economic History I. An advanced course covering the principal events in the economic life of the United States from the American Revolution to the Civil War.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Van Deusen

234. American Economic History II. An advanced course covering the principal events in the economic life of the United States from the Civil War to the present.

Credit—three hours.
Three hours a week.
Spring term.
235. The History of American Foreign Policy

I. A survey of the foreign policy of the United States from 1763 to 1890. The course will include an analysis of the relationship of domestic affairs with foreign policy. Special attention will be paid to the influential ideas that have affected foreign policy formation, the role played by certain prominent public figures, and the significance of changing world patterns as well as their bearing on the problems of the United States in meeting international change.

Credit—three hours.
Three hours a week.
Fall term.

236. The History of American Foreign Policy

II. A survey of the foreign policy of the United States from 1890 to the present. The course will include an analysis of the relationship of domestic affairs with foreign policy. Special attention will be paid to the influential ideas that have affected foreign policy formation, the role played by certain prominent public figures, and the significance of changing world patterns as well as their bearing on the problems of the United States in meeting international change.

Credit—three hours.
Three hours a week.
Fall term.

237. American Colonial History. An examination and analysis of the roots of American Civilization to 1789. Emphasis is placed on the interplay between European Expansion in the West and the emergence of a separatist movement in the North American colonies, the problems of the 17th Century American society, the crisis leading to the American Revolution, and the rise of the new American nation.

Credit—three hours.
Three hours a week.
Spring term.

238. The Age of Reform in American History 1890–1929. An historical examination of the reform impulse in a changing American environment. Special attention will be devoted to the interaction of agriculture and industry, the motivating ideas of reform and the men influential in the movement, and its relationship to the emergence of the United States in the world scene.

Credit—three hours.
Three hours a week.
Spring term.

239. The Social History of American Thought

I. This course will deal with the development of American thought to 1865. Special attention will be given to the social background of intellectual currents.

Credit—three hours.
Three hours a week.
Omitted 1959–60.
Mr. R. Wade

240. The Social History of American Thought

II. This course will deal with the development of American thought from 1865 to the present day. Special attention will be given to the social background of intellectual currents.

Credit—three hours.
Three hours a week.
Omitted 1959–60.
Mr. R. Wade

241. Medieval Civilization. A study of the emergence of a European civilization with emphasis upon the fusion of the Graeco-Roman, Christian, and Germanic traditions, and an analysis of the main institutional, artistic, and intellectual contributions of medieval society to the subsequent history of European peoples.

Credit—three hours.
Three hours a week.
Omitted 1959–60.
Mr. White

245. The Renaissance. Beginning with an analysis of the medieval cultural synthesis of the thirteenth century, this course examines its breakdown and the transition to the modern age, with especial emphasis on the Italian Renaissance.

Credit—three hours.
Three hours a week.
Fall term.
Mr. White

246. The Reformation. A study of Northern Europe during the transition to modern times, with especial emphasis upon the rise of Protestantism, capitalism and the modern state until the end of the Wars of Religion.

Credit—three hours.
Three hours a week.
Spring term.
Mr. White

251. European Thought and Institutions, 1600–1789. A study of political, economic, and cultural developments. Special attention is given to the Age of Louis XIV and the Enlightenment.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Christopher
252. European Thought and Institutions, 1789-1870. A study of political, economic, and cultural developments. Special attention is given to the era of the French Revolution and Napoleon and to the industrial, political, and intellectual revolutions of the mid-nineteenth century.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Christopher

253. France since 1870. A study of the economic, political, diplomatic, imperial, and cultural developments, concluding with an estimate of the changes resulting from World War II.

Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Christopher

255. Europe Since 1871. The development of Europe from the Franco-German War until the First World War.

Credit—three hours.
Three hours a week.
Fall term.
Mr. May

256. Europe Since 1914. An intensive study of Europe since 1914.

Credit—three hours.
Three hours a week.
Spring term.
Mr. May

261. The Evolution of the Contemporary Far East. A comparative historical analysis of China and Japan from about the 16th century to modern times. Special attention will be paid to the way in which both civilizations responded to the impact of Western influences, and how they adapted their social and political systems to meet the challenge of the modern world.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Harootunian

265. A History of Russia I. An intensive study of imperial Russia with the emphasis on the 19th century and ending with the outbreak of the First World War.

Credit—three hours.
Three hours a week.
Fall term.
Mr. May

266. A History of Russia II. An intensive study of Russia since 1914.

Credit—three hours.
Three hours a week.
Spring term.
Mr. May

267. The Middle East in Modern Times. Attention will be directed mainly to the developments of the past century and a half. Particular stress will be placed on the Young Turk Revolution and its aftermath, the growth of Arab nationalism, the roots of Arab-Israeli tensions, the strategic importance of the Middle East, and the record of attempts to modernize and "Westernize" the middle Eastern states.

Credit—three hours.
Three hours a week.
Omitted 1959-60.
Mr. Christopher

281. World Communism. The object of the course is to give the student a dispassionate view of the rise of Communism both as an ideological movement and as a power factor in international relations. The first part of the course will trace the development of Communist ideology. The second section will deal with the power structure of Communism, with special emphasis on the Soviet Union and Communist penetration into various parts of the world. The third part will deal with the relations of Communism with free societies.

Credit—three hours.
Three hours a week.
Fall term.
Mr. R. Wade

291-292. Intellectual History of the West. A reading course in the history of western thought from ancient times to the present, particularly recommended for Seniors concentrating in History. The course meets in small discussion sections once a week. Students not concentrating in history will be admitted to this course only by special permission of the instructors.

Credit—six hours.
Time to be arranged.
Fall through Spring.
Mr. Coates, Mr. Christopher, Mr. White
Mathematics

Professors Randolph, Eberlein; Visiting Professor Tamari; Associate Professors Gunderson, Raimi; Assistant Professors Bathio (on leave), Case, Golibrich, Kenyon, Rothman, Sucheston; Instructors Kaul, Lercher, Puff, Schroer, and Graduate Assistants.

A concentration in mathematics consists of courses taken during the junior and senior years in mathematics and an allied field totaling 36 hours, of which 24–30 hours are mathematics courses numbered 200 or over. Senior concentrators attend a weekly seminar in lieu of taking comprehensive examinations.

A freshman or sophomore considering a major in mathematics should consult with the department’s concentration adviser about a selection of courses suitable for his ultimate aims.

Mathematics 110 is open to freshmen whose records indicate superior preparation and ability or to upper classmen with the consent of the department. On a careful examination of the records of all freshmen registered for a Mathematics course, each student is assigned to either Mathematics 100 or Mathematics 110. If a student assigned to Mathematics 100 feels that he has additional evidence to justify a transfer to Mathematics 110 he should see the department’s freshman adviser as soon as possible after section assignments are posted late in Freshman Week. On the other hand, a student assigned to Mathematics 110 is free to request a transfer to Mathematics 100.

In the second Freshman semester, students from Mathematics 110 will be expected to continue with Mathematics 111. Students from Mathematics 100, however will have the options of Mathematics 105 and/or Mathematics 101. Mathematics 101 (or 111) is required of all students who intend to continue with a second year calculus course. Students will register their second semester choice with their instructors in Mathematics 100, some time near the end of the first semester.

All other prerequisites listed in the following course descriptions may be waived with the consent of the instructor and the Chairman of the Department of Mathematics.
A SAMPLE A.B. PROGRAM IN MATHEMATICS

Many concentration programs in mathematics are possible. The sample listed below is designed for the student who, while he may decide to pursue graduate study, expects to enter industry as an applied mathematician after four years. Other sequences would be of interest to the prospective secondary-school teacher, or to the prospective graduate student in mathematics.

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<td>Math. 211</td>
<td>3</td>
</tr>
<tr>
<td>Math. 270</td>
<td>3</td>
</tr>
<tr>
<td>Math. 220</td>
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<tr>
<td>or Math. 225</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>15 or 18</td>
</tr>
</tbody>
</table>
100. Introductory College Mathematics. Fundamental aspects of mathematics basic to all future work in the subject are developed; these concepts are used in studying straight lines, polynomials, and simple transcendental curves, and associated topics from algebra and trigonometry. Credit—three hours. Three hours a week. Fall and spring terms.

101. Elementary Calculus. A first course in calculus, in which limits, differentiation, and integration of functions of one variable are developed, together with their geometric and physical applications. Prerequisite: Mathematics 100. Credit—three hours. Three hours a week. Spring term.

105. Introduction to Finite Mathematics. This course is preferable to Mathematics 101 for students who intend to take no more than six hours of mathematics. Emphasis is on modern mathematical concepts independent of the calculus; logic, linear algebra, probability. May be taken concurrently with Mathematics 101 or 111. Prerequisite: Mathematics 100 or 110. Credit—three hours. Three hours a week. Spring term.

110. Analytic Geometry and Calculus. Analytic Geometry and Calculus are treated together in such a way that each complements the other. Credit—three hours. Three hours a week. Fall term.

111. Analytic Geometry and Calculus. A continuation of Mathematics 110, which is prerequisite. Credit—three hours. Three hours a week. Spring term.

150. Intermediate Calculus. Additional topics in the calculus of functions of one variable are studied, including Taylor’s series. Prerequisite: Mathematics 101. Credit—four hours. Four hours a week. Fall term.


160. Analytic Geometry, Calculus, and Differential Equations. Mathematics 160 is open only to students who have successfully completed Mathematics 111. Vectors, solid analytic geometry, and functions of several variables. Credit—four hours. Four hours a week. Fall term.


200. Advanced Calculus I. Functions of several variables, vector analysis, Stokes Theorem, Green’s Theorem. Not for students taking 260 and 261. Prerequisite: Mathematics 151 or 161. Credit—three hours. Three hours a week. Fall term.

201. Advanced Calculus II. Special functions, such as Bessel’s and Legendre’s, and the gamma function. The Laplace transform, Fourier transform, Fourier’s series. Applications. Prerequisite: Mathematics 151 or 161. Credit—three hours. Three hours a week. Spring term.

*Credit—three hours. Three hours a week. Fall term.*


*Credit—three hours. Three hours a week. Fall term.*

216. *Numerical Methods.* Programming and coding for several computer systems. Approximation methods from numerical analysis will be developed, with practice at the Computing Center. Prerequisite: Mathematics 101.

*Credit—three hours. Three hours a week. Spring term.*


*Credit—three hours. Three hours a week. Spring term.*

218. *An Introduction to the History of Mathematics.* A survey of the development of mathematics from earliest times to the twentieth century, emphasizing the history of elementary mathematics (through calculus). The mathematics itself as well as its history will be stressed by means of problem material. Prerequisite: Mathematics 101 or 110.

*Credit—three hours. Three hours a week. Spring term.*

220. *Mathematical Logic.* A systematic study of the logical foundations of contemporary mathematics. Formal development of the syntax of a standard theory; propositional calculus, quantification theory, identity, and de-
240. Introduction to General Topology. This course deals with the notions of topological space, homeomorphism, and continuous mapping. Properties such as compactness, connectedness, and metrizability are studied in detail. Applications are made to analysis through the study of metric spaces. Prerequisite: Mathematics 151 or 161.

Credit—three hours.
Three hours a week.
Spring term.

251. Introduction to Projective Geometry. Among the subjects considered are foundations, duality, projectivities, collineations, quadrangular sets, conics, projective introduction of coordinate systems, cross ratio, order and continuity, Klein's definition of geometry, affine and metric geometries. Mathematics 111 or 150 prerequisite.

Credit—three hours.
Three hours a week.

255. Differential Geometry. A vector calculus is introduced and used in developing the classical theory of the differential geometry of curves and surfaces in Euclidean three-dimensional space. Prerequisite: Mathematics 200 or 260 or 270.

Credit—three hours.
Three hours a week.

260. Introduction to Analysis. This course includes a careful study of the real and complex number systems, and the rigorous development of the fundamental operations of analysis. Prerequisite: Mathematics 151 or 161.

Credit—three hours.
Three hours a week.
Fall term.


Credit—three hours.
Three hours a week.
Fall term.


Credit—three hours.
Three hours a week.
Spring term.

270. Linear Differential Equations and Boundary-value Problems. Linear systems of ordinary differential equations and classical second-order partial differential equations; eigen-value problems, periodic systems, and other boundary-value problems occurring in applications. Related topics such as expansions in series of orthogonal functions, properties of Fourier series and transforms, and inversion of Laplace transforms are developed as needed. Prerequisite: Mathematics 151 or 161, and some knowledge of matrix techniques and complex variables.

Credit—three hours.
Three hours a week.
Spring term.

271. Non-linear Differential Equations. General theory of existence of solutions of differential equations; emphasis is on rigorous treatment, but some techniques suitable for numerical analysis are included. Non-linear oscillations and the stability theory of Liapunov and Poincaré. Prerequisite: Mathematics 260.

Credit—three hours.
Three hours a week.
Fall term.

290. Reading Course. At the discretion of the department chairman, an exceptional undergraduate may arrange with the department for special work with credit.

Credit to be arranged.
Hours to be arranged.
Fall and spring terms.


Credit—three hours.
Three hours a week.
Spring term.

463. Functions of a Complex Variable. The Dirichlet problem, Riemann mapping theorem, entire and meromorphic functions and allied topics. Prerequisite: Mathematics 261.

Credit—three hours.
Three hours a week.
Fall term.
A synopsis of the courses required for the degree Bachelor of Arts with concentration in Music is given on page 186. All courses in music except Appreciation 101–102 and one section of Theory 1 and 2, and Theory 11 and 12 are given at the Eastman School of Music and are taught by members of the faculty of that School. For information concerning other courses in music, consult the bulletin of the Eastman School of Music.

Courses at the Eastman School of Music. An arts student may take work in the Eastman School of Music for credit towards the arts degree. Candidates who wish to take the degree Bachelor of Arts with the major in music must follow the procedures outlined under application procedure for admission, pages 35–38. Other students, who do not wish to make music their principal study, are permitted to elect from courses of college grade offered by the Eastman School of Music to the extent of thirty hours. For the student who desires to major in music, work to the extent of forty-eight to fifty hours is specified in the synopsis below.

The Eastman School of Music will accommodate students registering for individual music instruction, in the order of their registration, reserving the right to close the lists when the limit of the schedules of the teachers of applied music is reached.
Students electing courses in music should first confer with their Faculty Advisers. If the course is approved as an elective, registration should then be made with the Registrar of the Eastman School of Music.

All arts students who plan to take one or more courses in the Eastman School of Music should take the various tests and auditions given at that school. Applicants for admission in September, 1960, who expect to take music courses should report at the School for these tests and auditions during Freshman Week.

### SYNOPSIS OF THE ARTS COURSE WITH A MAJOR IN MUSIC

#### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>English 101-102</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>Music</td>
<td>6</td>
</tr>
<tr>
<td>Music</td>
<td>6</td>
</tr>
<tr>
<td>Physical Ed.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>32</td>
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#### Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Electives</td>
<td>18</td>
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<tr>
<td>Music</td>
<td>8</td>
</tr>
<tr>
<td>Music</td>
<td>6</td>
</tr>
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<td>Physical Ed.</td>
<td>2</td>
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<tr>
<td></td>
<td>34</td>
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#### Junior Year

<table>
<thead>
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<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Electives</td>
<td>18</td>
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<tr>
<td>Music</td>
<td>6</td>
</tr>
<tr>
<td>Music</td>
<td>6</td>
</tr>
<tr>
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#### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>18</td>
</tr>
<tr>
<td>Music</td>
<td>4–6</td>
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<tr>
<td>Music</td>
<td>6</td>
</tr>
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<td></td>
<td>28–30</td>
</tr>
</tbody>
</table>

Concentration in music may be begun in the sophomore year provided the science requirement has been satisfied in the freshman year. Under this plan forty-two or forty-four hours must be taken at the Eastman School. The prescribed courses in music are the same as those listed above except that only three courses in applied music, as a music major, are required.

1If voice is the applied music subject, two hours of work in the Eastman chorus are required each week if a student is taking it as a major and recommended if it is an elective.

2Another upper division elective in theory or history of music, for which the student is prepared, may be substituted by permission.
Appreciation 101-102. A course discussing the elements of music, the important masterpieces of that art, and the significant composers from the point of view of the concert-going non-musician. Illustration is done by piano and phonograph, with simultaneous use of scores. Progress is tested by the writing of papers, mid-year and final examinations, and in other ways.

_Credit—six hours._

Three hours a week.
Fall through Spring.
Mr. Woodbury

Theory 1 and 2. This course is designed to give a thorough training in the melodic, harmonic, and rhythmic elements of music. The first semester is devoted to the study of the four types of triads, intervals, keys, scales, cadences, notation, rhythmic reading, sight-singing, melodic dictation, and harmonic dictation. New material in the second semester consists of the dominant and supertonic seventh chords, modal scales, key relationships, modulations, transposition by clef, four-part writing, and two-part counterpoint.

_Credit—six hours._

Five hours a week.
Fall through Spring.
Staff

Theory 11 and 12. In this course, based on the two-part, three-part, and four-part music of J. S. Bach and his contemporaries, emphasis is placed on analysis, part-writing, practical application at the piano, and on dictation. Harmonic and formal analysis is made of music by K. P. E. Bach, Haydn, Mozart, and Beethoven. Writing includes chorale harmonizations, chorale preludes, an invention in two parts, recitatives, piano accompaniments for folk songs, and three-part and four-part vocal arrangements. Prerequisite: Theory 1 and 2. Required of music majors; open to other majors with the permission of the instructor.

_Credit—eight hours._

Five hours a week.
Fall through Spring.
Staff

Theory 71 and 72. _Contemporary Styles._ This course, beginning with the style of Wagner and continuing through the styles of Scriabin, Debussy, and others, is designed to provide training in contemporary harmonic and contrapuntal technics. The second semester deals predominantly with contemporary American composers. Prerequisite: Theory 11 and 12.

_Credit—six hours._

Three hours a week.
Fall through Spring.
Mr. Sutton

Counterpoint 71-72. A practical study of the medieval modes and the vocal polyphony of the motet and the Mass up to and including five-part writing. One hour each week of singing and listening to the ecclesiastical literature of the period is included. Prerequisite: Theory 11 and 12.

_Credit—six hours._

Three hours a week.
Fall through Spring.
Mr. Mitchell, Mr. Sutton, and Mr. White

Orchestration 101 and 102. A study of the instruments of the orchestra together with the practical study of the art of symphonic scoring. Prerequisite: Theory 11 and 12.

_Credit—four hours._

Two hours a week.
Fall through Spring.
Mr. Mennini

Historical Survey 1, 2. A study of the history of music with emphasis on the cultural and general historical background.

_Credit—six hours._

Three hours a week.
Fall through Spring.
Miss Watanabe

History of Music 121, 122. _Piano Literature._ The piano sonata and the other characteristic forms, from the pre-piano period to the present time. Intended particularly for students majoring in piano, composition, or the history of music. Outside listening required.

_Credit—four hours._

Two hours a week.
Mr. Thompson

Eastman School Chorus. A class for the study of a cappella literature and larger works for chorus and orchestra. Required of voice majors and recommended if voice is studied as an elective.

_No credit._

Two hours a week.
Fall and spring terms.
Mr. Genhart
Naval Science

Captain CALLAHAN (USMC); Commander BACKUS; Major GLEASON (USMC); Lieutenants CONN, JUIF, REILLY; Chief Petty Officers COOPER, OWNBY, LAUFENBERG and LUKSICH; Petty Officer First Class FLOYD; Sergeant First Class BROOKS.

Requirements for the Naval Reserve Officers Training Corps will be found on pages 81–83.

101. Evolution of Sea Power. A study of the 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.

Credit—three hours.
Three lecture-recitations.
One two-hour practical instruction period a week.
Fall term.

102. Naval Orientation. A study of the basic customs and traditions of the Navy, and of the functions of the Naval Establishment and its components in the defense of the nation; an introduction to the duties and responsibilities of a line officer in the Naval Service.

Credit—three hours.
Three lecture-recitations.
One two-hour practical instruction period a week.
Spring term.

151. Naval Weapons. The development of an understanding of the fundamentals of naval weapons and weapons systems, stressing basic principles, and their application to control of the seas.

Credit—three hours.
Three lecture-recitations.
One two-hour practical instruction period a week.
Fall term.
221. Naval Machinery Nuclear Power and Ship Stability. Basic principles relating to the transformation of energy from fuel, including nuclear fuel, to heat to power. The application of steam, internal combustion and other prime movers to propulsion and auxiliary uses in Naval vessels and aircraft. A study of the principles of ship stability and buoyancy and their application to the problems of damage control.

*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Fall term.


*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Spring term.

231. Naval Operations. A study of 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.

*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Fall term.

232. Principles and Problems of Naval Leadership. A study of the principles and problems of human relations, the principles of management, and the responsibilities of the junior officer in his role as a Division Officer. This course includes such topics as 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.

*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Fall term.

235. Naval Auxiliary Machinery, Nuclear Power and Ship Stability. This course is open only to seniors majoring in engineering. The course is designed to apply the principles of engineering to the main propulsion plants of naval vessels. A study of nuclear power is included. In addition the course covers ship stability and buoyancy as they apply to damage control.

*Credit—one hour.*

One lecture-recitation.
One two-hour practical instruction period a week.
Fall term.


*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Fall term.

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.

*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Spring term.

271. Amphibious Warfare. A study of the concept, history, development and techniques of amphibious warfare, including a critical analysis of selected amphibious operations.

*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Fall term.


*Credit—three hours.*

Three lecture-recitations.
One two-hour practical instruction period a week.
Spring term.
Non-Western Civilizations

The requirements for the concentration in Non-Western Civilizations include the course described at the right and other courses to be chosen from the list on page 111.

201-202. Introduction to Non-Western Civilizations. A broad survey of the Soviet Union and of the principal areas of the Middle East, Asia, Africa and Latin America, with particular emphasis on their political, economic and social developments viewed in historical perspective, and on their contemporary problems.

Credit—six hours.
Three hours a week.
Fall through Spring.
Mrs. Dean, Mr. Harootunian and others
Nursing

All courses are taught at the Medical Center by the faculties of the Department of Nursing and the School of Medicine.

The Course in Nursing has been planned to provide a sound fundamental and cultural education combined with thorough preparation for nursing. It is conducted by the College of Arts and Science and the School of Medicine. Candidates matriculate as regular students in the College of Arts and Science.

The course in nursing is a five-year course, but by attending one Summer Session, students complete the course in four and one-half calendar years and qualify for the degree Bachelor of Science with a Major in Nursing and a Diploma in Nursing.
A synopsis of the course is given below. The program in the freshman year is the same for all students but in the sophomore year a student may elect either a Science concentration or a Social Studies concentration for her degree. The synopsis of the course follows:

**NURSING**  
*Program in the Arts College*

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology 101-102</td>
<td>8</td>
</tr>
<tr>
<td>English 101-102</td>
<td>6</td>
</tr>
<tr>
<td>Sociology 101-102</td>
<td>6</td>
</tr>
<tr>
<td>Group II Elective</td>
<td>6</td>
</tr>
<tr>
<td>Group I Elective</td>
<td>6</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
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</tbody>
</table>

34 hours

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Studies Concentration</td>
<td></td>
</tr>
<tr>
<td>Chemistry 111</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 112</td>
<td>4</td>
</tr>
<tr>
<td>Physics 105</td>
<td>4</td>
</tr>
<tr>
<td>English 103-104</td>
<td>6</td>
</tr>
<tr>
<td>Psychology 101-102</td>
<td>6</td>
</tr>
<tr>
<td>Group II Elective</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
</tbody>
</table>

35 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Concentration</td>
<td></td>
</tr>
<tr>
<td>Chemistry 111</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 112</td>
<td>4</td>
</tr>
<tr>
<td>Physics 105</td>
<td>4</td>
</tr>
<tr>
<td>Biology 125 or approved sub.</td>
<td>3</td>
</tr>
<tr>
<td>Psychology 101-102</td>
<td>6</td>
</tr>
<tr>
<td>English 103-104</td>
<td>6</td>
</tr>
<tr>
<td>Elective</td>
<td>6</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
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</tbody>
</table>

35 hours

**Summer Session**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 242</td>
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</tr>
<tr>
<td>Elective</td>
<td>3</td>
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</table>

Total hours—75

**Program in the Department of Nursing**  
*Third Year*

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Semester</td>
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</tr>
<tr>
<td>Biology 111</td>
<td>(3 hours Arts College)</td>
</tr>
<tr>
<td>Biology 117</td>
<td>(3 hours Arts College)</td>
</tr>
<tr>
<td>Nursing 133</td>
<td>3</td>
</tr>
<tr>
<td>Nursing 135</td>
<td>1</td>
</tr>
<tr>
<td>Nursing 139</td>
<td>4</td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Semester</td>
<td></td>
</tr>
<tr>
<td>Nursing 142</td>
<td>3</td>
</tr>
<tr>
<td>Nursing 143</td>
<td>6</td>
</tr>
<tr>
<td>Nursing 144</td>
<td>3</td>
</tr>
<tr>
<td>Nursing 145</td>
<td>6</td>
</tr>
<tr>
<td>Nursing 146</td>
<td>3</td>
</tr>
</tbody>
</table>

1Unless offered as entrance unit from high school.
Fourth Year

1st Semester
Nursing 153 ................................. 3 hours
Nursing 154 .................................. 2 hours
Nursing 157 .................................. 3 hours
Nursing 158 .................................. 2 hours

2nd Semester
Nursing 165 .................................. 3 hours
Nursing 166 .................................. 2 hours
Nursing 171 .................................. 4 hours

Fifth Year

1st Semester
Nursing 175 .................................. 3 hours
Nursing 176 .................................. 2 hours

At the beginning of the third year students will transfer to the Department of Nursing and will have five semesters of work there to complete the course. Admission to the Department of Nursing on completion of two and one-half years at the College of Arts and Science depends upon the grade of work completed at the College.

During the five terms at the Department of Nursing the students live in Helen Wood Hall, the nurses’ dormitory. For information concerning costs in the Department of Nursing, refer to the current Department of Nursing bulletin which may be obtained by addressing the Director of the Department of Nursing, University of Rochester Medical Center, Rochester 20, N. Y.

133. Introduction to Nursing. This course includes an orientation to nursing, the concept of the professional nurse and her responsibilities and the place of the hospital in the community health program. The major content of the course is concerned with basic nursing procedures used in the personal care of the patient. Attention is given to psychosocial concepts in nursing, to personal adjustments and to interpersonal relations. The course is designed to utilize previously learned scientific principles and serves as a foundation for all other nursing courses. Beginning at about the seventh week, students have periods of supervised practice on the divisions of the Hospitals.

Credit—three hours.

Four lectures, demonstrations or conferences, and two three-hour lab periods a week.

Fall term.
Mrs. Craytor, staff

135. Principles of Nutrition. The role of food in health and disease is included in the basic program and in major clinical areas with emphasis on socio-economic factors. Consideration is given to education and rehabilitation in this area.

Credit—three hours.

Two lectures or conferences, one three-hour lab a week.

Fall term.
Miss Crozier, staff


Credit—six hours.

Three lectures, three labs a week.

Dr. Pitel
142. Pharmacology. A study of the action of drugs in the human body. In lectures and discussion periods the origin, preparation, dosage, therapeutic use and toxic effects of drugs are considered. Emphasis is placed on the responsibilities of the nurse in the administration of drugs.

Credit—three hours.
Three lectures a week.
Miss Kennedy, staff

143. Principles of Surgical Nursing. Major public health problem areas requiring surgical intervention form a base for discussion of surgical nursing principles. The area of cancer is thoroughly explored. Emphasis is also placed on trauma and infection and the nursing problems related to care of adults with these conditions. The principles of nursing care of the surgical patient are closely correlated with the medical aspects of the disease condition requiring surgical intervention. Surgical specialties including orthopedic, eye, ear, nose and throat and gynecological nursing are included in this course. Throughout the course emphasis is placed on pre-operative and post-operative teaching of the patient and the rehabilitative aspects of patient care. Seminars and group discussion supplement formal presentation of content material. Planned field trips to selected agencies provide an opportunity for students to enlarge their knowledge of community resources. Nursing 133, prerequisite.

Credit—six hours.
Six lectures or conferences a week.
Miss Kennedy, staff

144. Surgical Nursing Field Experience. Through this field experience the student applies the principles of asepsis and the principles of nursing care of the adult requiring surgery, acquired in the course of surgical nursing, to the actual patient situation. Students are provided with an opportunity to observe in the operating room selected patients for whom they have been caring pre-operatively and for whom they will care post-operatively. The student thoroughly investigates the nursing problems presented by these patients and presents her findings and solutions to other students in clinical conferences.

Credit—three hours.
Twenty-two weeks field experience.
Miss Kennedy, staff

145. Principles of Medical Nursing. The course in Medical Nursing is based on content areas of major Public Health problems. These areas in Medicine include cardiovascular-renal, the diseases of aging, degenerative diseases. From this base general principles are derived which can be applied to the nursing care of adults with any medical condition. Nursing care includes preventive aspects and health teaching, physical care, emotional support and rehabilitation to the patient's maximum potential. Seminars and group discussion supplement formal presentation of content material. Planned field trips to selected agencies provide an opportunity for students to enlarge their knowledge of community resources. Nursing 133, prerequisite.

Credit—six hours.
Six lectures or conferences a week.
Miss Kennedy, staff

146. Medical Nursing Field Experience. This field experience provides an opportunity for the student to apply the principles discussed in Medical Nursing to the actual care of the sick adult. The student functions as a member of the nursing team in providing this care. Opportunity is given the student to observe the diagnostic and therapeutic services of the allied medical professional departments. Students thoroughly investigate all the care required by selected patients and present their findings in clinical conferences.

Credit—three hours.
Sixteen weeks of field experience.
Miss Kennedy, staff

153. Principles of Pediatric Nursing. This course includes the study of "normal" growth and development of the child from birth
through adolescence with guided observations in well-baby clinic and in selected nursery schools to enable the student to understand and care for well children so that she can apply these principles in planning and providing nursing care to meet the needs of the child who is ill. The developmental approach is used in teaching the care of the sick child which includes therapy and prevention of the common childhood diseases as well as communicable diseases with emphasis on the individual child and his family. Students participate in planning, class discussions, presentation of nursing care studies and sharing individual experiences on the clinical units. Teaching personnel includes doctors, nurses, social workers, nutritionists, other allied professional people, children themselves and parents. Nursing 133 prerequisite.

Credit—three hours.
Three lectures or conferences a week.
Miss O’Hara, staff

154. Pediatric Nursing Field Experience. Planned experience includes practice in the care of premature, infants, preschool and school age children as well as selected field trips to community agencies concerned with child care. Nursing experience is given concurrently with class instruction which is patient-centered.

Credit—two hours.
Twelve weeks of field experience.
Miss O’Hara, staff

155. Principles of Obstetric Nursing. The care of mothers and newborn infants in all phases of the maternity cycle and neonatal period. Emphasis is placed on pregnancy as a normal physiological function, and on the role of the nurse in interpreting and meeting the needs of parents through nursing care and teaching. The recognition, prevention and treatment of deviations from the normal is stressed. Lectures and conferences are planned in which members of the obstetric, pediatric, psychiatric, public health and social service departments participate. Nursing 133 prerequisite.

Credit—three hours.
Three lectures or conferences a week.
Miss O’Hara, staff

156. Principles of Psychiatric Nursing. This course includes the study of normal growth and personality development, a brief history of psychiatry and leads the student into the study of emotional illness. The clinical picture of the mentally ill child and adult, various methods of psychotherapy and the nursing care necessary to meet the patient’s needs are presented in lectures, seminars, clinic conferences, films, role playing and assigned readings as well as in the actual care given patients in this clinical field.

Credit—three hours.
Three lectures or conferences a week.
Miss Gorman

157. Principles of Obstetric Nursing. This course supplements Nursing 165 and provides the student with opportunities for observing and caring for mentally ill children and adults.

Credit—two hours.
Twelve weeks field experience.
Miss Gorman

171. Social Foundations of Nursing. A study of the historical development of the nursing profession is presented. Significant studies and research in nursing, in addition to trends in nursing education, are discussed.

Credit—four hours.
Four lectures a week.
Miss Hall, staff, lecturers


Credit—two hours.
Two lectures a week.
Dr. Rathburn


Credit—two hours.
Two lectures a week.
Mrs. Hendryx

176. Public Health Nursing Field Experience. Practical experience in community nursing in a voluntary agency is provided.

Credit—two hours.
Eight weeks of field experience.
Staff, Visiting Nurse Service of Rochester
The Courses in Optics

Professors Givens, Hopkins, Kingslake*; Associate Professors Boynton*, Dexter, Evans, Stewart, Wolf; Assistant Professor Teegarden; Senior Research Associates Dutton, Peskin; Senior Research Associate and *Assistant Professor Blakney, Milne; Research Associates and Assistant Professors* Baumeister, Eyer; Research Associates Murty, Nakai; Lecturers Carpenter*, Ewald*, Perrin*, Tuttle*.

The Courses in Optics lead to the degree Bachelor of Science with a Major in Optics. They are offered by the Institute of Optics to students who wish to prepare themselves for industrial and research positions in optical physics or optical engineering. In this, the Institute has the cooperation and interest of the optical and related industries. These courses offer 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, colorimetry, spectrophotometry and optical properties of thin films. The curricula include basic courses in mathematics, chemistry and physics and electives in other fields.

Two curricula are offered. One of these, called curriculum 1, is designed to prepare the student for graduate work in optics and related fields of physics, leading him eventually to a Ph.D. degree and a career in scientific research. The other, identified as curriculum 2, is intended to prepare the student to go into industry immediately upon receiving his B.S. degree. The M.S. degree is readily added to curriculum 2. The two curricula are identical for the first two years, but the student should make a choice before he begins the junior year.

*Part-time.
### B.S. Degree in Optics—Curriculum I

#### Freshman Year

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<tr>
<th>Course</th>
<th>Description</th>
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<td>Engl. 101-102</td>
<td>English Composition</td>
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<tr>
<td>Math. 110, 111</td>
<td>Analytic Geometry and Calculus</td>
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<tr>
<td>or Math. 100, 101</td>
<td>Introductory College Mathematics, Elementary Calculus</td>
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<tr>
<td>Phys. 107-108</td>
<td>Physics I</td>
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<tr>
<td>or Phys. 101-102</td>
<td>General Physics A</td>
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<tr>
<td>Chem. 121, 122</td>
<td>General Chemistry</td>
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<td>Optics 185, 186</td>
<td>Mechanical Drawing</td>
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<td>Physical Education</td>
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#### Sophomore Year

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<td>Math. 150, 151</td>
<td>Intermediate Calculus, Differential Equations</td>
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<td>or Math. 160, 161</td>
<td>Analytical Geometry, Calculus, Differential Equations</td>
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<tr>
<td>Phys. 117-118</td>
<td>Physics II</td>
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<td>or Phys. 111-112</td>
<td>General Physics B</td>
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<tr>
<td>Engl. 103-104</td>
<td>Introduction to Literature</td>
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<tr>
<td>Engr. ME 104</td>
<td>Machine Shop</td>
<td>2</td>
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<tr>
<td>Elective</td>
<td>A Modern Language</td>
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<td>Elective</td>
<td>Group II</td>
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<td>Phys. Ed.</td>
<td>Physical Education</td>
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#### Junior Year

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<tr>
<td>Math. 200, 201</td>
<td>Advanced Calculus I &amp; II</td>
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<tr>
<td>Phys. 221-222</td>
<td>Electricity &amp; Magnetism</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Optics 161</td>
<td>Geometrical &amp; Physical Optics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Optics 242</td>
<td>Testing of Optical Units &amp; Lens Systems</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>Group I or II</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td>Group IV</td>
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#### Senior Year

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<tbody>
<tr>
<td>Optics 261, 262</td>
<td>Physical Optics I &amp; II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Two of the following:</td>
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<tr>
<td>Optics 253, 254</td>
<td>Spectrophotometry &amp; Radiometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optics 283, 284</td>
<td>Mechanical Design of Optical Instruments</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Optics 271, 272</td>
<td>Design of Lenses, Prisms, and Optical Systems</td>
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</tr>
<tr>
<td>Elective</td>
<td>Group II or I</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td>Group IV</td>
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B.S. DEGREE IN OPTICS—CURRICULUM 2

Identical with Curriculum 1 for the first two years

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<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td><strong>Junior Year</strong></td>
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</tr>
<tr>
<td>Optics 161</td>
<td>Geometrical &amp; Physical Optics</td>
<td>3</td>
</tr>
<tr>
<td>Optics 242</td>
<td>Testing of Optical Units &amp; Lens Systems</td>
<td>3</td>
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<tr>
<td>Optics 257</td>
<td>Photography</td>
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<tr>
<td>Optics 152</td>
<td>Physiological Optics</td>
<td>4</td>
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<tr>
<td>E.E. 159, 160</td>
<td>Electrical Engineering</td>
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<td>or</td>
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<tr>
<td>E.E. 157, 158</td>
<td>Elementary Electrical Engineering I &amp; II</td>
<td>4</td>
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<tr>
<td>Elective</td>
<td>Mathematics</td>
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<td>Elective</td>
<td>Group I or II</td>
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<table>
<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td><strong>Senior Year</strong></td>
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</tr>
<tr>
<td>Optics 261, 262</td>
<td>Physical Optics I &amp; II</td>
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<tr>
<td>Two of the following:</td>
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<tr>
<td>Optics 253, 254</td>
<td>Spectrophotometry &amp; Radiometry</td>
<td>6</td>
</tr>
<tr>
<td>Optics 283, 284</td>
<td>Mechanical Design of Optical Instruments</td>
<td>6</td>
</tr>
<tr>
<td>Optics 271, 272</td>
<td>Design of Lenses, Prisms, and Optical Systems</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td>Group IV or Engineering</td>
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<td>Elective</td>
<td>Group II or I</td>
<td>3</td>
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</table>

242. The Testing of Optical Units and Lens Systems. A laboratory course covering the usual methods of visual, instrumental, and photographic testing of lens and prism systems.

_Credit—three hours._

Two lectures, one lab period a week.

_Fall term._

Mr. Hopkins


_Credit—three hours._

Two lectures, one lab period a week.

_Fall term._

Mr. Hopkins

271. The Design of Lenses, Prisms, and Optical Systems. A course of lectures on systematic methods of lens design giving a thorough grounding in the fundamental properties of the aberrations and their removal in given cases. The lectures are followed by a computing period in which actual lens systems will be designed by the students.

_Credit—four hours._

Three hours lecture.

One two-hour class period a week.

_Fall term._

Mr. Kingslake, Mr. Hopkins

272. The Design of Lenses, Prisms, and Optical Systems. A continuation of Optics 271 which is prerequisite.

_Credit—four hours._

Three hours lecture.

One two-hour class period a week.

_Spring term._

Mr. Kingslake, Mr. Hopkins

PHYSICAL OPTICS

161. Physical and Geometrical Optics. An introduction to the phenomena of interference, diffraction, polarization, and image formation by thin lenses and mirrors.

_Credit—three hours._

Two lectures, one three-hour lab a week.

_Spring term._

Mr. Givens
261. Physical Optics I. A course requiring adequate mathematical preparation, which treats the phenomena of the propagation of light. Electromagnetic theory as applied to propagation reflection and refraction.

*Credit—three hours.*
Two lectures, one three-hour lab a week.
Fall term.
Mr. Givens

262. Physical Optics II. A continuation of Optics 261 covering double refraction, interference, and diffraction. Optics 261 prerequisite.

*Credit—three hours.*
Two lectures, one three-hour lab a week.
Spring term.
Mr. Givens

263. Polarized Light. An examination of the 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.

*Credit—three hours.*
Two lectures, one three-hour lab a week.
Omitted 1959-60.


*Credit—three hours.*
Three hours a week.
Spring term.
Mr. Boynton

PHYSIOLOGICAL OPTICS

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.

*Credit—three hours.*
Three hours a week.
Spring term.
Mr. Boynton

251. Advanced Physiological Optics. A detailed discussion of selected topics pertaining to the visual process. Optics 152 or permission of the instructor prerequisite. Ordinarily given in alternate years.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.


*Credit—three hours.*
Three hours a week.
Omitted 1959-60.

253. Spectrophotometry and Radiometry I. A course dealing with the theories and the techniques involved in radiometric measurements. Particular attention will be given to errors in experimental results, sources of noise and the practical and theoretical limitations to radiation detectors. Special topics relating to radiometric and photometric problems of the out-of-doors will be discussed.

*Credit—three hours.*
Two lectures, one lab a week.
Fall term.
Mr. Stewart
254. Spectrophotometry and Radiometry II. The instruments used for spectrophotometry will be studied with emphasis on the practical and theoretical limits to sensitivity, resolution and range. Special topics in infrared techniques of detection will be discussed in terms of the spectral characteristics of the sources, the atmosphere and the components of the detectors.

Credit—three hours.
Two lectures, one lab a week.
Spring term.
Mr. Stewart

PHOTOGRAPHY

257. Photography. An introductory course in the 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.

Credit—three hours.
Two-hour lecture, two-hour lab a week.
Fall term.
Mr. Evans

258. Advanced 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 and nuclear particle radiation; analysis of subtractive color processes.

Offered only in University School.

Credit—three hours.
One lecture, one three-hour lab a week.
Spring term.

MECHANICAL DESIGN

185. Mechanical Drawing and Instrument Design I. An introduction to the general principles of mechanical design, of the different applied projection systems and of applied descriptive geometry; sketching and designing of mechanical parts involved in optical instrument design.

Credit—one hour.
Spring term.
Mr. Evans


Credit—one hour.
Omitted 1959–60.

283. Mechanical Design of Optical Instruments I. A study of components and applications of optical instruments: optical condensers and relays, zoom systems, prisms, optical gauges, stereoscopy, graphic ray tracing, and electron optics. Special optical devices: image dissectors, optical timers, continuous projectors, shutters and rangefinders. Laboratory: elements of instrument design such as lens mounts, bearings and slides; design drawing problems; analysis of the finished instrument, and laboratory experiments.

Credit—three hours.
Two hour lecture, a two hour lab period a week.
Fall term.
Mr. Evans


Credit—three hours.
Two hour lecture, a two hour lab period a week.
Spring term.
Mr. Evans

OPTICAL PROPERTIES OF SOLIDS

223. Electronic Properties of Solids. Selected topics in solid-state physics and physical electronics. The subjects considered include energy band theory of solids, conduction in solids, thermionic and photoelectric emission, gaseous electronic conduction, semiconductors, dielectrics, crystalline imperfections, luminescence, photoconductivity, and others. Atomic physics (Physics 115 or equivalent) prerequisite.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Dutton

225. Introduction to the Theory of the Solid State. An introductory course dealing with the fundamental properties of crystalline solids. Particular attention will be given to the electron motions in the solid and the effect of these motions on the physical properties of the solid. Special emphasis will be given to the optical properties of solids. (Offered in University School)

Credit—three hours.
Three hours a week.
Philosophy
Professor Beck; Associate Professors Stolnitz (on leave), Turbayne; Instructor Stewart; Assistants.

Students concentrating in Philosophy may, with the approval of the Department and the Division of Honors Studies, include in their programs of concentration one or more Honors Seminars, normally to be taken in the senior year. For Honors Seminars in Philosophy see page 130.

Colloquia for all students concentrating in philosophy are held throughout the academic year. These colloquia are planned so as to help the students to integrate the knowledge and skills gained in their several courses and to prepare them for the comprehensive examination.

Philosophy 101, 102 are among the courses meeting the Group II requirements for the A.B. degree (cf. p. 105). Philosophy 252 meets the comprehensive examination requirement for students in the General Science program.

A SAMPLE A. B. PROGRAM IN PHILOSOPHY
Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>First Term</th>
<th>Second Term</th>
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<td>Engl. 101-102</td>
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<tr>
<td>Phil. 101*</td>
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*Required of all majors in Philosophy.
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<tr>
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<td>Hist. 101-102</td>
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<td>Biol. 101-102</td>
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<td>Phys. 101-102</td>
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<td>Germ. 101-102</td>
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<td>French 101-102</td>
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<td>Phys. Ed.</td>
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<td>Engl. 103-104</td>
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<td>or Engl. 111-112</td>
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<td>Germ. 103-104</td>
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<td>or French 103-104</td>
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<td>Psych 101-102</td>
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<td>or Math. 101, 104</td>
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<td>Phil. 104 *</td>
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<td>Phil. 107 *</td>
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<td>or Phil. 216 *</td>
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<td>Sophomore Year</td>
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<td>or Math. 101, 104</td>
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<td>or Phil. 216 *</td>
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<td>Phil. 252</td>
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<td>Senior Year</td>
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<td>Phil. 211</td>
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<td>Phil. 244</td>
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<td>Electives</td>
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**PHILOSOPHY**

*Required of majors in Philosophy.

1It is strongly recommended that students preparing for graduate and professional work in Philosophy enter the Honors Program at the beginning of the third year.

Students who do not go into the Honors Division should take, during their last two years, the following courses in Philosophy 205, 221, 252, 211, and 244 and/or one or more honors seminars. The remainder of the program should be made up of advanced courses (and their prerequisites) in any field or fields of interest to the students. Depending upon the student's interests and professional plans, programs can be arranged comprising courses in almost any other department in the College of Arts and Science.

Students planning to enter graduate school for advanced work in philosophy should study both French and German; if their interest is in logic, work in mathematics is especially recommended.
101. **Introduction to Philosophy.** Critical examination of some of the central beliefs and methods of thinking in common sense, science, and religion. Such topics as: 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.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Beck, Mr. Turbayne, assistants

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.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Beck, Mr. Turbayne, assistants

103. **Plato.** A study of Plato’s historical influence on the development of Western thought and culture, and his significance for the problems of our own time. The problems discussed include: the reason for obeying the laws of society, the relation between knowledge and happiness, the strengths and weaknesses of democratic government. Readings in the trial and death of Socrates, and the *Republic.*

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Stolnitz

104. **History of Modern Philosophy.** An introduction to modern philosophy through a study of important philosophers from the seventeenth to the nineteenth centuries, and of their position in the cultural history of the West.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Beck

107. **Logic.** An elementary course in the methods and rules of thinking correctly, of avoiding common fallacies, and of effectively organizing information. Practical applications of basic logic, semantics, and scientific methods.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Stewart

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.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Stewart

**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.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Turbayne
216. **Formal Logic.** A study of the foundations of logic. Introduction to symbolic logic and its applications.

*Credit—three hours.*
Three hours a week.
*Fall term.*
Mr. Stewart

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 2.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Stolnitz

237. **Contemporary Social and Political Philosophy.** An introduction to the fundamental philosophical ideas implicit in contemporary discussions of social and political order, causation, knowledge, and value. A critical examination of the philosophical structure of Marxism, the theory of democratic institutions, and the fascist critique of both Marxist and non-Marxist theories of democracy.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Stolnitz

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 the "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.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Stolnitz

244. **The Philosophy of Criticism.** Examination of the meaning of value-judgments in the arts; whether and by what means such judgments can be confirmed; the problems of "good taste". Analysis of the validity and scope of the principles employed in criticism of the arts, including literature. Readings in critical texts and application to specific works of art.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.
Mr. Stolnitz

252. **Philosophy of Science.** A detailed study of the presuppositions, methods, and philosophical and cultural implications of the scientific enterprise; problems in the methodology of the natural and social sciences.

*Credit—three hours.*
Three hours a week.
Spring term.
Mr. Stewart

**Mathematical Logic.** (See Mathematics 220)

282. **The Organization of Knowledge.** A study, both historical and philosophical, of the basic presuppositions underlying the natural and social sciences, the humanities, and religion, their bearing upon each other, and their implications for man's conception of himself and of his place in the world.

*Credit—three hours.*
Three hours a week.
Omitted 1959-60.

291. **Reading Course.** The reading of philosophical literature under guidance. This course is planned primarily in the interest of seniors majoring in philosophy, and other students may register only with the consent of the chairman of the Department of Philosophy.

*Credit—two or three hours.*

Staff

292. **Reading Course.** A continuation of 291.

*Credit—two or three hours.*

Spring term.

Staff
Physical Education for Men

Professors Alexander, Burnham; Associate Professors Bitgood, Speegle; Assistant Professor Brown; Instructors Phillips, Smith.

The aim of the department is to provide physical activity and recreation for the students, to stimulate interest in a wide variety of individual and team games, 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.

101. Physical Education I. Required of all freshmen. Instruction is provided in swimming, tennis, handball, basketball, softball, track, volleyball, wrestling, soccer, tumbling, and apparatus.

   Credit—one hour.
   Three hours a week.
   Fall term
   Staff

103. Physical Education II. A continuation of Physical Education 101.

   Credit—one hour.
   Three hours a week.
   Spring term
   Staff

111. 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, softball, track, volleyball, wrestling, soccer, golf and badminton.

   Credit—one hour.
   Three hours a week.
   Fall term
   Staff

113. Physical Education II. A continuation of Physical Education 111.

   Credit—one hour.
   Three hours a week.
   Spring term
   Staff
Physical Education for Women

Professor Spurrier; Instructors, Miss Hughes, Miss Khouri, *Mrs. Mason, *Mrs. Sanders, Mrs. Van Arsdale.

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. Each girl buys a regulation costume and provides her own tennis racquet. Other equipment is furnished. The activities are taught for a period of eight weeks during four seasons: Fall, Winter I, Winter II, and Spring.

102. Physical Education I. Each girl is required to take a season of fundamentals of movement or an introductory course in rhythm; a safety proficiency swimming test is given. Those who do not qualify are expected to enroll for one season of swimming. Activities for remaining seasons are elective.

  Credit—one hour.
  Three periods a week.
  Staff
  Fall term.

104. Physical Education II. A continuation of 102.

  Credit—one hour.
  Three hours a week.
  Staff
  Spring term.

112. Physical Education I. Each girl is expected to enroll for one season of instruction in a sport if it was not elected during her freshman year. Activities for the remaining seasons are elected from the following:

  Fall: Archery, field hockey, modern dance, soccer, swimming, tennis.
  Winter: Badminton, basketball, diving, modern dance, swimming, trampoline, volleyball.
  Red Cross Life Saving is offered.

  Credit—one hour.
  Three periods a week.
  Staff
  Fall term.

114. Physical Education II. A continuation of 112.

  Spring: Archery, diving, golf, Lacrosse, modern dance, softball, swimming, tennis.
  Water Safety Instructor's Course is offered.

  Credit—one hour.
  Three hours a week.
  Staff
  Spring term.

*Part-time.
Physics and Astronomy

Professors Marshak, Barnes, Fulbright, *Givens, Roberts; Associate Professors Childs, *Dexter, French, Goebel, Hafner, Kaplon, Savedoff, Tinlot;
Senior Research Associate Heer; Assistant Professors Alford, Bilaniuk,
*Dutton, Helfer, *Keenan, Sudarshan; Research Associate and
*Assistant Professor de Swart; Instructors Fazio, Klarmann,
Melissinos, Warner; Research Associates Gotow, Nigam;
Technical Associate and Director of Research Budgets and Services Mortenson; Technical Associates Dungan, Hamann, Hawrylak; Assistant to the Chairman Jamison.

THE COURSE IN PHYSICS

The Department of Physics and Astronomy offers programs leading to the A.B. and B.S. degrees in Physics and Astrophysics. The Astrophysics program is described on page 211. The Department also makes available a choice between two introductory sequences in physics for students in related fields, and offers several additional upperclass courses that are attractive to non-specialists.

A student entering a physics program must have high standing in his preparatory courses in science and mathematics. In particular, he should have begun a study of calculus or be prepared to begin it in his first college term. His enrollment in a physics program is subject to the approval of the Chairman of the Department or his representative. Such approval is granted to a B.S. candidate at the beginning of his Freshman year, and to an A.B. candidate at the beginning of his Junior Year. Upon entering the College, students are screened by the Department in order to assign them to the appropriate introductory course. A conscientious effort is made to scrutinize the progress of all students in these courses, and to facilitate early transfers from one to the other when such a move is evidently in the interest of the student concerned.

The Department offers continuing advice to each of its upperclass students, bearing in mind his plans for the future. The program for the Junior and Senior years may be varied to give the training in physics, mathematics, and related fields that seems most appropriate for each student. Physics 221–222 and Mathematics 200 and 201 are required of all students. Physics 231–232 and 241–242, and Mathematics 260 and 261 are strongly recommended for students planning to pursue graduate study.

A typical concentration leading to the A.B. in Physics is given below. It should

*Part-time.
be regarded as a minimum program in physics and mathematics, and should be supplemented by at least one additional upperclass course in each field if it is to serve as adequate preparation for graduate study. The program leading to the B.S. in Physics is less flexible, but nevertheless provides a reasonable opportunity for a student to avoid overspecialization.

### SAMPLE A.B. PROGRAM IN PHYSICS

#### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>1st Term</th>
<th>2nd Term</th>
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<tbody>
<tr>
<td>Phys. 107-108</td>
<td>Physics I</td>
<td>4</td>
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<tr>
<td>Phys. 101-102</td>
<td>General Physics A</td>
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<tr>
<td>Math. 110, 111</td>
<td>Calculus</td>
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<td>Math. 100, 101</td>
<td>Introductory College Mathematics</td>
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<td>Engl. 101-102</td>
<td>English Composition</td>
<td>3</td>
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<tr>
<td>Chem. 123, 124</td>
<td>General Inorganic Chemistry</td>
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<tr>
<td>Phys. Ed.</td>
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#### Sophomore Year

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<tr>
<td>Phys. 117-118</td>
<td>Physics II</td>
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<tr>
<td>Phys. 111-112</td>
<td>General Physics B</td>
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<tr>
<td>Math. 160, 161</td>
<td>Differential Equations</td>
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<tr>
<td>Math. 150, 151</td>
<td>Intermediate Calculus</td>
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<tr>
<td>Engl. 103-104</td>
<td>Introduction to Literature</td>
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<td>Modern foreign language</td>
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#### Junior Year

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<tr>
<td>Opt. 161</td>
<td>Geometric and Physical Optics</td>
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<tr>
<td>Math. 200, 201</td>
<td>Advanced Calculus</td>
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#### Senior Year

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<th>Description</th>
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<tbody>
<tr>
<td>Phys. 221-222</td>
<td>Electricity and Magnetism</td>
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<td>Math. 260, 261</td>
<td>Analysis</td>
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<td>Math. 236, 237</td>
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<td>Math. 216, 217</td>
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**B.S. IN PHYSICS**

**Freshman Year**

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<tr>
<td>Phys. 107-108</td>
<td>Physics I</td>
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<tr>
<td>Math. 110, 111</td>
<td>Analytic Geometry &amp; Calculus</td>
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<td>Engl. 101-102</td>
<td>English Composition</td>
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<td>Chem. 123, 124</td>
<td>General Inorganic Chemistry</td>
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<td>Phys. Ed.</td>
<td>Physical Education</td>
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**Sophomore Year**

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<tbody>
<tr>
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<tr>
<td>Math. 160, 161</td>
<td>Differential Equations</td>
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<tr>
<td>Engl. 103-104</td>
<td>Introduction to Literature</td>
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<td>Modern Foreign Language</td>
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**Junior Year**

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<tr>
<th>Course</th>
<th>Title</th>
<th>1st Term</th>
<th>2nd Term</th>
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</thead>
<tbody>
<tr>
<td>Phys. 221-222</td>
<td>Electricity &amp; Magnetism</td>
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<tr>
<td>Phys. 224</td>
<td>Introductory Electronics</td>
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<td>Phys. 230</td>
<td>Thermodynamics</td>
<td>3</td>
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<tr>
<td>Optics 261</td>
<td>Geometric and Physical Optics</td>
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<tr>
<td>Math. 200, 201</td>
<td>Advanced Calculus</td>
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**Senior Year**

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<th>Course</th>
<th>Title</th>
<th>1st Term</th>
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<tbody>
<tr>
<td>Phys. 283-284</td>
<td>Senior Laboratory</td>
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<td></td>
<td>Phys. 231-232</td>
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<td>Phys. 241-242</td>
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<td>Math. 260, 261</td>
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<td>EE 240, 241</td>
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<tr>
<td>Electives</td>
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</tbody>
</table>
The Course in Astrophysics has been introduced primarily to provide training for those students considering graduate work in Astronomy, Astrophysics or related subjects. The course of study contains sufficient training in Physics so that election of this degree does not exclude the student seeking employment or further education in Physics. Enrollment in this course is restricted to students of high standing in Science and Mathematics. The Freshman and Sophomore courses are identical with the Course in Physics. Those students carrying the Course in Physics must elect the Astrophysics program during their Junior Year. For further information consult the Chairman of the Department or his representative for Astrophysics.

**B.S. IN ASTROPHYSICS**  
**Freshman Year**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>Engl. 101-102</td>
<td>English Composition</td>
<td>3</td>
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<tr>
<td>Math. 110, 111</td>
<td>Analytic Geometry and Calculus</td>
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<td>Physics 107-108</td>
<td>Physics I</td>
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<tr>
<td>Chem. 123, 124</td>
<td>General Inorganic Chemistry</td>
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<tr>
<td>Phy. Ed.</td>
<td>Physical Education</td>
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| Total         |                                     | 15       | 15       |
Sophomore Year

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<tbody>
<tr>
<td>Math. 160, 161</td>
<td>Analytic Geometry, Calculus and Differential Equations</td>
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<tr>
<td>Phys. 117-118</td>
<td>Physics II</td>
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<tr>
<td>Engl. 103-104</td>
<td>Introduction to Literature</td>
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Junior Year

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<tbody>
<tr>
<td>Ast. 203</td>
<td>Solar System</td>
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<tr>
<td>Math. 200, 201</td>
<td>Advanced Calculus</td>
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<td>Optics 261</td>
<td>Geometrical and Physical Optics</td>
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<td>Physics 221-222</td>
<td>Electricity and Magnetism</td>
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<tr>
<td>Physics 230</td>
<td>Heat and Thermodynamics</td>
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Senior Year

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<tbody>
<tr>
<td>Ast. 203</td>
<td>Stellar Astronomy</td>
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<td>Ast. 204</td>
<td>Introduction to Astrophysics</td>
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<td>Phys. 231-232</td>
<td>Introduction to Classical Physics</td>
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<td>Phys. 241-242</td>
<td>Modern Physics</td>
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Physics

101–102. General Physics A. An introduction to the primary phenomena and fundamental concepts of physics. The concepts are developed as logical conclusions from observations of pertinent lecture demonstrations. Calculus is not required. The subjects covered in the lectures are Mechanics, Heat, Sound, Electricity, and Magnetism, Light, and Atomic and Nuclear Physics. The laboratory experiments illustrate various major principles characteristic of all but the last of the above fields.

Credit—eight hours.
Two lectures, one recitation, one lab a week.
Fall through Spring.

105. General Physics for Nurses. A course of selected topics in general physics. Although primarily designed to meet the needs of students taking the B.S. in Nursing, this course is open to any student wishing to take a term course in general physics.

Credit—four hours.
Two lectures, one recitation and one lab a week.
Fall term.

107–108. Physics I. A rigorous and intensive introductory course, covering topics in mechanics, wave motion, and thermodynamics. The lectures provide demonstrations of fundamental phenomena in physics, but empha-
sis is placed on the theoretical development of ideas. Frequent use is made of vector analysis and elementary differential and integral calculus. The laboratory problems require thoughtful and independent work; there may be opportunities for exceptional students to carry out original projects. High school physics is prerequisite; Mathematics 110, 111 to be taken concurrently. Students electing this course must be planning to take Physics 117-118 in a subsequent year.

Credit—eight hours.
Three lectures, one recitation, one lab a week.
Fall through Spring.

111–112. General Physics B. An extension of general physics for students who have completed Physics 101–102 and who desire further training in physics. The topics emphasized are statics, dynamics, thermodynamics and electromagnetism. Elementary calculus is used throughout; students should be taking Mathematics 150, 151 or 160, 161 concurrently. The laboratory work can be omitted from the course, with reduction of credit to six hours.

Credit—eight hours.
Two lectures, one recitation, one lab per week.
Fall through Spring.

113. Introduction to Modern Physics. A survey of the field of atomic physics with particular emphasis on the general significance of recent developments. The course is intended primarily for students in other departments. Introductory physics and calculus prerequisite.

Credit—three hours.
Three lectures a week.
Fall term.

114. Introduction to Nuclear Physics. A study of nuclei and nuclear processes with emphasis on new methods and applications. Includes structure of the nucleus, nuclear transformations, fission, methods of producing high energy particles, counting techniques. Applications to the fields of chemistry and biology are discussed. Prerequisites: introductory physics, Physics 113 or 115, calculus.

Credit—three hours.
Three lectures a week.
Spring term.

117–118. Physics II. A continuation of Physics 107–108, covering topics in electromagnetism, optics, and modern physics. The mathematical level of the discussion is designed to keep pace with the student's development; it is required that he be taking Mathematics 160, 161 concurrently. Laboratory work is carried out in the same spirit as in 107–108, but the experiments are more sophisticated. Admission to this course is contingent upon satisfactory performance in Physics 107–108.

Credit—eight hours.
Three lectures, one recitation, one lab a week.
Fall through Spring.

221–222. Electricity and Magnetism. An advanced course in electromagnetic theory emphasizing the field point of view. Calculation of electric and magnetic fields; Maxwell's equations and electromagnetic waves; elementary radiation theory; the motion of charged particles in electric and magnetic fields. The application of classical electromagnetism to current problems in physics will be discussed insofar as time permits. Physics 117–118 is prerequisite, or Physics 111–112 with consent of the instructor. Mathematics 200, 201 is recommended, and may be taken concurrently.

Credit—six hours.
Three lectures a week.
Fall through Spring.

224. Introductory Electronics. Physical principles of vacuum tubes and transistors; linear circuit theory; linear equivalent circuits involving vacuum tubes and transistors; linear amplifiers with and without feedback; power supplies; an introduction to non-linear and switching modes of vacuum tube and transistor circuits; the application of electronic devices to physical measurements. Physics 117–118 or 111–112 is prerequisite.

Credit—three hours.
Two lectures, one lab a week.
Spring term.

230. Thermodynamics. A survey of thermodynamics, both from the classical and the statistical point of view. Topics covered include the concept of temperature, the three laws of thermodynamics and some of their consequences, followed by an introduction to statistical mechanics. Physics 107–108 or 111–112 is prerequisite, and students must have a prior knowledge of partial derivatives and multiple integrals.

Credit—three hours.
Three lectures a week.
Fall term.

231–232. Introduction to Classical Physics. Dynamics of systems of particles; Lagrange's equations; theory of rigid bodies; theory of small vibrations; elasticity; hydrodynamics. Physics 107–108 and Mathematics 200, 201 or
260, 261 prerequisite. May be taken concurrently with the consent of the instructor.

**Credit—six hours.**
Three lectures a week.
Fall through Spring.
Mr. Tinlot

241-242. **Modern Physics.** The concepts and phenomena of atomic and nuclear physics are studied, following an introduction to elementary wave mechanics. Physics 221–222 and Mathematics 200, 201 are prerequisite.

**Credit—six hours.**
Three lectures a week.
Fall through Spring.

283–284. **Senior Laboratory.** An introduction to important techniques of modern research in the fields of atomic and nuclear physics. Such experiments as beta and gamma spectroscopy and absorption, mass spectroscopy, X-ray diffraction, detection of nuclear particles, magnetic resonance, and measurements of atomic constants are performed with equipment of high calibre. The recitations provide an opportunity for the student to report on individual experiments, and to improve his understanding of the theoretical basis for the work. Prerequisites: Physics 221–222, 224; Mathematics 200, 201; or consent of instructor.

**Credit—six hours.**
One recitation and two labs a week.
Fall through Spring.
Mr. Roberts


**Credit to be arranged.**
Fall through Spring.

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**Astronomy**

103. **General Astronomy.** A descriptive, non-mathematical course designed to provide the student with a general knowledge of the universe as well as some understanding of the methods by which such knowledge is attained. When weather permits, evening observations will be made.

**Credit—three hours.**
Three hours a week.
Spring term.
Mr. Savedoff, Mr. Helfer

202. **Solar System.** A comprehensive discussion of the sun, its planets, and other dependents. Topics included are: time; celestial coordinates; navigation; the earth as an astronomical body; elementary celestial mechanics; the sun (in so far as it affects the planets); the planets; satellites; minor planets; comets and meteors; physical conditions in the solar system; origin of the solar system. Prerequisites: Math. 150, 151 and Physics 111–112. Astronomy 103 is not a prerequisite.

**Credit—three hours.**
Three hours a week.
Offered first in 1959–60 and alternate years thereafter.

204. **An Introduction to Astrophysics.** This course is concerned primarily with applications of atomic and nuclear physics in Astronomy. Topics included are: Masses, radii, luminosity and temperatures of the stars; descriptive atomic spectroscopy; thermodynamics and stellar spectra; nuclear reactions of astronomical interest; energy sources of the sun and stars; white dwarfs; stellar evolution. Prerequisites: Math. 150, 151 and Physics 111–112 and 241. Astronomy 103 is not a prerequisite.

**Credit—three hours.**
Three hours a week.
Offered first in 1959–60 and alternate years thereafter.

205. **Stellar Astronomy.** A description of the universe in which we find our solar system. Topics included in this course are: position and distances of stars; brightness of stars as distance measure; motions of the fixed stars; relation of these motions to galactic structure; double stars; star clusters; interstellar dust and gas; radiohydrogen and our galaxy; the external galaxies; cosmological problems; origin of stars and clusters; origin of the universe. Prerequisites: Math. 150, 151 and Physics 111–112. Astronomy 103 is not a prerequisite.

**Credit—three hours.**
Three hours a week.
Offered first in 1959–60 and alternate years thereafter.

295. **Reading or Research in Astronomy.** Normally open to seniors majoring in physics and astronomy.

**Credit to be arranged.**
One to three hours a week.
Political Science

Professors Diez, Wiltsey; Visiting Professor Dean; Assistant Professors Bluhm, Fenno, Scher.

Political Science 101 and 102 are prerequisite to all other courses in Political Science except by special permission of the Department. A program of concentration in Political Science includes satisfactory completion of thirty-six hours beyond introductory courses, of which twenty-seven hours must be in Political Science. Courses in the concentration program will be chosen by students in consultation with the departmental adviser. Students must offer a minimum of two courses in Political Science chosen from Group B and at least one course each chosen from Group A and Group C.

SAMPLE A.B. PROGRAM IN POLITICAL SCIENCE

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<thead>
<tr>
<th>Freshman Year</th>
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<td>Hours</td>
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<tr>
<td>Engl. 101-102</td>
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<tr>
<td>Pol. Sci. 101</td>
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<td>Pol. Sci. 102</td>
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Sophomore Year

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<td>Psych. 101-102</td>
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<td>Pol. Sci. 261</td>
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Junior Year

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<td>Pol. Sci. 271</td>
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<td>Pol. Sci. 298</td>
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Senior Year

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<td>Pol. Sci. 282</td>
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<tr>
<td>Pol. Sci. 285</td>
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<tr>
<td>Electives</td>
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101. **European Political Systems.** A comparative study of the background, political processes, institutions, and ideologies of selected European states including Great Britain, France, West Germany, and the Soviet Union.

*Credit—three hours.*

Three hours a week.

Fall term.

Staff

102. **The American Political System.** An examination of the background, political processes, institutions, and ideologies of the United States with comparative illustrations drawn from the governmental systems studied in Political Science 101. Political Science 101 is a prerequisite.

*Credit—three hours.*

Three hours a week.

Spring term.

Staff

Group A. **International Relations and Foreign Political Systems**

251. **International Politics I.** An examination of the nature, environment, and objectives of nation-states and other significant groups.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Diez

252. **International Politics II.** An examination of processes, techniques, and patterns of behavior characteristic of international politics. Prerequisite: Political Science 251.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Diez

253. **Contemporary India and Its Role in World Affairs.** A consideration of the emergence of independent India from centuries of historical struggle to achieve a united country, beginning with earliest times. Political, economic, social, and cultural developments in contemporary India, and the effect of these developments on India's foreign policy.

*Credit—three hours.*

Three hours a week.

Fall term.

Mrs. Dean.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Diez

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.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Fenno

271. The Politics of Administration. A study of the decision-making process in American public agencies. The internal power relations and the primary external sources of influence—political parties, legislatures, pressure groups, elected executives, and courts—are considered.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Scher

273. The American Regulatory Process. An analysis of the work of administrative agencies that have power to affect private rights. Emphasis will be placed on goals, powers, and procedures of administrative action and the pattern of restraints imposed through judicial review.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Wiltsey

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.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Wiltsey

Group C. Political Theory

282. Civil Rights. An examination of the permissible limits of governmental restraints on private rights and liberties as determined by the American judiciary. Prerequisite: Political Science 281.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Wiltsey

285. Systematic Political Theory. A study of systematic political theories from Plato to Lasswell. Emphasis is placed upon an assessment of the universality of the great political theories and their relevance to the understanding of contemporary political systems.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Bluhm


Credit—three hours.
Three hours a week.
Spring term.
Mr. Bluhm

287. Theories of Peace and Freedom. An examination of the ideals of peace and freedom and their psychological and institutional foundations in some classic works of Western political theory.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Bluhm

298. 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 and open only to Political Science concentrators and graduate students in Political Science.

Credit—three hours.
Three hours a week.
Spring term.
Staff
Psychology


Concentration requirements: All students are required to complete Psychology 201-202 by the end of the Junior Year. Students are urged to include Psychology 242 and 214 in their programs. Those with interests in the biological sciences should include biology, physics, and chemistry as related courses. Those with interests in the social sciences should include biology, sociology, economics, and other social sciences. Students planning to pursue graduate studies in psychology should include Psychology 209 and seek a broad foundation in other disciplines, including the above-named, mathematics and philosophy to the extent possible. Such students should consult with a departmental adviser at the earliest possible date.

*Part-time.
SAMPLE A.B. PROGRAM IN PSYCHOLOGY
This particular program gives emphasis to the natural science status of Psychology. Programs with other emphases would be radically different.

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<td><strong>Eng. 101-102</strong></td>
<td>English Composition</td>
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<td><strong>Hist. 101-102</strong></td>
<td>Introduction to Contemporary Civilization</td>
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<td><strong>Phil. 101</strong></td>
<td>Introduction to Philosophy</td>
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<td><strong>Phil. 102</strong></td>
<td>Ethics</td>
<td>3</td>
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<tr>
<td><strong>Phys. 101-102</strong></td>
<td>General Physics A</td>
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<tr>
<td><strong>Math. 110, 111</strong></td>
<td>Analytic Geometry and Calculus</td>
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<tr>
<td><strong>Math. 150, 151</strong></td>
<td>Intermediate Calculus</td>
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<td><strong>Psych. 101-102</strong></td>
<td>Introduction to Psychology</td>
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<td>3</td>
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<tr>
<td><strong>Biol. 101-102</strong></td>
<td>General Biology</td>
<td>4</td>
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<tr>
<td><strong>Chem. 121, 122</strong></td>
<td>General Chemistry</td>
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<th>Junior Year</th>
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<tr>
<td><strong>Psych. 201-202</strong></td>
<td>Experimental Psychology</td>
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<tr>
<td><strong>Psych. 209</strong></td>
<td>Statistics in Psychology</td>
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<tr>
<td><strong>Psych. 242</strong></td>
<td>Social Psychology</td>
<td>3</td>
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<tr>
<td><strong>Chem. 161-162</strong></td>
<td>Organic Chemistry</td>
<td>4</td>
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<tr>
<td><strong>Germ. 101-102</strong></td>
<td>Elementary German</td>
<td>3</td>
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<td><strong>Elective</strong></td>
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<th>Senior Year</th>
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<tr>
<td><strong>Psych. 203</strong></td>
<td>Physiological Psychology</td>
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<td><strong>Psych. 205</strong></td>
<td>Comparative Psychology</td>
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<tr>
<td><strong>Psych. 214</strong></td>
<td>Abnormal Psychology</td>
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<tr>
<td><strong>Psych. 220</strong></td>
<td>Psychology of Learning</td>
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<td><strong>Germ. 105</strong></td>
<td>Readings in Scholarly and Technical German Prose</td>
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<tr>
<td><strong>Germ. 106</strong></td>
<td>Special Technical Readings</td>
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<tr>
<td><strong>Biol. 125</strong></td>
<td>Comparative Chordate Anatomy</td>
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<tr>
<td><strong>Biol. 265</strong></td>
<td>Cellular Physiology and Metabolism</td>
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<td><strong>Phil. 252</strong></td>
<td>Philosophy of Science</td>
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<td>Group I or II</td>
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<tr>
<td><strong>Total</strong></td>
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<td>16</td>
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</table>
101–102. Introduction to Psychology. A systematic study of the principles of human behavior and experience, and the relation of psychological facts to everyday life. Lectures and class discussions supplemented by experiments and demonstrations. This course should be elected in the sophomore year. Prerequisite for all other courses in the department except 209. Prerequisite for all programs leading to a teacher’s certificate. Open to freshmen by special permission.

Credit—six hours.
Three hours a week.
Fall through Spring.
Mr. Spragg

201–202. Experimental Psychology. Techniques and methods in the experimental study of human behavior, motor coordination, sensory and perceptual processes, discrimination, experimental esthetics, conditioning, learning, memory, transfer and interference, thinking and reasoning, emotion, and personality. The experiments are selected on the basis of their factual content and their illustration of basic experimental designs and procedure in the analysis of human behavior. Psychology 101–102 and permission of departmental adviser prerequisite.

Credit—eight hours.
Six hours a week.
Fall through Spring.
Mr. Andreas


Credit—three hours.
Three hours a week.
Fall term.
Mr. Wendt

205. Comparative Psychology. The concepts of the science of behavior and the application of scientific method to the study of animal conduct. This course deals with the evolution of behavior and intelligence, the receptor control of activity, periodicity in behavior, and higher mental processes in animals. Psychology 101–102 prerequisite.

Credit—three hours.
Spring term.
Mr. Wendt

207. Psychological Analysis of Behavior in Groups. A course considering problems of the behavior of the individual in group settings. Emphasis is on the psychological analysis of small groups, of communication and persuasion processes in small groups as well as by mass media, and of other important areas of interpersonal relations. Open to a limited number of seniors and graduate students by permission of the instructor. Psychology 101–102 and Psychology 242 prerequisite.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Nowlis

209. Statistics in Psychology. An introduction to the application of statistical methods. Although the illustrations of the applications presented are taken primarily from the field of Psychology, the course will also be suitable for students interested in the application of statistical methods to sociology, education, and biology.

Credit—three hours.
Three hours a week.
Fall term.
Mr. Green

210. Child Psychology. A consideration of the development of the child in the periods before and immediately after birth, during infancy, and adolescence. Special attention will be given to the development of socialization, personality, emotion, language. Class lectures will be supplemented by demonstration films. Psychology 101–102 prerequisite.

Credit—three hours.
Three hours a week.
Spring term.
Mr. Flavell
211. **Mental Measurement.** A survey of the major findings in the field of psychological measurement. Individual differences in intelligence and personality traits are studied and an analysis made of the contribution of heredity, race, sex, and various environmental factors to these differences. Class demonstration of the principal tests. Psychology 101–102 prerequisite.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Zax

213. **Personality Dynamics.** A survey of the basic methods in studying personality. An analysis of factors determining the course of behavior and personality development. Emphasis on the study of modern personality theories as they bear on areas such as conflict, frustration, the defense mechanisms and allied phenomena. Consideration given to current research in the field. Psychology 101–102 prerequisite.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Cowen

214. **Abnormal Psychology.** A consideration of the etiological factors, clinical description, and treatment of personality aberrations, emphasizing the more serious forms of mental disorder. Class lectures are supplemented by demonstrations. Psychology 101–102 prerequisite.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Cowen

220. **Psychology of Learning.** An intensive study of psychological theory and findings which bear upon problems in conditioning and learning. Principles of transfer of training will be discussed in relation to their applicability to education and to other training situations.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Andreas

293. **Reading Course.** Supervised reading on topics not covered by existing courses or on specialized topics. Open only by special permission of the instructor.

Credits normally three hours each term.

Fall and spring term.

Staff

NOTE: For graduate courses in Psychology consult the Bulletin of the Graduate School.

297. **Special Problems Course.** The investigation, under guidance, of a special problem in experimental psychology and the presentation of the result of the research in a paper. Open only by special permission of the instructor.

Credits to be arranged.

Fall and spring terms.

Staff
Religion

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.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Hamilton

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.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Devadutt


*Credit—three hours.*

Three hours a week.

Omitted 1959-60.
Sociology and Anthropology

Professor J. Gittler (on leave); Assistant Professors Harper, Sangree; Instructor Marsey; Graduate Assistants.

A program of concentration in Sociology requires the satisfactory completion of a minimum of 24 and a maximum of 30 course hours beyond Sociology 101-102. Sociology 261 and 281 are required for all concentrators. Prerequisites to courses may be waived only with consent of instructor.

SAMPLE A.B. PROGRAM IN SOCIOLOGY

Freshman Year

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<td>Elective</td>
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<td>Elective Group II</td>
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<td>Elective Group III or IV</td>
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Sophomore Year

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<td>Soc. 112</td>
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Junior Year

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<td>Psych. 242</td>
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Senior Year

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<tr>
<td>Soc. 261</td>
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<tr>
<td>Electives Sociology</td>
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</table>

Total: 15
101–102. *Introduction to Sociology.* A survey of sociological principles and their application to everyday problems; an introduction to the study of social relationships; the interaction between human beings, socialization, group processes, analysis of institutions, social change, social problems. Prerequisite for all other courses in Sociology, except Sociology 111, 112.

*Credit—six hours.*
Three hours a week.
Fall through Spring.
Miss Marsey, Mr. Sangree

111. *Courtship and Marriage.* Dating, courtship and marriage; factors for success in marriage; marriage patterns in various cultures; changing marriage patterns in the United States. Open to juniors and seniors without prerequisite, or with the permission of the instructor.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.

112. *The Family and Problems of Family Adjustment.* The family in American culture; changing patterns of family life in the United States; contributions of the various fields of knowledge to the problems of family relations; family disorganization in the United States; analysis of cases of family readjustment. Open to juniors and seniors without prerequisite, or with the permission of the instructor.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.

221. *Population and Human Ecology.* World and United States population composition and distribution; social and cultural causes of population changes; problems of overpopulation and migration; analysis of population policies.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.

231. *Crime and Delinquency.* Extent and character of crime in the United States; social factors in the causation of crime; treatment and care of offenders; prevention of crime.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.
232. *Racial and Cultural Minorities.* Meaning of minorities; minority groups as objects of prejudice; analysis of types of prejudice and of proposed solutions in democratic society.

*Credit—three hours.*
Three hours a week.
Fall term.
Mr. Sangree

233. *Orientation to Social Work.* Introduction to the field of social work; social agency services in the United States.

*Credit—three hours.*
Three hours a week.

234. *Special Sociological Field Investigations.* Supervised field work; skills in gathering of data in real social situations; placements in selected community social agencies. Limited to senior concentrators only.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.

241. *Cultural Anthropology I.* Human origins; nature and meaning of culture; universals in culture; culture change and culture growth.

*Credit—three hours.*
Three hours a week.
Fall term.
Mr. Sangree

242. *Cultural Anthropology II.* Comparative cultures; cross-cultural analysis; ethnographic studies.

*Credit—three hours.*
Three hours a week.
Spring term.
Mr. Sangree

243. *Culture Areas of Negro (Sub-Saharan) Africa.* Major culture areas of Negro Africa; detailed ethnographic studies; nature and diversity of the indigenous social structure.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.
Mr. Sangree

251. *The Rural Community.* Changing characteristics of rural society; human relationships, values and institutions affected by changing population, technology, and agricultural practices; farmers' organizations.

*Credit—three hours.*
Three hours a week.
Omitted 1959–60.

252. *The Urban Community.* Growth and structure of the city; urban social relations.

*Credit—three hours.*
Three hours a week.
Spring term.
Miss Marsey

253. *Sociology of Industrial Relations.* Human relations in industry; sociology of industrial capitalism; the role of the informal group in the industrial plant; social organization, social change, and social disorganization in industrial relations; analysis of occupations and professions in industrial society.

*Credit—three hours.*
Three hours a week.
Spring term.
Mr. Harper

254. *Social Stratification.* Contemporary social classes as they bear upon power relationships, personality, ethnic patterns, cultural change; changes in patterns of stratification; differential fertility patterns; class consciousness.

*Credit—three hours.*
Three hours a week.
Spring term.
Miss Marsey
255. *Educational Sociology.* The school as an institution in society; the relation of the child to the school, of the school to the family; the school in the community. Sociology 101-102 or Education 200 are prerequisite, except by permission of the instructor.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Harper

256. *Social Institutions and Voluntary Associations.* Analysis of political and religious institutions; formal voluntary associations in American life.

*Credit—three hours.*

Three hours a week.

Spring term.

Miss Marsey

257. *Medical Sociology.* The social organization of a hospital; sociological analysis of the medical profession; doctor-patient relationships; nurse-patient relationships; social correlates of illness; sociological implications of mental illness.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Harper

261. *Sociological Analysis.* Systematic analysis of major concepts, propositions, and theories in sociology; integration of sociological fields. Open to seniors only.

*Credit—three hours.*

Three hours a week.

Spring term.

Mr. Harper

271. *Culture and Personality.* Relation of culture and social structure to the development of personality; analysis of national character; relation of subcultures and personality traits.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Sangree

272. *Collective Behavior.* A study of mass behavior and social unrest, including such topics as rumor, social movements, the crowd, the mob, mass communication and public opinion.

*Credit—three hours.*

Three hours a week.

Fall term.

Miss Marsey

242. *Social Psychology.* (See Psychology)

*Credit—three hours.*

Three hours a week.

Mr. Nowlis

281. *Methods of Social Research.* The formulation of research design; research techniques; gathering of data; analysis of data; review of specific research studies.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Harper

282. *Statistics in Sociology.* A survey of statistical methods applicable to sociology. Topics will include: descriptive statistics, probability and sampling, point estimation, confidence intervals, simple correlation.

*Credit—three hours.*

Three hours a week.

Fall term.

Mr. Harper

291. *Special Problems.* The investigation, under guidance, of a special problem in selected areas of sociology. By special permission of instructor only.

*Credit to be arranged.*

Fall and spring terms.

Staff

441. *Culture Contact and Social Change.* Problems of cultural diffusion; analysis of types of culture contact and cultural interchange; the nativistic movement; the charismatic leader and the legitimization of authority.

*Credit—three hours.*

Three hours a week.

Omitted 1959-60.

Mr. Sangree

461. *History of Social Theory.* Origin and development of early social thought; survey of social theory from ancient civilizations to middle of the 19th century.

*Credit—three hours.*

Three hours a week.

Omitted 1959-60.

462. *Contemporary Sociological Theory.* Analysis of writings of key figures including Max Weber, Simmel, Tonnies, Durkheim, Pareto, Karl Mannheim, Park and others; analysis of theoretical systems and schools.

*Credit—three hours.*

Three hours a week.

Omitted 1959-60.
The College of Education prepares undergraduate students for careers in teaching. The Division of Nursing Education, a unit of the College prepares registered nurses for positions of leadership and responsibility in the administrative and educational fields of nursing.

Teacher Education Programs

The teacher education programs at The University of Rochester are planned to include a broad liberal background, sound professional preparation, and specialization or concentration in academic fields.

Qualified students may follow programs of study which lead to the degree of Bachelor of Science and New York State certification for teaching in the elementary schools or provisional certification for teaching secondary school academic subjects.
Admission. All students who plan to major in Education and follow a career in teaching should apply for admission to the College of Education. This application should be submitted during the last semester of the second college year. Among the requirements for admission to the undergraduate teacher education degree programs are:

a. Completion of a minimum of 60 semester hours of selected course work.

b. A 2.0 honor point average based upon all course work taken prior to admission.

c. A satisfactory health record.

d. A strong desire to make teaching a career.

e. Satisfaction of any other admission standards and requirements established by the College of Education and acceptance by the Committee on Admissions of the College. During the first two years of college a prospective teacher should complete as many distribution requirements as possible and should include Education 200 and Psychology 101-102 in his program.

Transfer students from other colleges who are applying for junior or senior standing may be admitted into the College of Education through the Office of Admissions of The University of Rochester River Campus.

Each student in the College of Education is assigned a departmental counselor.
PROGRAM IN ELEMENTARY EDUCATION. A program is planned by the student and his counselor from the general outline below. It includes during the senior year a semester of full-time student teaching in schools of the Rochester area.

I. Distribution Requirements

A. English 101-102 (unless excused) 6 hours
B. Two courses from Group I 12 hours
C. Social Science 6 hours
   Chosen from Economics 151-152; History 101-102; Government 101, 102; Philosophy 101, 102, or Sociology 101-102
D. Science 12 hours
   One course approved for science distribution and Psychology 101-102

II. Education Requirements

A. Educational Foundations 3 hours
   Education 200
B. Educational Psychology 6 hours
   Education 210 and one other course chosen from Education 211, 212 or Psychology 210
C. Elementary School Methods 12 hours
   Education 220, 221, 222 and one other course chosen from Education 223, 224 or 225
D. Student Teaching 15 hours
   Education 228 and Education 229

III. Group Concentration Requirements

This requirement must be met by choosing 18 hours from one group and 12 hours from a second group exclusive of courses selected to fulfill the distribution requirement

IV. Physical Education 4 hours

V. Electives 24 hours

Total 130 hours

Students majoring in elementary education should include in their total college program at least 6 hours of geography and 6-12 hours in history, including American History. These courses may be part of the distribution requirements, the group concentration requirements or the general electives. Some course work in speech is highly desirable.

1 This program qualifies a student for a New York State certificate for teaching in elementary schools. It does not meet certification requirements in some states. Students who wish to prepare for certification in other states should consult a counselor in the College of Education.

2 See page 105 of this Bulletin.
Program in Secondary Education. An undergraduate student working toward a degree in the College of Education and preparing to teach an academic subject in the secondary schools, grades 7 through 12, will plan a program with the aid of his counselor according to the general outline below. This program requires that a student spend half of each day for a semester of his senior year in student teaching.

I. Distribution Requirements

A. English 101-102 (unless excused) 6 hours
B. Two courses from Group I 12 hours
C. Social Science 6 hours
   Chosen from Economics 151-152; History 101-102; Political Science 101, 102; Philosophy 101, 102, or Sociology 101-102
D. Science 12 hours
   One course approved for science distribution and Psychology 101-102

II. Education Requirements

Education 200 3 hours
Education 210 3 hours
Education 230 3 hours
Special Methods 3 hours
   (Education 231, 232, 234, 235 or 236)
Education 239 6 hours
Education electives 6 hours

III. Teaching Field

30-36 hours

IV. Physical Education

4 hours

V. Academic electives to make a total of 130 semester hours

30-36 hours

Total 130 hours

Students who wish to meet minimum certification requirements for secondary school teaching while earning degrees in other colleges of the River Campus should apply for admission to the Teacher Education Sequence no later than the end of the first semester of their junior year. Applications should be submitted to the College of Education office. Information concerning New York State certification requirements may be obtained from that office.

1This program will satisfy requirements for a New York State provisional certificate. To continue teaching academic subjects in the schools of the State a teacher must complete a fifth year of college work leading to the permanent certificate.

2See page 105 of this Bulletin.
Faculty
COLLEGE OF EDUCATION

Howard R. Anderson, PH.D. (Iowa)
Professor of Education

William A. Fullagar, Ed.D. (Columbia)
Professor of Education

Edward C. Merrill, Ph.D. (George Peabody College)
Professor of Education

Esther M. Thompson, R.N., A.M. (Columbia)
Professor of Nursing Education

Byron Burdette Williams, Ph.D. (Ohio State)
Professor of Education

Arthur L. Assum, A.M. (Ohio State)
Associate Professor of Education

Catherine C. Brophy, R.N., A.M. (Columbia)
Associate Professor of Nursing Education

Associate Professor of Education

Florence E. Dunn, R.N., A.M. (Columbia)
Associate Professor of Nursing Education

Frances Lucile Horler, Ph.D. (Chicago)
Associate Professor of Education

Gar W. Fairbanks, Ed.D. (Colorado State)
Assistant Professor of Education

Clarence M. Williams, M.A. (Michigan State)
Assistant Professor of Education

Dolores Graham, R.N., B.S. (Rochester)
Instructor in Nursing Education

Walter W. Bennett, Ed.M. (Rochester)
Lecturer in Education

Lillian T. Brooks, Ed.M. (Rochester)
Lecturer in Education

Clarence B. Eaufl, M.A. (Rochester)
Lecturer in Education

Lester B. Foreman, M.A. (Rochester)
Lecturer in Education

Joseph P. Garen, M.D. (Buffalo)
Lecturer in Nursing Education

Herman R. Goldberg, M.A. (Columbia)
Lecturer in Education

Estelle Hawley, Ph.D. (Rochester)
Lecturer in Nursing Education

Howard E. Kiefer, Ed.D. (Buffalo)
Lecturer in Education

Elisabeth C. Phillips, R.N., M.A. (Columbia)
Lecturer in Nursing Education

Catherine J. Sullivan, M.A. (Columbia)
Lecturer in Education

H. Carlisle Taylor, B.A. (Rochester)
Lecturer in Education

Carlos DeZafra, M.A. (New York University)
Associate Lecturer in Education

Lawrence K. Lipsett, Ed.D. (Buffalo)
Associate Lecturer in Education

Robert P. Dye, M.S. (St. Bonaventure)
Assistant Lecturer in Education

Assistant Lecturer in Education

H. Hunter Fraser, Ed.M. (Rochester)
Assistant Lecturer in Education

Vivian T. Harway, Ph.D. (Rochester)
Assistant Lecturer in Education

Abe A. Hollander, Ed.M. (Rochester)
Assistant Lecturer in Education

Paul Knoke, B.S. (Wisconsin)
Assistant Lecturer in Education

Mary A. McCafferty, M.S. (Geneseo)
Assistant Lecturer in Education

Edna Weeks Smith, B.S. (New York University)
Assistant Lecturer in Education

Elizabeth Zuehlke, B.S. (Western Reserve)
Assistant Lecturer in Education

*Part-time.
Courses of Instruction

EXPLANATION OF COURSE NUMBERING SYSTEM

1-99  Non-credit courses.
100-199 Introductory courses—usually at the freshman and sophomore level—no graduate credit.
200-289 Courses at the junior and senior level, may also carry graduate credit unless otherwise specified.
290-299 Undergraduate reading or research courses.
300-399 Courses in the Honors Division.
400-489 Graduate courses at the master’s level or the first-year of graduate study. Open to undergraduates only by special arrangement.
490-499 Master’s level, reading or research courses.
500-589 Advanced or specialized graduate courses.
590-599 Ph.D. reading or research courses.

200. Education in the American Social Order. (Fall and Spring) A survey of the social 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; opportunities and requirements in education as a profession. This is the first course in the undergraduate sequence.

Credit—three hours.

Fall: Tues., 8:00-8:50 a.m.
Thurs., 8:00-12:00 noon.
Spring: Tues., 8:00-8:50 a.m.
Thurs., 8:00-12:00 noon.

210. Psychology for Teachers. (Fall and Spring) Psychology of learning and teaching. Studies of growth and achievement, emotional development, simple and complex types of learning, purposive behavior, intelligence, and measurement. Seeks to meet the needs and problems of the classroom teacher. Prerequisites: Psychology 101-102 or equivalent.

Credit—three hours.

Fall: Section 1: Tues., 9:00-11:50 a.m.
Section 71: Tues., 7:10-9:55 p.m.
Spring: Mon., Wed.; 4:20-5:35 p.m.

220. The Elementary School Curriculum. (Spring) An intensive study of the elementary school curriculum from the point of view of the underlying theory and the techniques employed. Consideration of various forms of curriculum organization and content, the activity movement, integration, unit organization.

Credit—three hours.

Mon., Wed., Fri.: 2:20-3:10 p.m.

221. The Teaching of Reading and Language in the Elementary School. (Spring) Consideration of desirable and appropriate methods and materials for developing children’s abilities in all phases of the language arts.

Credit—three hours.

Section 1: Mon., Wed., Fri.: 1:20-2:10 p.m.
Section 71: Tues., 7:10-9:55 p.m.

222. The Teaching of Arithmetic in the Elementary School. (Fall) Study of effective methods and appropriate materials for teaching arithmetic.

Credit—three hours.

Thurs., 7:10-9:55 p.m.
223. The Teaching of Science in the Elementary School. (Spring) Study of the materials and content of elementary school science and methods of helping children understand scientific principles and information.

Credit—three hours.
Mon., 7:10-9:55 p.m.

224. The Teaching of Children’s Literature. (Fall) Basic criteria in the selection of literature and materials suitable for children of preschool, primary, and intermediate grades and the methods to be followed in teaching. Story telling, extensive silent reading, interpretative oral reading, and the correlation of literature with the other arts are included.

Credit—three hours.
Mon., Wed.; 4:20-5:35 p.m.

225. Children and the Creative Arts. (Fall and Spring) Consideration of art, music, and dramatic play activities for children. Study of current trends, objectives, and procedures in selection of appropriate and desirable experiences with emphasis on development of creative potentialities of children. Workshop techniques utilized to provide students opportunity to work with various media and processes.

Credit—three hours.
Fall: Wed., 7:00-10:00 p.m.
Spring: Wed., 7:00-10:00 p.m.

228. Principles of Teaching in the Elementary School. (Fall) A seminar for consideration of teaching problems with special reference to student teaching experiences. To be taken during academic year in which Education 229 is taken.

Credit—three hours.
Mon., 4:00-6:00 p.m., and hour to be arranged.

229. Supervised Student Teaching in the Elementary School. (Fall and Spring) The observation and student teaching is done in the public elementary schools of the Rochester area through full-time participation for one term. Application for admission to this course must be made to the College of Education at least six weeks in advance of registration.

Credit—twelve hours.
Hours to be arranged.


Credit—three hours.
Fall:
Tues., Thurs.; 4:20-5:35 p.m.
Spring:
Section 1: Tues., 9:00-11:50 a.m.
Section 61: Tues., Thurs.; 4:20-5:35 p.m.
231. The Teaching of English in the Secondary School. (Fall) A study of recognized methods of teaching English in the secondary schools. The selection of materials for the teaching of 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. Education 210 and sufficient subject matter background is a prerequisite.

\[\text{Credit—three hours.} \]
\[\text{Mon., Wed.: 4:20-5:35 p.m.} \]

232. The Teaching of Social Studies in the Secondary School. (Fall) The aims, present tendencies, 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. Education 210 and sufficient subject matter background is a prerequisite.

\[\text{Credit—three hours.} \]
\[\text{Mon., Wed.: 4:20-5:35 p.m.} \]

234. The Teaching of Science in the Secondary School. (Fall) Consideration of the content of the high school sciences, methods of selection and organization of curriculum materials and equipment, and procedures for teaching and evaluation. Education 210 and sufficient subject matter background is prerequisite.

\[\text{Credit—three hours.} \]
\[\text{Mon., Wed.: 5:45-7:00 p.m.} \]

235. The Teaching of Modern Foreign Languages in the Secondary School. (Fall) Provides experience in lesson planning and in the use of audio-visual materials and evaluation of instruction. Consideration of the methods of teaching and the content of high school courses. Education 210 and sufficient subject matter background is a prerequisite.

\[\text{Credit—three hours.} \]
\[\text{Mon., Wed.: 4:20-5:35 p.m.} \]

236. The Teaching of Mathematics in the Secondary School. (Fall) Survey of desirable methods in the teaching of mathematics. The objectives, content, and methods of presenting the basic topics in arithmetic, algebra, geometry, and trigonometry. Some discussion of typical curriculum procedures for testing and evaluation. Education 210 and sufficient subject matter background is prerequisite.

\[\text{Credit—three hours.} \]
\[\text{Mon., Wed.: 4:20-5:35 p.m.} \]

239. Supervised Student Teaching in the Secondary School. (Fall and Spring) Observation, participation, and classroom teaching are done in the public day high schools of Rochester and vicinity. The student spends 40 clock hours in observation and participation and 80 clock hours in teaching. Application for admission to the course must be made to the College of Education at least six weeks in advance of registration. Prerequisites: Education 200, 210, 230 and one of the following: Education 231, 232, 234, 235, 236.

\[\text{Credit—six hours.} \]
\[\text{Hours to be arranged.} \]

280. Audio-Visual Materials and Methods. (Fall) Designed to develop understanding of values of audio-visual materials and their effective use. Consideration of field trips, museum materials, projected still pictures, motion pictures, recordings, transcriptions, and radio and television programs. Discussion of bases for selection, evaluation, and use of audio-visual materials. Opportunities given students to develop skill in the operation of audio-visual equipment.

\[\text{Credit—three hours.} \]
\[\text{Sat., 9:15-12:00 noon.} \]
Division of Nursing Education

GENERAL INFORMATION

GENERAL NURSING PROGRAM. The aim of this program is to provide a program for graduates of diploma schools of nursing, which will enable them to strengthen their basic preparation for professional nursing in hospitals and public health nursing agencies. Through the coordination of rich experience in nursing with a foundation in liberal arts, the student is expected to achieve competencies to practice nursing in all beginning positions and to secure the needed background for advanced study.

SCHOLARSHIP AND STUDENT AID

A limited number of loans for study in nursing education are granted each year by the Genesee Valley Nurses Association to nurses who hold membership in the organization.

Limited loan funds are available to full-time students. Information concerning loan funds may be secured from the Division of Nursing Education.

Students desiring to finance part of their program may apply for staff positions in one of the local hospitals. For information concerning the employment policies, the student should write to the director of nursing of the hospital in which she is interested, or to Miss Esther M. Thompson, Chairman of the Division of Nursing Education, The University of Rochester.

GRADUATE NURSE QUALIFYING EXAMINATION

Application cards and information concerning the Graduate Nurse Qualifying Examination may be secured from the office of the Division of Nursing Education. This examination for 1959–1960 will be given on a Saturday in October and April.

STUDENT ACTIVITIES

Students in the Division of Nursing Education have formed their own club to foster the development of student participation in group activities. The program of activities includes coffee hours, student mixers, picnics, and teas.
PROGRAM FOR THE BACHELOR’S DEGREE
GENERAL REGULATIONS

The following degree is available to graduate nurses: Bachelor of Science with a Major in General Nursing, awarded by the College of Education.

ADMISSION REQUIREMENTS: The general requirements for admission are graduation from a secondary school in which the student has completed the normal number of units of secondary school work (16) properly distributed so as to constitute an adequate preparation for the degree program.

In addition candidates for admission must satisfy the following:

1. They must be graduated from an accredited school of nursing.
2. They must be registered in the state in which they are practicing nursing.
3. They must take and achieve an acceptable standing on the Graduate Nurse Qualifying Examination. Results of this examination will be used to plan individual programs and to determine advanced standing. The fee for this examination is $10 and should be paid at the time application is made.

Application blanks may be secured from the Division of Nursing Education. All inquiries should be addressed to the Chairman, Division of Nursing Education. Programs for full-time or part-time study should be planned in consultation with a member of the Division of Nursing Education.

DEGREE REQUIREMENTS. The degree requires the completion of at least 130 semester hours of credit and 260 points of credit.

All graduating students are required to take the Area and Aptitude tests of The Graduate Record Examination. These tests are administered on the River Campus in the spring semester at a time to be announced.

RESIDENCE REQUIREMENT. The minimum residence requirement for any degree, according to the New York State Education Department, is one year of full-time study. This requirement must be met by 30 semester hours and 60 points of credit taken in full-time residence or through part-time study in The University of Rochester Evening Session or the River Campus Summer Session. Extramural courses will not meet this requirement.

Programs are subject to periodic review.

The courses of study prescribed for the degree follow:
### THE DEGREE BACHELOR OF SCIENCE WITH A MAJOR IN GENERAL NURSING

Advanced Standing (based on satisfactory performance on the Graduate Nurse Qualifying Examination) ................................................. 42 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101, 102 (English Composition)</td>
<td>6</td>
</tr>
<tr>
<td>Sociology 101, 102 (Introduction to Sociology)</td>
<td>6</td>
</tr>
<tr>
<td>Psychology 101, 102 (Introduction to Psychology)</td>
<td>6</td>
</tr>
<tr>
<td>Biology 101, 102 (General Biology)</td>
<td>8</td>
</tr>
<tr>
<td>English 103, 104 (Introduction to Literature)</td>
<td>6</td>
</tr>
<tr>
<td>Courses chosen from Group II electives</td>
<td>6</td>
</tr>
<tr>
<td>History 101, 102, Government 101, 102</td>
<td>3</td>
</tr>
<tr>
<td>Field Work in Mental Health Nursing—8 weeks</td>
<td>3</td>
</tr>
<tr>
<td>Dynamics of Human Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Field Work in Public Health Nursing—8 weeks</td>
<td>3</td>
</tr>
<tr>
<td>Introduction to Public Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Field Work in Group Practice in Nursing—3 weeks</td>
<td>1</td>
</tr>
<tr>
<td>Principles of Group Practice in Nursing</td>
<td>2</td>
</tr>
<tr>
<td>Methods of Social Case Work</td>
<td>2</td>
</tr>
<tr>
<td>Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>Methods and Materials of Health &amp; Clinical Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Public Health Administration</td>
<td>3</td>
</tr>
<tr>
<td>Ward Administration</td>
<td>3</td>
</tr>
<tr>
<td>Recommended electives</td>
<td>6</td>
</tr>
<tr>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>Physiology</td>
<td>3</td>
</tr>
<tr>
<td>Free electives</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>130</td>
</tr>
</tbody>
</table>

### PREREQUISITES

Graduation from an approved school of nursing.
Licensure in one or more states.
Satisfactory achievement on the Graduate Nurse Qualifying Examination.²

Prior to enrollment for the semester of field experience, students must have completed, on a part or full-time basis, the distribution requirement for the first year. Students whose program of study for the basic diploma has not included experience in the required clinical specialties may be asked to do field experience in these fields. For a limited period of time the following concentrate of courses in the public health nursing program will be retained for those students who are working toward certification requirements by the Public Health Council of the State Department of Health or school nurse-teacher certification by the State Education Department:

- Introduction to Public Health Nursing
- Advanced Public Health Nursing
- Principles of Nutrition
- Public Health Administration and Preventive Medicine
- Methods and Materials of Health and Clinical Teaching
- Organization and Administration of the School Health Program

¹See page 105 of this Bulletin.
²May be taken after beginning study.
Supervised Practice Teaching
Field Work: Public Health Nursing

Because of the complexity of certification requirements and the many changes now taking place on certification regulations, students are cautioned against attempting to complete requirements without first seeking advice from a member of the Nursing Education faculty.

Courses of Instruction
IN NURSING EDUCATION

220. Field Work in Public Health Nursing. (Fall and Spring) Guided observation and supervised practice in a community agency offering public health nursing services. Through the experience of working with carefully selected families, an opportunity is given to learn the scope and methods of public health nursing functions, as well as the contributions of other workers concerned with health and social welfare.

Sec. 1: Credit—three hours. Hours to be arranged.
Sec. 2: Credit—variable. Hours to be arranged.

221. Introduction to Public Health Nursing. (Fall and Spring) General responsibilities of the public health nurse and of the organization of nursing services in public health programs in both urban and rural areas, under official and voluntary agencies. Considers the interrelationships between public health nursing, hospital nursing, and other community health and social agencies. Given concurrently with field experience in public health nursing.

Credit—three hours.

Fall:
Sec. 1: Fri., 9:00 a.m.—12:00 noon.
Fri., 1:00—4:00 p.m.
Sec. 2: Mon., Wed.: 7:10—8:25 p.m.

Spring:
Fri., 9:00 a.m.—12:00 noon; 1:00—4:00 p.m.
223. Principles of Nutrition. (Fall) The study of normal dietary requirements of varied age groups and recent developments in the dietary treatment of disease.
   Credit—three hours. Tues., Thurs.; 5:45-7:00 p.m.

224. Field Work in Mental Health Nursing. (Fall and Spring) Opportunity in the psychiatric nursing unit to gain an understanding of behavior, with special emphasis on the nurse-patient relationship.
   Credit—three hours. Hours to be arranged.

225. Dynamics of Human Behavior. (Fall and Spring) This course supplements the field program in mental health nursing. Emphasis is given to the factors affecting development of personality.
   Credit—three hours. Hours to be arranged.

226. Field Work in Group Practice in Nursing. (Fall and Spring) A planned field experience in a selected hospital designed to give the graduate nurse student the opportunity to participate, under guidance, as a member of a nursing team.
   Credit—one hour. Hours to be arranged.

227. Principles of Group Practice in Nursing. (Fall and Spring) This course is designed to supplement the field program and to acquaint the student with the philosophy underlying the team method of planning for patient care. Functions and responsibilities of team members are analyzed and plans are developed for meeting the total nursing care needs of selected patients.
   Credit—two hours. Hours to be arranged.

228. Advanced Public Health Nursing. (Spring) Development, present practices, and trends in the special services such as maternal, infancy and child health, communicable disease, geriatrics, medical rehabilitation, and industrial hygiene.
   Credit—three hours. Mon., Wed.; 5:45-7:00 p.m.

230. Methods and Materials of Health and Clinical Teaching. (Fall and Spring) Analysis of learning activities available in public health nursing agencies, hospitals, and schools of nursing. Methods used in teaching individuals and groups.
   Credit—three hours. Fall: Mon., Wed.; 4:20-5:35 p.m. Spring: Mon., Wed.; 5:45-7:00 p.m.

239. Supervised Practice Teaching. (Fall and Spring) Observations and practice teaching in schools of nursing and/or high schools in Rochester and vicinity. Application for registration in this course must be received at least three months in advance.
   Credit—three hours. Hours to be arranged.

274. Organization and Administration of the School Health Program. (Spring) The school health program, its scope, function, organization and administration and its relation to community health programs; the role of school personnel in implementing the program.
   Credit—three hours. Tues., Thurs.; 4:20-5:35 p.m.

275. Public Health Administration and Preventive Medicine. (Spring) History, organization, objectives, and activities of federal, state, and local public health agencies; the relationship to other governmental and voluntary health and social agencies. Major health problems, principles underlying preventive disease, and the use and interpretation of vital statistics.
   Credit—three hours. Fri., 5:45-8:25 p.m.
Aims and Objectives of the College of Engineering

The College of Engineering shares with the other schools and colleges of the University the primary responsibility to preserve and increase knowledge through teaching, scholarship, and research. It has as more specific objectives:

a) To prepare undergraduate engineers who are well versed in the engineering and related sciences and able to apply the principles of these sciences to new situations, who are cognizant of the meaning of professional life, and able and eager to accept the responsibilities of professional status, and who are aware of both the world in which they live, and of their duties and obligations to the complex society of which they are a part.

b) To educate students at the graduate level for teaching, research, or advanced engineering positions in industry, and, as a corollary, to provide in the Engineering College the proper atmosphere in which to educate undergraduate engineers.

c) To foster active research programs designed to teach graduate students the aims and methods of research, to provide a stimulating and challenging atmosphere for both students and faculty, and to add to the store of human knowledge.

d) To serve the local and national communities by providing opportunities for part-time study, and to make available the consulting and research resources of the College to help solve problems appropriate to these resources.
The Courses in Engineering

The Four-Year Accredited Courses in Chemical and Mechanical Engineering, and the Newly Offered Curriculum in Electrical Engineering, leading to the Bachelor of Science degree with field specification, devote over one-fifth of the time to work in the humanities and social studies and the remainder in the basic sciences and specialized engineering studies. Each curriculum is based upon a foundation of mathematics, physics, chemistry and basic engineering studies. The emphasis is placed upon a thorough understanding of the fundamental principles of science and engineering, rather than on a detailed knowledge of specific engineering practice. The aim is to prepare the engineering graduate for industrial employment or other professional engineering service, or for study beyond the Bachelor’s degree.

Although these undergraduate programs are normally completed in four academic years, a student in engineering may request permission to extend his undergraduate work over a five-year period. The additional time may be used to broaden his formal education by including additional courses in the liberal arts or in sciences. A student wishing to follow this program should consult with his Faculty Adviser toward the end of his freshman or sophomore year. Approval is required from the Faculty Adviser, the Department Chairman, and the Dean of Students, and the proposed program must meet, during each of the five years, the normal minimum load requirements.
THE METALLURGICAL OPTION in Chemical or Mechanical Engineering affords the student following either of these programs the opportunity to gain considerable theoretical knowledge and laboratory experience in the field of physical metallurgy.

Students in mechanical engineering may follow the metallurgical option by taking ME 273, 274 and 275 as their senior elective courses. In the case of chemical engineers a special rearrangement of electives is required, and the choice must be made before the end of the sophomore year. Physical Metallurgy is concerned with the fabrication, control of properties, and application of the common industrially important metals and alloys. The option provides a valuable adjunct to the mechanical or chemical engineering programs.

THE FIVE-YEAR TWO-DEGREE COURSES IN ENGINEERING AND LIBERAL ARTS. These courses, leading to both the B.S. and A.B. degrees at the end of five years, include all the requirements for the single B.S. degree plus thirty-six hours of Arts electives in a chosen field of concentration. These curricula offer a worthwhile program which provides a much broader and more liberal training than is possible in the regular four-year course. The aim is to give the engineer a fuller appreciation of the social and economic responsibilities of his profession and to enable him to combine his engineering and non-engineering training in a wider field of effort. The choice between the four- and five-year courses should be made at the end of the freshman year.

ADMISSION POLICY. To be admitted to the College of Engineering, a student must

a. have completed the freshman and sophomore courses of the appropriate Departmental synopsis or equivalent work satisfactory to the College.

b. have a point-hour ratio of at least 2.000 in the work specified in (a).

c. have received a grade of C or better in each of the courses marked with an asterisk in the appropriate Departmental synopsis.

d. satisfy the appropriate Department with regard to professional promise, interest, and character.

Under certain circumstances, applicants not meeting all the above requirements may be admitted as special or probationary students. The status of such students is subject to review at the end of each semester.
DISTRIBUTION REQUIREMENTS OF THE COLLEGE OF ENGINEERING

The distribution requirements of the College of Engineering are identical to those of the College of Arts and Science (see p. 105), with the following exceptions:

1. Of the twenty-four hours required for distribution, at least six must be taken in Group I and six in Group II. The remaining twelve hours may be taken in either Group I or Group II.

2. Psychology 101, 102—Introduction to Psychology, may be accepted as meeting the requirements for a Group II course.

COURSE SYNOPSES

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. ROTC students majoring in engineering must take the appropriate Air Science or Naval Science courses of the freshman year in addition to the regular courses listed below.

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 100, 101</td>
<td>Introductory College Mathematics and Elementary Calculus</td>
</tr>
<tr>
<td>or Math. 110, 111</td>
<td>Analytic Geometry and Calculus</td>
</tr>
<tr>
<td>or Chem. 121, 122</td>
<td>General Chemistry</td>
</tr>
<tr>
<td>or Chem. 123, 124</td>
<td>General Inorganic Chemistry and Quantitative Analysis</td>
</tr>
<tr>
<td>Phys. 101-102</td>
<td>General Physics A</td>
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<tr>
<td>or Phys. 107-108</td>
<td>Physics I</td>
</tr>
<tr>
<td>Eng. 101, 102</td>
<td>English Composition</td>
</tr>
<tr>
<td>Ph. Ed. 101, 103</td>
<td>Physical Education</td>
</tr>
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</table>

Chemical engineers must take Chem. 123, 124; Electrical engineers should take Phys. 107-108 and Math. 110-111.

CHEMICAL ENGINEERING

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>*Math. 150, 151</td>
<td>Intermediate Calculus and Differential Equations</td>
</tr>
<tr>
<td>or *Math. 160, 161</td>
<td>Analytic Geometry, Calculus and Differential Equations</td>
</tr>
<tr>
<td>*Physics 111-112</td>
<td>General Physics B</td>
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<tr>
<td>or *Physics 117-118</td>
<td>Physics II</td>
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*Must be passed with a grade of C or better.
### COLLEGE OF ENGINEERING

#### Junior Year

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>1st Term</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Chern. 251, 252</td>
<td>Organic Chemistry</td>
<td>4</td>
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<tr>
<td>Chern. 213</td>
<td>Quantitative Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>Ch.E. 223, 224</td>
<td>Applied Thermodynamics</td>
<td>2</td>
</tr>
<tr>
<td>Ch.E. 243, 244</td>
<td>Chemical Engineering Principles</td>
<td>3</td>
</tr>
<tr>
<td>Ch.E. 294</td>
<td>Plant Visits</td>
<td>½</td>
</tr>
<tr>
<td>Electives</td>
<td>Group Electives ¹</td>
<td>6</td>
</tr>
<tr>
<td>M.E. 113</td>
<td>Statics and Strength of Materials</td>
<td>3</td>
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**SUMMARY:**

<table>
<thead>
<tr>
<th>Term</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Summer</td>
<td>18½</td>
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#### Senior Year

<table>
<thead>
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<th>Course(s)</th>
<th>1st Term</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch.E. 233, 234</td>
<td>Kinetics of Phys. &amp; Chem. Processes</td>
<td>3</td>
</tr>
<tr>
<td>Elective ¹</td>
<td>Chemical Engineering Electives</td>
<td>3</td>
</tr>
<tr>
<td>Ch.E. 265, 266</td>
<td>Process Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Ch.E. 246</td>
<td>Kinetics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>E.E. 157</td>
<td>Elementary Electrical Engineering I</td>
<td>3</td>
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<tr>
<td>M.E. 271 ²</td>
<td>Engineering Metallurgy for Chem. Engrs.</td>
<td>4</td>
</tr>
<tr>
<td>Ch.E. 294</td>
<td>Plant Visits</td>
<td>½</td>
</tr>
<tr>
<td>Elective ¹</td>
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</tr>
<tr>
<td>Elective</td>
<td>Free Elective</td>
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**SUMMARY:**

<table>
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<th>Hours</th>
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<tbody>
<tr>
<td></td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>17½</td>
</tr>
</tbody>
</table>

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*Must be passed with a grade of C or better.

¹At least one course (six hours) must be a literature or second-year modern language course, and at least three credits of elementary economics must be included.

²May be taken in the junior year in exchange for a group elective.

Electives may be chosen from among ChE 210, 250, 263, 267, 270, 278, 280, 290, and 292 or ME 273, 274, 280 and 480. ChE 270, 290, or 292 must be included.

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**COMBINED CHEMICAL ENGINEERING AND ROTC PROGRAM**

The combined Chemical Engineering and ROTC program differs from the regular program as shown below. Elective courses not otherwise committed must be used to satisfy the distribution requirements.

**NAVAL ROTC**

**Freshman Year**

1. Add Nav. 101, 102 to the courses regularly required.
Sophomore Year
1. Take Nav. 151 and Psychology 101 or equivalent in place of six hours of group elective.

Junior Year
1. Replace six hours of group electives by E.E. 157 and Nav. 222.

Senior Year
1. Take Nav. 231, 232 in place of six hours of free elective.
2. Take Nav. 235 in place of Ch.E. 246.
3. Take six hours of group elective in place of E.E. 157 resulting in three hours overload.

AIR FORCE ROTC

Freshman Year
1. Add AIR 101, 102 to the courses regularly required.

Sophomore Year
1. Take AIR 111, 112 in place of six hours of group elective.

Junior Year
1. Replace six hours of group elective by AIR 201, 202.

Senior Year
1. Take AIR 211, 212 in place of six hours of free elective.
2. Take six hours of group elective as overload.

PROGRAM FOR STUDENTS WHO ENTERED COLLEGE IN SEPTEMBER 1958, OR EARLIER

Sophomore Year

<table>
<thead>
<tr>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
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</thead>
<tbody>
<tr>
<td>Math. 150, 151</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math. 160, 161</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Physics 107-108</td>
<td>4</td>
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</tr>
<tr>
<td>Chem. 161, 162</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ch.E. 101</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 101-102</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Engl. 103-104</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engl. 111-112</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Phys. Ed. 111, 113</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>20</td>
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</table>

Junior Year

<table>
<thead>
<tr>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 213</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chem. 251, 252</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ch.E. 221</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ch.E. 241</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>M.E. 111</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>M.E. 105</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
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</table>
Faculty or departmental advisers should be consulted for information concerning combined engineering ROTC programs.

### ELECTRICAL ENGINEERING

#### Sophomore Year

<table>
<thead>
<tr>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>17</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 160, 161 or Math. 150, 151</td>
<td>Analytic Geometry, Calculus and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>*Physics 117, 118 or Physics 111, 112</td>
<td>Intermediate Calculus and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>*EE. 139, 140</td>
<td>Introduction to Circuit Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Group Elective</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 101</td>
<td>Statics and Strength of Materials</td>
<td>0</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>Physical Education</td>
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</table>

#### Junior Year

<table>
<thead>
<tr>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>19</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 200, 201</td>
<td>Advanced Calculus, I and II</td>
<td>3</td>
</tr>
<tr>
<td>Physics 113</td>
<td>Introduction to Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>Optics 223</td>
<td>Electronic Properties of Solids</td>
<td>0</td>
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<tr>
<td>M.E. 250</td>
<td>Thermodynamics</td>
<td>3</td>
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<tr>
<td>E.E. 211</td>
<td>Linear Systems Analysis</td>
<td>0</td>
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<tr>
<td>E.E. 201, 202</td>
<td>Electrical Engineering Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>E.E. 240, 241</td>
<td>Electronic Circuits, I and II</td>
<td>3</td>
</tr>
<tr>
<td>Group Elective</td>
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*Must be passed with a grade of C or better.
# COLLEGE OF ENGINEERING

## Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
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</thead>
<tbody>
<tr>
<td>Physics 221, 222</td>
<td>3</td>
<td>3</td>
<td></td>
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<tr>
<td>E.E. 203</td>
<td>4</td>
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<tr>
<td>E.E. Technical Elective</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>E.E. 251</td>
<td>3</td>
<td>0</td>
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<tr>
<td>E.E. 261</td>
<td>0</td>
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<tr>
<td>Free Elective</td>
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<tr>
<td>Group Elective</td>
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<tr>
<td>Group Elective</td>
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</table>

**HOURS**

| Term | 19 | 18 |

## COMBINED ELECTRICAL ENGINEERING AND ROTC PROGRAM

The combined Electrical Engineering and ROTC program differs from the regular program, as shown below:

### NAVAL ROTC

**Freshman Year**

1. Add NAV 101, 102 to the courses regularly required.

**Sophomore Year**

1. Replace Group Elective, first term, by NAV 151.
2. Psychology 102 must be taken as the group elective second term.

**Junior Year**

1. Replace the second term group elective by NAV 222.

**Senior Year**

1. Take NAV 231, 232 in place of six hours of free elective.
2. Take NAV 235 as a one-hour overload.

### AIR FORCE ROTC

**Freshman Year**

1. Add AIR 101, 102 to the courses regularly required.

**Sophomore Year**

1. Add AIR 111, 112 to the courses regularly required.

**Junior Year**


**Senior Year**

1. Replace free electives by AIR 211, 212.
## MECHANICAL ENGINEERING

### Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
</tr>
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<tbody>
<tr>
<td>Math. 150, 151</td>
<td></td>
<td>Intermediate Calculus and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>Analytic Geometry, Calculus and Differential Equations</td>
<td></td>
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<tr>
<td>Math 160, 161</td>
<td></td>
<td>General Physics B</td>
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<tr>
<td>Physics 111-112</td>
<td></td>
<td>Physics II</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>Physics 117-118</td>
<td></td>
<td>Statics and Strength of Materials</td>
<td>0</td>
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<tr>
<td>M.E. 101</td>
<td></td>
<td>Shop</td>
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<tr>
<td>M.E. 102</td>
<td></td>
<td>Graphic and Kinematic Analysis</td>
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<td>M.E. 104</td>
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<tr>
<td>Ph. Ed. 111, 113</td>
<td>1</td>
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<td><strong>Total</strong></td>
<td><strong>19</strong></td>
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### Junior Year

<table>
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<th>2nd Term</th>
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<tr>
<td>M.E. 229</td>
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<td>M.E. 231</td>
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<td>M.E. 232</td>
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<td>Elective</td>
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<td><strong>Total</strong></td>
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<td><strong>18</strong></td>
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### Senior Year

<table>
<thead>
<tr>
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<th>Hours</th>
<th>1st Term</th>
<th>2nd Term</th>
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<tbody>
<tr>
<td>M.E. 236</td>
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<td>M.E. 254</td>
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<td>M.E. 257, 258</td>
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<tr>
<td>Technical Electives</td>
<td>3</td>
<td>6</td>
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</tr>
<tr>
<td>Electives</td>
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<td>6</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>19</strong></td>
<td></td>
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</tbody>
</table>

Of the 30 hours of electives in the program, 24 must be used to satisfy the distribution requirements. (See p. 105) The remaining 6 hours may be used to provide additional breadth, or may be combined with the 9 hours of technical electives to afford a degree of concentration in some phase of engineering. The option in metallurgy, or programs concentrating in mechanics and design, thermodynamics and heat engineering, or electromechanical engineering are examples. Departmental advisers will assist students in selecting the electives best suited to their needs and interests.

*Must be passed with a grade of C or better.*
COMBINED MECHANICAL ENGINEERING AND ROTC PROGRAM

The combined Mechanical Engineering and ROTC program differs from the regular program as shown below. Elective courses not otherwise committed must be used to satisfy the distribution requirements.

NAVAL ROTC

Freshman Year
1. Add NAV 101, 102 to the courses regularly required.

Sophomore Year
1. Replace M.E. 104 by NAV 151.
   The displaced shop course must be taken as a short course during the summer.
2. Psychology 101, 102 must be taken as one of the elective courses.

Junior Year
1. Replace the second term elective by NAV 222.

Senior Year
1. Take NAV 231, 232 in place of six hours of free electives.
2. Take NAV 235 as a one hour overload.
3. Three hours of technical elective may be replaced, if desired, by 3 hours of group elective.

AIR FORCE ROTC

Freshman Year
1. Add AIR 101, 102 to the courses regularly required.

Sophomore Year
1. Replace M.E. 104 by AIR 111, and one of the second term electives by AIR 112. The displaced shop course must be taken as a short course during the summer.

Junior Year
1. The elective is replaced by AIR 201, 202

Senior Year
1. Add AIR 211 as an extra course.
2. Replace 3 hours of technical electives by AIR 212.

PROGRAM FOR STUDENTS WHO ENTERED COLLEGE IN SEPTEMBER, 1958, OR EARLIER

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>1st Term</th>
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<tr>
<td>Math. 150, 151</td>
<td>4</td>
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<td>or</td>
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<tr>
<td>Math. 160, 161</td>
<td>4</td>
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<td>Physics 101-102</td>
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<td>M.E. 110, 113</td>
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<td>M.E. 103, 104</td>
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<tr>
<td>Ph.Ed. 111, 113</td>
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**Junior Year**

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<tr>
<th>Course</th>
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<tr>
<td>M.E. 270, 272</td>
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<td>M.E. 231, 232</td>
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<td>M.E. 230, 240</td>
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<td>M.E. 250, 251</td>
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<td>M.E. 211</td>
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<td>E.E. 159, 160</td>
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**Senior Year**

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<tr>
<th>Course</th>
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<tr>
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<td>M.E. 257, 258</td>
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<td>M.E. 242</td>
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<td>E.E. 177</td>
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<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>18</td>
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</tbody>
</table>

Faculty or departmental advisers should be consulted for information concerning combined engineering-ROTC programs.
THE ADMINISTRATIVE OFFICERS

Dean

John William Graham, Jr., D.Sc.
212 Gavett Hall

Associate Dean for Graduate Studies

Lewis Dalcin Conta, Ph.D.
212 Gavett Hall

Faculty

Lewis Dalcin Conta, Ph.D. (Cornell)
Professor of Mechanical Engineering

Daniel Ward Healey, Jr., Ph.D. (Harvard)
Professor of Electrical Engineering

Horace William Leet, M.E. (Cornell)
Professor of Mechanical Engineering

Shelby Alexander Miller, Ph.D. (Minnesota)
Professor of Chemical Engineering

Gouq-Jen Su, Sc.D. (Massachusetts Institute of Technology)
Professor of Chemical Engineering

Gerald Howard Cohen, Ph.D. (Wisconsin)
Associate Professor of Electrical Engineering

Richard Frederick Eisenberg, M.S. (Rochester)
Associate Professor of Mechanical Engineering

Thomas Richard Faucett, Ph.D. (Purdue)
Associate Professor of Mechanical Engineering

Hugh Guthrie Flynn, Ph.D. (Harvard)
Associate Professor of Electrical Engineering

Richard Reist Kraybill, Ph.D. (Michigan)
Associate Professor of Chemical Engineering

Oscar Edward Minor, B.S. (Rochester)
Associate Professor of Mechanical Engineering

Pandeli Durbetaki, M.S. (Rochester)
Assistant Professor of Mechanical Engineering

Assistant Professor of Electrical Engineering

Robert A. Ellson, B.M.E. (City College)
Instructor in Mechanical Engineering

Adam Roy Miller, M.S. (Rochester)
Instructor in Chemical Engineering
Chemical Engineering

Professors MILLER, SU; Associate Professor KRAYBILL; Instructor MILLER, and Assistants.

ChE 101. Introduction to Chemical Engineering. An introduction to the character of chemical engineering practice and to the process industries served by chemical engineers. The application of mathematics, of conservation laws, and of communication skills to the solution of engineering problems and the presentation of engineering information will be emphasized. Mathematics 101 or 110 prerequisite.

Credit—two hours.
Two lecture-recitations a week.

Mr. Miller

ChE 111. Industrial Chemical Calculations. Quantitative applications of such physical and chemical principles as energy and material balance, thermochemistry and elementary thermodynamics, solubility, vapor pressure, and the principles of measurement. Problem analysis and problem solution are emphasized. Physics 101 or 107 and Mathematics 150 or 160 prerequisite.

Credit—four hours.
Three lecture-recitations and one three-hour laboratory a week.

Mr. Miller and assistants

ChE 112. Chemical Engineering Calculations. Quantitative applications of such physical and chemical principles as material balance, the first law of thermodynamics, simple physical equilibrium, and the principles of measurement. Problem analysis, problem solution, and the practical application of mathematics are emphasized. Chem 124, Math 150 or 160, Phys 102 or 108, and ChE 101 prerequisite.

Credit—five hours.
Four lecture-recitations and one three-hour laboratory a week.

ChE 210. Calculation Techniques. Applications of statistics, numerical methods, computers, and differential equations to chemical engineering problems. Math 151 or 161 and ChE 244 are prerequisite.

Credit—three hours.
Three lecture-recitations a week.

ChE 221. Introduction to Thermodynamics. A study of the fundamental principles covering the first and second laws of thermodynamics. The transition of energy and the relationships existing among the several thermodynamic properties of matter are quantitatively treated and applied to practical engineering problems.

Credit—three hours.
Three lecture-recitations a week.

Mr. Su

ChE 222. Thermodynamics for Chemical Engineers. A treatment of thermodynamic principles with particular reference to the second and third laws. Applications are made to miscellaneous mechanical and chemical processes, special emphasis being given to gas liquefaction and chemical equilibria involving both ideal and non-ideal systems. ChE 221 prerequisite.

Credit—three hours.
Three lecture-recitations a week.

Mr. Su

ChE 223. Applied Thermodynamics I. A study of the first and second laws of thermodynamics, and quantitative treatment of the relationships existing among the several thermodynamic properties of matter. Applications of the first law, particularly to systems of real gases and vapors. Math 151 or 161 and Phys 112 or 118 prerequisite and Chem 251 corequisite.

Credit—two hours.
Two lecture-recitations a week.


Credit—two hours.
Two lecture-recitations a week.

ChE 231. Applied Kinetics and Reactor Design. A 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. Chem 252 and ChE 244 prerequisite.

Credit—three hours.
Three lectures a week.

Mr. Miller
ChE 233. Kinetics of Physical and Chemical Processes I. Diffusion theory is reviewed, and theoretical and empirical rate equations describing diffusive mass transfer processes are studied. Illustrations will be drawn from unit operations. Chemical kinetics also is reviewed, and methods of interpreting kinetic data are explored. Chem 252, ChE 224 and ChE 244 prerequisites.

Credit—three hours.
Three lectures a week.

ChE 234. Kinetics of Physical and Chemical Processes II. A continuation of ChE 233. Calculations for the design of chemical reactions and mass transfer equipment will be developed and practiced. Boundary-layer theory is introduced, followed by a unified treatment of transport processes. ChE 233 prerequisite.

Credit—three hours.
Three lectures a week.

ChE 241. Unit Operations I. The theory and application of the unit operations of chemical engineering through the solution of problems in fluid flow, heat transmission, evaporation, and mechanical separation processes. ChE 111 and 221 prerequisite.

Credit—four hours for undergraduate students and three hours for graduate students.
Three lecture-recitations and one three-hour laboratory a week.
Mr. Kraybill and assistants


Credit—three hours.
Three lecture-recitations a week.
Associate Professor Kraybill

ChE 243. Chemical Engineering Principles I. The theory of the chemical engineering unit operations, with special attention to fluid mechanics and the mechanics and behavior of particulate solids. ChE 101 is prerequisite and Chem 151 is corequisite.

Credit—three hours.
Three lecture-recitations a week.

ChE 244. Chemical Engineering Principles II. A continuation of ChE 243. Heat transfer, applications of physico-chemical equilibrium, and staged operations are treated. ChE 243 is prerequisite.

Credit—three hours.
Three lecture-recitations a week.

ChE 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 are practiced. Experience in writing effective technical reports is an important part of the course. Chem 213 and 242 are prerequisite.

Credit—three to four hours.
Equivalent of nine to twelve hours a week.

ChE 246. Kinetics Laboratory. A continuation of ChE 245. The experiments demonstrate chemical-reaction and mass-transfer rates. ChE 233 is corequisite.

Credit—one hour.
One three-hour laboratory a week.

ChE 247. Chemical Engineering Laboratory. Experimental studies in filtration, flow of heat, refrigeration, evaporation, and internal combustion engines. The student has an opportunity to apply fundamental engineering and thermodynamic principles to actual process operations, to become familiar with equipment performance, and to gain experience in writing effective technical reports. ChE 241 prerequisite.

Credit—two hours.
One three-hour laboratory each week.

ChE 248. Chemical Engineering Laboratory. This course is similar in nature to ChE 247, except that studies in extraction, distillation, humidification, drying, absorption, and materials testing are undertaken. Must be taken with or subsequent to ChE 242.

Credit—two hours.
One three-hour laboratory per week.
Mr. Miller and assistants

ChE 250. Selected Unit Operations. A study of some of the chemical engineering unit operations. The fundamentals of chemical engineering are applied, and design and operation are treated, with special attention being devoted to certain of the particularly mechanical operations. ChE 244 prerequisite.

Credit—three hours.
Three lectures a week.

ChE 263. The Chemistry of Plastic Materials. The sources of chemical raw materials and the conversion of these materials to resins will be discussed. The general principles of polymer formation will be laid down. Each important class of plastic materials will be described 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.

ChE 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 multi-variable experiment is demonstrated. ChE 231 prerequisite.

*Credit—one or two hours.*

One or two three-hour laboratories a week.

ChE 266. **Process Laboratory.** A continuation of ChE 265. ChE 265 prerequisite.

*Credit—one hour.*

One three-hour laboratory a week.

ChE 267. **Industrial Chemical Technology.** Analysis of industrial chemical processes with attention to chemical principles, chemical engineering practice, and economic factors. Such topics as raw material and energy sources, water treatment, and waste processing are included, as well as selected organic and inorganic processes. Chem 161 and 251 prerequisite and ChE 233 corequisite.

*Credit—three hours.*

Three lectures a week.

Mr. Miller

ChE 270. **Chemical Engineering Process Design.** This course is essentially an opportunity for the chemical engineering senior to integrate the material he has mastered in his several previous science and engineering courses. In general, problems related to the design of chemical plants, including economic as well as technical considerations, are treated. Specifically, these problems include structural design, piping design, flow sheet layout, plant layout, economic balance, instrumentation and automatic control, and comprehensive equipment and process design. ChE 242 prerequisite.

*Credit—three hours.*

Three lectures a week.

Mr. Kraybill

ChE 278. **The Chemical Industry and Its Operation.** A brief review of the history of chemical technology and the emergence of the modern chemical industry, followed by a study of the organization, financing, and economic profile of the process industries. Special attention is given to the interplay between technical and economic factors and to the 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 will be summarized.

*Credit—two hours.*

Two lectures a week.

Mr. Miller

ChE 280. **Process Control and Instrumentation.** A review of the principles of measurement is followed by a survey of established techniques for measuring and controlling process variables. The selection and engineering of instruments for the chemical process industries are studied.

*Credit—three hours.*

Three lectures a week.

ChE 290. **Special Topics.** A senior seminar course in which current practices and current research developments in chemical engineering are explored. Those students who are of particular technical aptitude concentrate on advanced topics of theoretical and technical character; others concentrate on design practice, engineering economics and cost considerations, and plant practice. ChE 242 and 231 prerequisite.

*Credit—three hours.*

Three lectures a week.

ChE 292. **Chemical Engineering Projects.** The student is placed on his own initiative in the pursuit of an original problem related to chemical engineering. Experimental work usually is involved. Proper planning of the project and presentation of results are important features of the course. Only highly qualified students may enroll. ChE 244 is prerequisite and consent of the Department is required.

*Credit—one to six hours.*

ChE 294. **Plant Visits.** Appropriate industrial plants that illustrate chemical engineering in practice are visited. The visits are preceded by explanation and followed by discussion, and a final report is required of each student.

*Credit—one-half hour.*
Electrical Engineering

Professor Healy; Associate Professors Cohen, Flynn; Assistant Professor Stroh; Lecturer Coombs, and Assistants.

**EE 139. Introduction to Circuit Analysis I.**
The theory of linear, passive, lumped-parameter networks. Network topology, general network theorems, general equilibrium equations, node and mesh analysis, and singularity functions. Physics 108 (or 102), Mathematics 111 (or 101) prerequisite.

*Credit—three hours.*
Three lectures a week.

**EE 140. Introduction to Circuit Analysis II.**
A continuation of EE 139: Natural response of networks, sinusoidal steady state, introduction to pole-zero concepts, power and energy, and coupled circuits. EE 139 prerequisite.

*Credit—three hours.*
Three lectures a week.

**EE 157. Elementary Electrical Engineering I.**
A basic course for chemical engineers covering elements of circuit theory, an introduction to electrical measurements, and electronic devices or power machinery. Physics 112 and Math 161 prerequisite.

*Credit—three hours.*
Three lectures a week and one laboratory period on alternate weeks.

**EE 158. Elementary Electrical Engineering II.**
A continuation of EE 157 designed to complement and extend the coverage of that course in electrical engineering subjects. EE 157 prerequisite.

*Credit—three hours.*
Three lectures a week and one laboratory period on alternate weeks.

**EE 161, 162. Electrical Laboratory.**
A laboratory course for mechanical engineers including selected experiments in basic measurements, circuit components, electric networks, electronic devices, and power transformers and machinery. EE 139, 140 must be taken concurrently.

*Credit—one hour.*
One laboratory period a week.

**EE 201, 202, 203. Electrical Engineering Laboratory.**
A general laboratory course for electrical engineers. EE 201 covers dc and ac measurements by deflection and null methods, the elementary characteristics of vacuum tubes and transistors, and linear amplifiers. EE 202 includes more complex electronic circuits, such as oscillators, pulse and timing circuits, modulators, and detectors. EE 203 is devoted to dc and ac machinery, transformers, magnetic amplifiers, torque motors and electro-acoustic devices, and special projects.

*Credit—four hours per course.*
One recitation and two laboratory periods a week.
EE 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 those illustrating the unique properties of the transistor. EE 241 prerequisite.

Credit—three hours.
Three lectures a week.


Credit—three hours.
Three lectures a week.

EE 211. Linear Systems Analysis. The formulation and solution of the integro-differential equations which describe linear physical systems, including mechanical and electromagnetic as well as electrical systems. Transform methods, particularly Fourier and Laplace transforms, are introduced and applied to physical problems. Math 151 or 161 prerequisite.

Credit—three hours.
Three lectures a week.

EE 240. Electronic Circuits I. A first course in active networks. The common characteristics of active three-terminal devices are developed and applied. Topics include rectifiers, thyatrons, small signal parameters of active devices, piecewise linear analysis and graphical constructions. EE 139-140 prerequisite.

Credit—three hours.
Three lectures a week.

EE 241. Electronic Circuits II. A continuation of EE 240, including single-stage and cascaded amplifiers, feedback, stability, frequency compensation, oscillators, and trigger circuits. EE 240 prerequisite.

Credit—three hours.
Three lectures a week.

EE 245. Feedback Control Systems. Theory of linear feedback system analysis and synthesis, and application of the theory to a variety of engineering fields. EE 211 and Math 201 prerequisite.

Credit—three hours.
Three lectures a week.

EE 251. Electromechanical Energy Conversion. An introduction to the theory of electromechanical energy conversion, with applications to dc and ac rotating machines and incremental motion devices (transducers).

Physics 112, EE 140, and consent of instructor prerequisite.

Credit—three hours.
Three lectures a week.

EE 261. Communication System Engineering. The study of basic communication systems including their components, bandwidth requirements and limitations, the principles of modulation and detection, and elements of information theory and noise phenomena.

Credit—three hours.
Three lectures a week.

EE 271. High-Frequency Engineering. A study of phenomena associated with and characterized by high-frequency operation. Topics include the methods of producing high frequencies by magnetrons and klystrons, traveling wave tubes, the transmission of high-frequency energy by conventional transmission lines, coaxial lines, and wave guides, and the transmission and reception of electromagnetic radiation in space. Physics 221, Math 201 prerequisite.

Credit—four hours.
Three lectures and one laboratory period a week.

EE 401. Computer Electronics. A study of electronic circuits and components suitable for basic analog and digital computer elements. Solid state devices are emphasized. Topics include the design of multipliers, function generators, arithmetic units, memories and input-output devices. Consent of the instructor prerequisite.

Credit—three hours.
Three lectures a week.

EE 402. Analog and Digital Computers. An introduction to the principles of analog and digital computation. The methods used to reduce systems to a form suitable for analog computation are applied in the laboratory to examples drawn from all fields of engineering. Digital computers are approached from a system standpoint emphasizing design. EE 401 prerequisite.

Credit—three hours.
Three lectures a week, one laboratory on alternate weeks.

EE 431. Advanced Network Analysis. A treatment of selected topics in network analysis, such as one-terminal-pair reactive networks, classical filter theory, and distributed parameter networks (transmission lines). Consent of the instructor prerequisite.

Credit—three hours.
Three lectures a week.
Mechanical Engineering

Professors Conta, Leet; Associate Professors Faucett, Eisenberg, Minor; Assistant Professor Dubetaki; Instructor Ellson, and Assistants; Shop, Mr. Pearse, Mr. Beach.

ME 101. Engineering Graphics. A study of orthographic projection as a tool in solving problems in space, and also as the basis of communication among technically trained persons. Topics included are: graphs, sectioning, conventions, dimensions, pictorials, assemblies, intersections, developments, along with "double auxiliary" methods of graphic solutions.

Credit—three hours.
Two lectures and four hours of laboratory a week.
Mr. Minor and assistant

ME 102. Graphic and Kinematic Analysis. Further application of "descriptive geometry" techniques in solving problems in space and in vector polygons. A study of graphical calculus: kinematics of cams and gears; instant centers; introduction to engineering report writing. ME 101, Physics III prerequisite.

Credit—three hours.
Two lectures and four hours of laboratory a week.
Mr. Minor and assistant

ME 103. Foundry Lectures. A course supplementing the work and lectures of ME 104 dealing with practices and procedures in pattern making and foundry work.

Credit—one hour.
One lecture-recitation period a week plus selected inspection trips.
Mr. Pearse
ME 104. **Machine Shop.** A course emphasizing standard machines and tools from the standpoint of their possibilities in performing various types of work. It is the aim of this course to acquaint the student with the abilities and limitations of modern machine tools, rather than to produce skilled machinists.

**Credit—two hours.**

One lecture, five hours shop work a week.

Mr. Pearse, Mr. Beach

ME 105. **Shop Practice.** For chemical engineers. Simple machine tool operations, with demonstrations and practice in sheet metal working, soldering, welding, and pipe fitting, and lecture and plant visits in pattern making and foundry practice.

**Credit—one hour.**

One lecture, two hours shop work a week.

Mr. Pearse, Mr. Beach

ME 110. **Analytical Mechanics.** Foundations of mechanics, introduction to vectors, solutions of plane and space force problems with applications to engineering structures and machines, properties of areas and solids. Introduction to kinetics. Must be taken with or subsequent to Math 150.

**Credit—three hours.**

Three lecture-recitations per week.

Mr. Ellson

ME 111. **Applied Mechanics.** A condensed course in mechanics for chemical engineers. Covers static force systems; treats kinematics briefly; deals with kinetics of plane motion; and ends with a short treatment of work and energy, and impulse and momentum. Mathematics 151 prerequisite.

**Credit—three hours.**

Three lecture-recitations per week.

Mr. Ellson

ME 112. **Statics and Strength of Materials.** The principles of statics are reviewed, and applied to problems of engineering interest. The basic theories of strength of materials are covered—including properties of materials, axial loading, flexure, torsion, buckling, and combined stresses. Math 150, Physics 111 prerequisite.

**Credit—three hours.**

Three lectures a week.

Mr. Ellson

ME 113. **Mechanics of Materials.** Mechanics of deformable elastic solids. Basic theories of strength of materials presented and applied to important engineering problems. Topics covered include study of properties of materials, biaxial stress analysis, bending and torsion, elastic stability, and fatigue of metals. ME 110 or ME 111 prerequisite.

**Credit—three hours.**

Three lecture-recitations per week.

Mr. Faucett and Mr. Ellison

ME 211. **Materials Laboratory.** Tests of engineering materials are made with emphasis on application of theories of failure. Use is made of photoelastic and wire resistance strain gage methods in the study of design problems. ME 113 prerequisite.

**Credit—two hours.**

One lecture and one three-hour laboratory period each week.

Mr. Minor and assistants


**Credit—three hours.**

Three lecture-recitations per week.

Mr. Faucett

ME 229. **Kinematics.** A study of motion, emphasizing analytic treatment of displacement, velocity and acceleration in various linkages. The use of velocity and acceleration polygons as a graphic procedure. Fundamentals of speed changers, including gears and gear trains. Prerequisite: ME 102, Physics 111.

**Credit—two hours.**

Two lectures a week.

ME 230. **Kinematics of Machinery.** Free and constrained motion; methods of transmitting motions in machines; belt linkages, cams, frictional and toothed gearing and gear trains; velocity and acceleration of machine members. ME 110 prerequisite.

**Credit—four hours.**

Two recitations, two three-hour periods a week.

Mr. Leet

ME 231. **Fluid Mechanics.** A study of the properties of fluids and the theory of fluid flow systems. The course includes dimensional analysis, and makes use of models where possible. A brief treatment of the thermodynamics of compressible flow is given. Math 151, Physics 112 prerequisite. ME 250 must be taken concurrently.

**Credit—three hours.**

Three lectures a week.

Mr. Faucett

**Credit—three hours.**
Two one-hour recitations, one three-hour laboratory a week.
Mr. Faucett


**Credit—three hours.**
Three lectures a week.
Mr. Leet

ME 234. Mechanical Vibrations. Principles of harmonic motion; study of free, damped, and forced vibrations of single and multi-degree freedom systems; vibration theory applied to engineering problems. ME 232 prerequisite.

**Credit—three hours.**
Three lecture-recitation periods a week.
Mr. Faucett

ME 236. Advanced Mechanics of Materials. Three-dimensional systems of stresses and strains, and theories of failure of materials under static and dynamic conditions. The theories of elasticity, plates and shells, and elastic stability are introduced. ME 113, Math 151 prerequisite.

**Credit—three hours.**
Three lectures a week.
Mr. Faucett

ME 240. Mechanics of Machines. Analytic study of machines for the performance of definite work; determination of loads on machine members due to applied and inertia forces, friction, and gravity; choice of materials and proportioning of details to meet conditions of stress, economy, and manufacturing methods; provisions for adjustment, renewal, and lubrication; limitations of the theoretical principles of mechanics and the proper use of rational and empirical formulae in design. ME 113, 230 prerequisite.

**Credit—four hours.**
Three lecture-recitations, one three-hour period a week.
Mr. Leet

ME 241. Advanced Mechanics of Machines. An advanced course in the design of machine elements with greater emphasis on the total machine. Determination of loadings, stresses, and member sizes and shapes. Prerequisite: ME 232, 240.

**Credit—three hours.**
Three lectures a week.
Mr. Leet

ME 242. Structural Design. A study of stresses involved in the design of trusses, girders, columns, and floor systems. Timber, steel and reinforced concrete structures are considered. Prerequisite: ME 113.

**Credit—three hours.**
Three lectures a week.
Mr. Leet


**Credit—four hours.**
Three lectures, one three-hour laboratory a week.

ME 250. Thermodynamics I. A brief review of fundamental concepts, the first law, the ideal gas laws and calorimetry, followed by a study of the second law, entropy, and the properties of pure substances. An introduction to heat transfer, and a study of vapor power cycles completes the term. Physics 111, and Mathematics 150 prerequisite.

**Credit—three hours.**
Three lectures a week.
Mr. Durbetaki
ME 251. Thermodynamics II. The application of thermodynamic principles to a study of single phase and two phase mixtures, air conditioning, air compressors and expanders, internal combustion engines, and refrigeration processes. ME 250 prerequisite.

Credit—three hours.
Three lectures a week.
Mr. Durbetaki


Credit—three hours.
Three lectures a week.
Mr. Durbetaki

ME 255 and 256. Engineering Laboratory. Selected experiments in the fields of materials testing, fluid flow and heat power. Open only to students in the Industrial Management Program, or by permission of the instructor. ME 53 and ME 60 prerequisites.

Credit—two hours each term.
One laboratory period a week.
Mr. Minor, Mr. Durbetaki

ME 257–258. Mechanical Engineering Laboratory. Laboratory experiments in fluid flow, heat transfer, and power generation. The lecture period is used to discuss and demonstrate instrumentation, and as a preparation for the laboratory experiments. During the second term students are expected to demonstrate initiative and originality in the organization and conduct of the experiments. ME 251 prerequisite.

Credit—three hours each term.
One lecture period and one laboratory period a week.
Mr. Durbetaki and assistants

ME 259. Refrigeration and Air Conditioning. The application of thermodynamics to the study of refrigeration and air conditioning cycles. Air, vapor, absorption, and steam jet refrigeration cycles are considered, as well as the equipment and controls to carry out these cycles. The principles of psychrometry are studied and their application to comfort and industrial air conditioning discussed. ME 60 prerequisite.

Credit—three hours.
Two lecture-recitation periods a week and one laboratory period.
Mr. Conta

ME 260. Special Problems in Heat Power. This course is intended for advanced students in mechanical engineering who wish instruction in topics in the heat-power field beyond the scope of the normal heat-power offerings within the mechanical engineering curriculum. The subject matter of the course will vary from year to year in accordance with the needs and interests of the class.

Credit—three hours.
Three lecture-recitation periods a week.
Mr. Conta

ME 261. Gas Turbine Power Plants. A study of the thermodynamics of gas turbine cycles, and of the machinery necessary to carry out these cycles. Consideration will be given to design and operation of the turbines and compressors, and to the problems involved in the combustion of fuels in high velocity air streams. Although the major emphasis will be on power turbines some time will be devoted to the jet propulsion of aircraft. ME 251 and ME 231 prerequisite.

Credit—three hours.
Three lecture-recitation periods a week.
Mr. Conta

ME 262. Gas Dynamics. The mechanics and thermodynamics of compressible flow at subsonic and supersonic velocities. Shock phenomena as well as combustion and other thermal effects will be covered. Applications to flow in ducts, nozzles, diffusers, combus-
tors, and impellers will be studied. Prerequisites: ME 231 and 254.

Credit—three hours.
Three hours a week.
Mr. Conta

ME 263. Internal Combustion Engines. A study of the thermodynamic cycles and principles of operation of spark and compression ignition engines and their auxiliaries. A careful consideration of ideal cycles and of the deviations of actual engines from the ideal will be followed by a study of fuel properties, carburetion and fuel injection, combustion and the control of detonation, engine performance, and engine systems. Laboratory experiments will demonstrate and supplement the principles studied in class. ME 251 prerequisite.

Credit—three hours.

Two lecture-recitation periods and one laboratory period a week.
Mr. Conta, Mr. Durbetaki

ME 270, 272. Physical Metallurgy. A study of the fundamentals of physical metallurgy. Emphasis is placed on the structure of metals, phase diagrams, physical and mechanical properties, and heat treatment. Specific metals and metallurgical processes will not be covered except as a means of illustrating the principles. Chemistry 122, ME 113 prerequisite.

Credit—three hours each term.
Three lectures a week.
Mr. Eisenberg

ME 273. Ferrous Alloys. A detailed study of the iron carbon system, heat treatment, and the correlation of microstructures with associated properties of steels. Special purpose steels such as tool steels, stainless steels and high temperature alloys are also studied. The laboratory is devoted to metallography, heat treating and testing. Prerequisites: ME 272, 276, 277.

Credit—three hours.
Two lectures and one laboratory a week.
Mr. Eisenberg

ME 274. Non-Ferrous Metals and Alloys. A study of non-ferrous metals and alloys, associating properties with microstructure, composition, and thermal treatments. Recent developments, including nuclear metallurgy, are also considered. The laboratory work is devoted to metallography, heat treatment, and testing. Prerequisites: ME 272, 276, 277.

Credit—three hours.
Two lectures and one laboratory a week.
Mr. Eisenberg

ME 275. 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 and laboratory work. A complete engineering report will be required covering the work undertaken. ME 272 prerequisite. Students not taking the Metallurgy option must have the consent of the instructor.

Credit—three or four hours.
Mr. Eisenberg

ME 276, 277. Metallurgy Laboratory. In the first term the laboratory work emphasizes experimental techniques and equipment, including pyrometry, materials testing and metallography. In the second term the emphasis is on metallurgical operations and the application of the principles of physical metallurgy to specific metals and alloys. ME 271, 272 corequisite.

Credit—one hour first term,
two hours second term.
One laboratory a week.
Mr. Eisenberg

ME 278. Non-Ferrous Metals and Alloys. A detailed study of non-ferrous metals and alloys, associating properties with microstructure, composition, and thermal treatments. Recent developments, including nuclear metallurgy, are also considered. The laboratory work is devoted to metallography, heat treating and testing. Prerequisites: ME 272, 276, 277.

Credit—three hours.
Two lectures and one laboratory a week.
Mr. Eisenberg

ME 279. 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 and laboratory work. A complete engineering report will be required covering the work undertaken. ME 272 prerequisite. Students not taking the Metallurgy option must have the consent of the instructor.

Credit—three or four hours.
Mr. Eisenberg

ME 280. Introduction to Nuclear Engineering. An introductory course dealing briefly with a number of problems in the nuclear field. The course will draw extensively on the engineering student's earlier educational background. Topics studied are: introduction to nuclear physics; reactor components and analysis; materials of construction; power systems and controls; waste disposal and safety.

Credit—three hours.

Three lectures a week.
Mr. Conta and staff

ME 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.

Credit—one, two, or three hours.

Members of the engineering staff

ME 480. Nuclear Laboratory. A laboratory course in which the College's sub-critical reactor and a large analog computer will be used to study neutron distribution, reactor kinetics, and reactor instrumentation and control.

Credit—three hours.

One hour lecture and one three-hour laboratory a week.
Mr. Conta and staff
The School of Business Administration was established in 1958, to administer and further develop the professional degree programs in business administration introduced in 1945–46 in the College of Arts and Science and in the University School by the former Department of Economics and Business Administration. Particularly since World War II, growing interest has been shown in education leading to improved understanding of business and industry as well as to preparation for professional competency at the administrative level. The School seeks to provide business, industry and government with a strong and growing source of future managers, and also to qualify employed managers for enlarged responsibilities.

PURPOSE

The objectives of the School of Business Administration are:

1. To improve understanding of the role of business in society, the function of the executive in business, and the forces and relationships conditioning their performance; and 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.
DEGREE PROGRAMS OFFERED

The School administers programs of study leading to the degree Bachelor of Science, with majors in Accounting, Business Administration and Industrial Management, and to the degree Master of Science with a major in Business Administration.

Although the undergraduate student is not formally admitted to the School 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).

To permit more non-business electives in his junior and senior years, and to prepare more effectively for advanced course sequences in his major field, the full-time student initiates his study of business administration at the sophomore level. Depending upon their maturity and experience, part-time students may be permitted to elect preprofessional business courses even earlier in their program. All Bachelor's degree candidates continue to elect some liberal arts and science courses in their junior and seniors years, and also may select general electives from other Colleges of the University. In addition to the requirements shown for each of the degree programs below, all graduating students are required to take the Area and Aptitude Tests of the Graduate Record Examination. These tests are administered on the River Campus in the spring semester at a time to be announced.

BACHELOR OF SCIENCE
WITH A MAJOR IN BUSINESS ADMINISTRATION

The degree program in Business Administration consists of a well-balanced and coordinated group of liberal and professional studies designed to prepare the student for successful progress toward a rewarding and socially useful business career. Courses in the humanities, mathematics, natural sciences, and social sciences including economics comprise some 55 to 65 percent of the four-year program; professional education in business administration comprises most of the remainder. Ample flexibility in the choice of electives enables each student to adapt his program to his own needs and interests.

The professional studies consist principally of a core of business administration and allied courses which reflects both the breadth of preparation required for managerial responsibility and the high degree of interdependence of major business functions. This core includes (1) introductory courses in business fundamentals, basic accounting, and basic economics; (2) more intensive course work in business law, financial management, marketing, production management and statistics; and (3) two advanced courses which are designed to integrate the previous studies, and which are taught primarily by the case method. One of these latter courses stresses human factors in administrative management and the other, the analysis and decision-making involved in comprehensive business problems.
Throughout the core curriculum, analysis of concrete business situations is stressed. In addition, field trips to industrial establishments, direct contact with visiting executives and, for some, participation in internship programs facilitate the adaptation of formal course study to business requirements.

The synopsis of the requirements for the Bachelor of Science degree with a major in Business Administration follows:

I. Minimum Study in Business Administration .................................................. 43 hours
   A. Preprofessional Courses
      Bus. Ad. GBA157 & GBA158, Fundamentals of Bus. Admin... 6 hours
      ACC153 & ACC154, Principles of Accounting .................. 6 hours
   B. Required Core Courses
      LAW203 & LAW204, Business Law; Contracts I & II ........ 4 hours
      QNT205, Elementary Business Statistics ....................... 3 hours
      FIN205, Financial Management .................................... 3 hours
      MKT203, Marketing ................................................... 3 hours
      PRD208, Production Management .................................. 3 hours
      GBA251, Administrative Principles & Practices ............. 3 hours
      GBA282, Business Policy ........................................... 3 hours
   C. Business Administration Electives ................................................. 9 hours

II. Minimum Study in Economics ............................................................... 15 hours
    Economics 151, 152, Principles of Economics ....................... 6 hours
    Economics Electives ....................................................... 9 hours

III. Minimum General Studies in Other Liberal Arts and Science .................. 50–51 hours
     English 101–102, English Composition ........................................ 6 hours
     English 103–104, Introduction to Literature* .................... 6 hours
     Elective in Group I (Humanities) ........................................ 6 hours
     Laboratory Science ........................................................... 6–8 hours
     Mathematics ................................................................. 6 hours
     Social Sciences other than Economics ............................... 12 hours
     Liberal Arts & Science Electives*................................. 6–9 hours

IV. General Electives (at least 6 hours must be in fields other than Business Administration) .................................................. 15–18 hours
    Total Required ....................................................................... 128–130 hours

*English 111–112 or other literature courses may be substituted for English 103–104 with the consent of the College of Arts & Science and the School of Business Administration.

**Students completing a four-year ROTC program may offer up to 6 hours of ROTC courses in partial fulfillment of the Liberal Arts Electives requirement.

***To be admitted to the School of Business Administration, full-time students must present 4 hours of credit for Physical Education or a substitute—such as Military Science—acceptable to the Department of Physical Education.

In choosing his electives in business administration and economics, the student may emphasize either breadth of preparation for administration or a limited specialization in one functional area of business. A specialization ordinarily consists of at least twelve hours (four courses) in one of the following areas:

Accounting: Within the Business Administration major, specialization in accounting is designed to develop an awareness of standards and values required for significant managerial responsibility in areas where accounting concepts and practices are controlling.
Finance: Specialization in this area broadens and deepens the student's understanding of the finance function in business, of financial instruments and institutions, and of the economic forces and relationships which affect financial and investment management. It also develops further the student's powers of analysis and decision-making with respect to financial problems and financial reports.

Marketing: Those specializing in marketing will find emphasis on the use of resources to match demands and means of keeping our system of distribution adapted to expanded productive capacity and the over-all economy. Due in part to increasing production, the problems of distributing the goods and services being made available are increasing and are also becoming more complex. This has been evidenced by an increase in the number of people employed in distribution activities. The area of marketing provides opportunities for managers responsible for devising, improving and developing new techniques and policies for distribution.

Production Management: Specialization in this area encourages an appreciation of a production executive's responsibilities and an understanding of the issues, concepts and practices within this field.

BACHELOR OF SCIENCE
WITH A MAJOR IN ACCOUNTING

The degree program in Accounting is designed primarily for those interested in careers in public accounting or other fields where Certified Public Accountants are required or preferred. Completion of this program qualifies students for admission to the New York State C.P.A. examination.

Students who wish only to establish equivalency for the registered accounting curriculum at the University of Rochester and who have completed their basic degree in another institution, should obtain counselling from the School of Business Administration at the earliest opportunity and register with the Office of Admissions as special students.

The program combines intensive preparation in the field of accounting with a core of general business administration courses and with general education in the liberal arts and sciences. Consequently it includes more required courses and fewer elected than does the B.S. program in Business Administration. ROTC students can complete all of its requirements in four years, only if they attend one summer session.

The synopsis of the requirements for the Bachelor of Science degree with a major in Accounting follows:

### I. Minimum Study in Accounting

- Bus. Ad. ACC153 & ACC154, Principles of Accounting: 6 hours
- Bus. Ad. ACC221 & ACC222, Cost Accounting: 6 hours
- Bus. Ad. ACC233, Intermediate Accounting: 3 hours
- Bus. Ad. ACC236, Advanced Accounting I: 3 hours
- Bus. Ad. ACC239, Advanced Accounting II: 3 hours
- Bus. Ad. ACC261, Auditing I: 3 hours
- Bus. Ad. ACC275, Income Tax Accounting I: 3 hours

### II. Minimum Study in Other Areas of Business Administration


**Total:** 27 hours

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### Bus. Ad. LAW 203 & LAW 204, Business Law; Contracts  
4 hours

2 hours

### Bus. Ad. LAW 226, Agency Partnerships & Corp.  
2 hours

### Bus. Ad. QNT 205, Elementary Bus. Statistics  
3 hours

### Bus. Ad. FIN 205, Financial Management  
3 hours

### Bus. Ad. FIN 225, Financial Analysis  
3 hours

### Bus. Ad. MKT 203, Marketing  
3 hours

### Bus. Ad. PRD 208, Production Management  
3 hours

#### III. Minimum Study in Economics

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Economics 151–152, Principles of Economics</td>
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</tr>
<tr>
<td>Economics 211, Money, Credit and Banking</td>
<td>3</td>
</tr>
<tr>
<td>Economics Elective</td>
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#### IV. Minimum Study in Other Liberal Arts and Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tr>
<td>English 101–102, English Composition</td>
<td>6</td>
</tr>
<tr>
<td>English 103–104, Introduction to Literature*</td>
<td>6</td>
</tr>
<tr>
<td>Elective in Group I (Humanities)</td>
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</tr>
<tr>
<td>Laboratory Science</td>
<td>6–8</td>
</tr>
<tr>
<td>Mathematics</td>
<td>6</td>
</tr>
<tr>
<td>Social Sciences other than Economics</td>
<td>12</td>
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<tr>
<td>Liberal Arts Electives</td>
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</table>

#### V. General Electives**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>8–9</td>
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#### VI. Total Required

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>128–131</td>
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</tbody>
</table>

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*English 111–112 or other literature courses may be substituted for English 103–104 with the consent of the College of Arts and Science and the School of Business Administration.


***To be admitted to the School of Business Administration, full-time students must present 4 hours of credit for Physical Education or a substitute—such as Military Science—acceptable in the Department of Physical Education.

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## BACHELOR OF SCIENCE WITH A MAJOR IN INDUSTRIAL MANAGEMENT

The program in Industrial Management is designed to prepare students for successful progress toward the growing number of attractive executive positions in industry which demand not only business administrative ability but also an understanding of the physical and engineering sciences.

To achieve the required degree of understanding of both of these fields without undesirable sacrifice of study in the humanities and social sciences, the student must complete a somewhat larger number of hours of study than is prescribed for the other degree programs of the School, with a somewhat smaller number of electives. ROTC students will require five years to complete the program.

The degree requirements outlined below apply to those who began their study prior to September 1959. Students entering the College of Arts and Science or the University School in September 1959 should contact the School of Business Administration regarding proposed plans of study, or adopt the same first year schedule prescribed for engineering students.

The synopsis of the requirements for the Bachelor of Science degree with a major in Industrial Management follows:

#### I. Minimum Study in Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.E. 101–102, Engineering Drawing</td>
<td>6</td>
</tr>
<tr>
<td>M.E. 105, Shop Practice</td>
<td>1</td>
</tr>
</tbody>
</table>
M.E. 111, Applied Mechanics ........................................ 3 hours
M.E. 113, Mechanics of Materials .................................. 3 hours
M.E. 250 & 251, Thermodynamics .................................. 6 hours
M.E. 255 & 256, Engineering Laboratory ........................... 4 hours
Ch.E. 101, Intro. to Chem. Engineering ............................ 2 hours
E.E. 157 & 158, Elementary Electrical Engineering .............. 6 hours
M.E. 244, Motion and Time Study .................................. 3 hours

II. Minimum Study in Business Administration ....................... 27 hours
GBAI57 & GBAI58, Fundamentals of Bus. Administration ........ 6 hours
ACCI53, Principles of Accounting I .................................. 3 hours
ACCC290, Cost Accounting ........................................... 3 hours
QNT205, Business & Economic Statistics ............................ 3 hours
PRD208, Production Management ..................................... 3 hours
GBA251, Administrative Prin. & Practices .......................... 3 hours
Business Admin. Electives ............................................. 6 hours

III. Minimum Study in Basic Science & Mathematics .................. 30 hours
Chem. 123 & 124, General Inorganic Chemistry or 121 & 122, or General Chemistry ..................... 8 hours
Math. 100, Intro. Math. & Analytical Geometry .................... 3 hours
Math. 101, Elementary Calculus ..................................... 3 hours
Math. 150 & 151, Intermediate Calculus ............................. 8 hours
Physics 101–102, General Physics .................................... 8 hours

IV. Minimum Study in Humanities & Social Sciences .................. 39 hours
Econ. 151–152, Principles of Economics .............................. 6 hours
Econ. Elective ............................................................. 3 hours
English 101–102, English Composition ................................ 6 hours
English 103–104, Introduction to Literature or Survey of English Lit. .......................... 6 hours
Psych. 101–102, Intro. to Psychology .................................. 6 hours
Group I, Elective ......................................................... 6 hours
Group II, Elective ....................................................... 6 hours

V. Unrestricted Electives ............................................... 6 hours

VI. Physical Education or Acceptable Substitute ...................... 4 hours
Total Required ......................................................... 140 hours

Admission Requirements

Students are admitted to the School of Business Administration at the beginning of their junior year. To qualify for unconditional admission, a student must have earned, at the University of Rochester or at some other accredited institutions, not less than 60 hours of credit, distributed as follows:

**Majors in Accounting and Business Administration**

I. Minimum Study in Arts and Science .................................. 36–38 hours
   Economic Principles ................................................. 6 hours
   English Composition ................................................... 6 hours
   English Literature ..................................................... 6 hours
   Laboratory Science ..................................................... 6 hours
   Mathematics ............................................................. 6 hours
   Social Science Elective ................................................. 6 hours

II. Preprofessional Study in Business Administration ................. 12 hours
   Accounting Principles ............................................... 6 hours
   Fundamentals of Business Administration ........................ 6 hours
III. Electives (additional study in Arts and Science recommended) .................. 12–14 hours
Total (exclusive of any physical education required of freshmen and sophomores in the College attended, or an acceptable substitute therefore) .................. 60 hours

Majors in Industrial Management

I. Humanities and Social Science ............................................. 18 hours
   English Composition ........................................... 6 hours
   English Literature ........................................... 6 hours
   Social Science Elective ........................................... 6 hours

II. Laboratory Science and Mathematics ........................................... 30 hours
   Chemistry 121 & 122 ........................................... 8 hours
   Physics 101–102 ........................................... 8 hours
   Mathematics 100 & 101 ........................................... 6 hours
   Mathematics 150 & 151 ........................................... 8 hours

III. Mechanical Engineering ............................................. 10 hours
   Engineering Drawing ........................................... 6 hours
   Mechanics ........................................... 3 hours
   Shop Practice ........................................... 1 hour

IV. Business Administration ........................................... 9 hours
   Fundamentals of Business Administration .................... 6 hours
   Principles of Accounting ........................................... 3 hours
Total (exclusive of any physical education required of freshmen and sophomores in the College attended, or an acceptable substitute therefore) .................. 67 hours

Some deviation from the above specific distributions of courses may be permitted if it can be demonstrated that the student still will be able to meet all the distribution requirements for his Bachelor of Science degree in not over two more years of full-time study (or the equivalent in part-time study).

Normally, it will be expected that the admission requirements have been completed in a period of not over two years of full-time study in the case of students from the College of Arts and Science and transfer students from other institutions where a full-time course of study has been pursued.

The student's grades in the courses presented in fulfillment of these requirements must have been such as to give him a total of quality points of credit not less than double the hours of credit.* In addition to this evidence of overall academic ability, he must have demonstrated satisfactory achievement in all business administration and economics courses completed prior to admission to the School of Business Administration.

*For purposes of this computation, quality points of credit per hour of credit are assigned as follows: A—4; B—3; C—2; E—0. Intermediate grades such as C+ are assigned corresponding intermediate values, such as 1.5, when such grades are recognized as part of the granting institution's official grading system.

Graduate Program

The program of study leading to the degree Master of Science with a major in Business Administration is designed to increase the mature student's potentialities for effective participation and leadership in busi-
ness. Depending on the extent of a student's previous study in business administration and economics, this program requires one to two years of full-time study, or the equivalent in part-time study.*

For the student who previously has had little or no formal study of business administration and economics, the program involves two separate phases. The first, or prerequisite phase, consists of introductory and intermediate level study of the principal functional areas of business, basic administrative tools and practices, and the general economic environment in which business operates. The second, or graduate phase, is devoted to more advanced study in one area of business administration, independent research and report writing, and further integration in terms of top management policy and administrative action.

To be admitted to the second phase, i.e., to candidacy for the Master's degree, a student must have completed six semester hours of undergraduate study or equivalent coverage at the post-baccalaureate level in Accounting Principles, in Economic Principles, and in Business and Economic Statistics; and three semester hours each in Business or Corporation Finance, Marketing, Production or Industrial Management, and advanced Economics. These courses must have been completed with an average grade of at least B.

Beginning September 1959, five of the prerequisite subjects will be offered in courses designed for and normally open only to college graduates. These courses, Bus. Ad. ACC403, QNT405, FIN405, MKT403 and PRD408, offer more sophisticated and rigorous development of the subjects treated, hence provide better preparation for completion of the Master's degree requirements than do the corresponding undergraduate-level courses in these subjects. Their introduction represents a further strengthening of the program along lines characteristic of the M.B.A., or Master of Business Administration, type of graduate program. Additional and more detailed information on the M.B.A. program will be found in the Graduate Catalog. Students who have not as yet completed the prerequisite requirements in these subject fields should elect the new 400-level courses rather than the corresponding 200-level courses.

Upon admission to candidacy a student selects one field, e.g. accounting, finance, marketing, production, in which to specialize and prepare a master's essay or thesis. Typically half of his program concerns the field of specialization and includes all of the following Business Administration courses: GBA451, GBA482 and IHR421, plus three to six advanced Economics courses. In most cases Plan B for those whose basic degrees involved little or no formal study of business administration and economics is recommended. Others with substantial coverage in these fields may wish to consider Plan A. A more detailed description of the program may be obtained from the School of Business Administration. (See page 30.)

*Typically about three years of part-time study are required to complete the number of courses taken in one year of full-time study. The normal load for part-time students is two courses (about six semester hours) per term.
THE FACULTY
(1958–1959)

John M. Brophy, Ph.D. (Cornell)
Professor of Business Administration

Eric C. Vance, M.A. (Columbia)
Professor of Business Administration

Oscar M. Kriegman, Ph.D. (Illinois)
C.P.A. (Illinois)
Associate Professor of Accounting

John D. Stanley, LL.B. (Indiana)
Associate Professor of Business Administration

John M. Brophy, Ph.D. (Cornell)
Professor of Business Administration

Eric C. Vance, M.A. (Columbia)
Professor of Business Administration

Oscar M. Kriegman, Ph.D. (Illinois)
C.P.A. (Illinois)
Associate Professor of Accounting

John D. Stanley, LL.B. (Indiana)
Associate Professor of Business Administration

* Roger W. Allen, M.B.A. (Chicago)
Assistant Professor of Business Administration

George Lee Almond, M.A. (Ohio State)
Assistant Professor of Business Administration

Minor P. Avery, B.S. (Syracuse)
Assistant Lecturer

Jack H. Benard, B.S. (Illinois)
Associate Lecturer

John F. Bush, A.B. (Rochester)
Lecturer

Margaret Byrne Wehrle, B.S. (Syracuse)
Assistant Lecturer

Wiles E. Converse, M.B.A. (Pennsylvania)
Assistant Lecturer

Richard M. Dowling, M.A. (Illinois)
Assistant Lecturer

James C. Duffus, B.A. (Yale) C.P.C.U.
Assistant Lecturer

J. Henry Elferink, A.B. (Rochester)
Lecturer

Assistant Lecturer

Edgar R. Fielder, M.B.A. (Michigan)
Assistant Lecturer

Lecturer

*On leave.

Joseph N. Freudenberger, A.M. (Missouri)
Lecturer

Assistant Lecturer

John B. Gibson, M.A. (Williams College)
Assistant Lecturer

W. Richard Haines, B.S. (Rutgers)
Assistant Lecturer

William H. Hallock, A.B. (Rochester)
Lecturer

Bruce E. Hansen, LL.B. (Albany Law)
Associate Lecturer

Edwin H. Hartman (Rochester)
Assistant Lecturer

James T. Henderson, A.B. (Rochester)
Associate Lecturer

Lecturer

Russell R. Jalbert, M.A. (Chicago)
Assistant Lecturer

Joseph Kiebala, M.A. (Pennsylvania)
Associate Lecturer

Robert M. Klein, M.A. (Syracuse)
Associate Lecturer

Leslie J. Knox, M.B.A. (Syracuse)
Lecturer

Richard C. Legge, M.B.A. (Syracuse)
Assistant Lecturer

Robert W. Melville, S.B. (Massachusetts Institute of Technology)
Assistant Lecturer

Harry P. Messina, Jr., LL.B. (Cornell Law)
Associate Lecturer

Stewart D. Moot, LL.B. (Virginia Law)
Associate Lecturer

Assistant Lecturer

Douglas R. Nicholson, M.S. (Rochester)
C.P.A. (New York)
Lecturer
Courses
OF INSTRUCTION

EXPLANATION OF COURSE NUMBERING SYSTEM

Under 100  Non-credit courses.
100–119  Courses designed for other than degree candidates of the School of Business Administration and carrying no credit toward this School’s degrees.
120–149  Courses designed primarily for other than degree candidates of the School of Business Administration; credit allowed toward this School’s B.S. degrees only by special permission of the Director.
150–199  Sophomore-level courses carrying full credit toward B.S. degrees but no credit toward M.S. degrees in the School of Business Administration.
200–219  Junior-level courses carrying full credit toward B.S. degrees but no credit toward M.S. degrees in the School of Business Administration.
220–289  Junior-senior-level courses carrying full credit toward B.S. degrees and also open to graduate students in Business Administration.
290–299  Independent study (reading or research) courses carrying full credit toward B.S. degrees only.
400–419  Courses designed primarily for college graduate students; may be elected by outstanding seniors with special permission of the Director; normally do not carry credit toward the Master’s degree in Business Administration.
420–489  Courses designed primarily for graduate students; carry credit toward the Master’s degree in Business Administration.
490–499  Independent study (reading or research) courses open to graduate students only.
GBA119. Business Organizations, Concepts and Opportunities. (Fall) Designed for those interested but not majoring in Business Administration, this course involves a study of factors important to business and industrial growth, location, organization, technology, and community relationships. Trends in career prospects as they are affected by industrial and governmental manpower policies are given special emphasis. Visits to selected industries, case discussions and reports, and occasional evening conferences with business and industrial executives are included in the course work.

Credit—three hours.

Hours to be arranged.

GBA157. Fundamentals of Business Administration I. (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, both for illustrative purposes and to introduce the student to the methods of business problem analysis.

Credit—three hours.

Fall:
Sec. 1: Tues., Thurs.; 10:00-10:50 a.m.; Fri., 2:20-3:10 p.m.
Sec. 2: Tues., Thurs.; 11:00-11:50 a.m.; Fri., 2:20-3:10 p.m.
Sec. 51: Mon., Wed.; 7:10-8:25 p.m.
Sec. 52: Mon., Wed.; 8:40-9:55 p.m.
Sec. 53: Mon., Wed.; 8:40-9:55 p.m.
Sec. 61: Tues., Thurs.; 7:10-8:25 p.m.

Spring:
Sec. 1: Mon., Wed.; 8:40-9:55 p.m.
Sec. 61: Tues., Thurs.; 5:45-7:00 p.m.

GBA158. Fundamentals of Business Administration II. (Fall and Spring) A study of human factors in administrative organization and executive action. Stressed throughout is management theory and process underlying effective planning, direction and control. Discussions and case reports treat issues involving cooperation or conflict among managers and non-managers, including formal and informal organization, resistance to change, communication networks, representation and participation in decision-making, and elements in “programmed” approach to improved human relations. Prerequisite: GBA 157.

Credit—three hours.

Fall: Mon., Wed.; 8:40-9:55 p.m.
Spring:
Sec. 1: Tues., Thurs.; 10:00-10:50 a.m.; Fri., 2:20-3:10 p.m.
Sec. 2: Tues., Thurs.; 11:00-11:50 a.m.; Fri., 2:20-3:10 p.m.
Sec. 51: Mon., Wed.; 7:10-8:25 p.m.
Sec. 52: Mon., Wed.; 8:40-9:55 p.m.
Sec. 53: Mon., Wed.; 8:40-9:55 p.m.
Sec. 61: Tues., Thurs.; 7:10-8:25 p.m.

GBA251. Administrative Principles and Practices. (Fall) By means of the case method, this course deals with the administrative functions of organization, direction and control, emphasizing the human problems involved in getting things done through group effort. Topics include the role of formal and informal organization, maintenance of channels of communications, executive leadership, employee motivation, and morale. Class discussion of concrete business situations serves to create a keener awareness of the attitudes, actions, conflicting values, and relationships of the individuals with whom the administrator must work, and thus to develop a workable attitude and approach to administrative problems. Emphasis on independent and advanced study and papers distinguish the graduate aspect of this course. Prerequisites: FIN205, MKT205, PRD208.

Credit—three hours.

Sec. 1: Mon., Thurs.; 2:45-4:00 p.m.
Sec. 61: Tues., Thurs.; 5:45-7:00 p.m.

GBA282. Business Policy Seminar. (Spring) This course serves to integrate the student’s previous studies and further develop his ability to deal effectively with business problems. It comprises a series of cases on policy formulation and administration, involving the functions of purchasing, production, personnel marketing, finance and accounting. These cases 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. Emphasis on independent and advanced study and papers distinguish the graduate aspect. Prerequisites: QNT231, FIN205, MKT205, PRD208.

Credit—three hours.

Sec. 1: Mon., Thurs.; 2:45-4:00 p.m.
Sec. 61: Tues., Thurs.; 5:45-7:00 p.m.


ACCOUNTING

ACC63. Public Accounting Internship. By special arrangements between the University and various public accounting firms, local and national, an internship program has been established which enables the students to work full time with the firms for a period of three to six weeks during their senior year. The students are given an opportunity to perform the general tasks of a junior under the supervision of a senior accountant. The students must be recommended by the instructor and duly accepted by the public accounting firm before any final arrangements can be made for their participation in the program. Three to six weeks a semester. No credit.

ACCI53. Principles of Accounting I. (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. Credit—three hours.

Fall:
Sec. 1: Mon., Wed., Fri.; 8:00-8:50 a.m.
Sec. 2: Tues., Thurs., Sat.; 8:00-8:50 a.m.
Sec. 51: Mon., Wed.; 7:10-8:25 p.m.
Sec. 61: Tues., Thurs.; 5:45-7:00 p.m.
Sec. 62: Tues., Thurs.; 8:40-9:55 p.m.
Sec. 63: Tues., Thurs.; 8:40-9:55 p.m.

Spring:
Sec. 51: Mon., Wed.; 5:45-7:00 p.m.
Sec. 61: Tues., Thurs.; 8:40-9:55 p.m.

ACCI54. Principles of Accounting II. (Fall and Spring) A continuation of ACCI53. Major emphasis is placed upon asset and equity accounting, manufacturing accounting, the development of accounting principles, and the analysis of financial statements. Prerequisite: ACCI53. Credit—three hours.

Fall:
Sec. 51: Mon., Wed.; 5:45-7:00 p.m.
Sec. 61: Tues., Thurs.; 8:40-9:55 p.m.

ACC209. Managerial Cost Accounting. (Fall) A consideration of the basic elements of 1) general accounting for administration, marketing, and production costs, 2) unit cost accounting for the manufacturing firm, 3) budgeting and budgetary control and 4) standard cost accounting. Considerable emphasis will be given to both job and process cost accounting, including the principles of burden application. The discussion of budgeting and standard cost will be mainly from the standpoint of control. Prerequisite: ACCI53.

Credit—three hours.

ACC221. Cost Accounting I. (Fall) The application of cost principles and procedures to job order and process accounting; materials control and inventory methods; accounting for labor; allocation of overhead costs; cost statements. Prerequisite: ACCI54.

Sec. 1: Tues., Thurs., Sat.; 9:00-9:50 a.m.
Sec. 51: Mon., Wed.; 5:45-7:00 p.m.
Sec. 61: Tues., Thurs.; 7:10-8:25 p.m.

ACC222. Cost Accounting II. (Spring) A continuation of ACC221. Standard cost procedures; distribution cost analysis; the use of cost information for administrative purposes. Prerequisite: ACC221.

Credit—three hours.

Sec. 1: Tues., Thurs., Sat.; 9:00-9:50 a.m.
Sec. 51: Mon., Wed.; 5:45-7:00 p.m.
Sec. 61: Tues., Thurs.; 7:10-8:25 p.m.

ACC233. Intermediate Accounting. (Fall) An analysis of the accounting theory underlying the preparation of financial statements. Topics treated include the form and content of corporation financial statements; principles of asset valuation, accounting for capital stock and surplus and problems of income determination. Prerequisite: ACCI54.

Credit—three hours.

Sec. 1: Tues., Thurs., Sat.; 11:00-11:50 a.m.
Sec. 51: Mon., Wed.; 8:40-9:55 p.m.

ACC236. Advanced Accounting I. (Spring) Topics treated include intangible assets; liabilities; reserves; analysis of financial statements; reorganizations; price-level problems; partnerships; consignments; installment sales; and insurance. Prerequisite: ACC233.

Credit—three hours.

Sec. 1: Tues., Thurs., Sat.; 11:00-11:50 a.m.
Sec. 51: Mon., Wed.; 8:40-9:55 p.m.

ACC239. Advanced Accounting II. (Fall) Topics treated include accounting for businesses in financial difficulty; estates; consolidated statements; mergers; and foreign exchange. Prerequisite: ACC236.

Credit—three hours.

Sec. 1: Tues., Fri.; 2:20-3:35 p.m.
Sec. 51: Mon., Wed.; 8:40-9:55 p.m.
ACC241. Budgetary Control. (Fall) Principles and procedures of preparing business budgets for planning and control purposes. Preparation of sales, distribution, administration and problems involved. Extensive use of problems and cases. Prerequisite: ACC222 or the equivalent.

Credit—three hours.
Mon., Wed.; 8:40–9:55 p.m.

ACC243. Governmental and Institutional Accounting. (Fall) A study of fund accounting as applied to governments and non-profit institutions; principles and methods of budgeting, estimating income, and operating budgetary control systems; accounting for revenue and expenditures; preparation of financial statements; and other special problems. Prerequisite: ACC223.

Credit—two hours.
Fri., 6:30–8:15 p.m.

ACC261. Auditing I. (Fall) 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. Principles and procedures are illustrated and developed by means of auditing practice cases. Prerequisite: ACC236.

Credit—three hours.
Fall: Tues., Thurs.; 8:40–9:55 p.m.
Spring: Mon., Wed., Fri.; 8:00–8:50 a.m.

ACC262. Auditing II. (Spring) A continuation of ACC261.

Credit—three hours.
Tues., Thurs.; 8:40–9:55 p.m.

ACC275. 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. In the second semester special emphasis will be placed upon the preparation of returns. Prerequisite: ACC256.

Credit—three hours.
Sec. 1: Mon., Wed., Fri.; 8:00–8:50 a.m.
Sec. 51: Mon., Wed.; 8:40–9:55 p.m.


Credit—three hours.
Mon., Wed.; 8:40–9:55 p.m.

(ACC281. Accounting Systems I.)

Credit—two hours.
Not offered 1959–60.

(ACC282. Accounting Systems II.)

Credit—two hours.
Not offered 1959–60.

ACC283. C.P.A. Problems. (Spring) Advanced accounting problems are used as a basis for the review and application of accounting concepts and procedures. The material for the course is drawn to a great extent from actual C.P.A. Examination questions and includes analysis and revision of financial statements, partnerships, receiver's statements, consolidated statements, cost accounting, and other accounting problems. Prerequisites: ACC221, ACC239, and ACC261.

Credit—three hours.
Tues., Thurs.; 7:10–8:25 p.m.

ACC403. Introductory Accounting Concepts. (Fall) Designed for college graduates without previous formal study in accounting, this course is a broad survey of accounting with emphasis upon the development of a logical framework of underlying concepts and standards upon which accounting practices and procedures are based. The course stresses the principles and notes the procedures employed in analyzing business transactions, recording their financial effects, summarizing them in financial statements, and interpreting these statements.

Credit—three hours.
Mon., Wed.; 8:40–9:55 p.m.

BUSINESS LAW

LAW203. 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. Prerequisite to all other business law courses.

Credit—two hours.
Sec. 1: Mon., Wed.; 8:00–8:50 a.m.
Sec. 71: Fri., 6:30–8:15 p.m.

LAW204. Business Contracts II. (Spring) A continuation of LAW203.

Credit—two hours.
Sec. 1: Mon., Wed.; 8:00–8:50 a.m.
Sec. 71: Fri., 6:30–8:15 p.m.

LAW223. 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.  

Credit—two hours.

Sec. 1: Tues., Thurs.; 8:00-8:50 a.m.
Sec. 71: Fri., 6:30-8:15 p.m.

LAW226. 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.

Credit—two hours.

Sec. I: Tues., Thurs.; 8:00-8:50 a.m.
Sec. 71: Fri., 6:30-8:15 p.m.

LAW231. Property Law I.  

Credit—three hours.  
Not offered 1959-60.

LAW232. Property Law II.  

Credit—three hours.  
Not offered 1959-60.

LAW235. Fundamentals of Patents. (Spring) Tests for invention, mechanics of protecting inventions, rights of inventors and employers, patent licensing, infringement, validity, patentability and inventorship discussed from the standpoint of business and technical personnel.

Credit—two hours.  
Not offered 1959-60.

QUANTITATIVE METHODS

QNT205. Elementary Business Statistics (Fall)  
Methods of statistical analysis common to all fields, including collection and charting of data, computation and use of averages and measures of dispersion, sampling, and statistical investigation. Prerequisite: Intermediate Algebra.

Credit—three hours.

Sec. 1: Tues., Thurs., Sat.; 11:00-11:50 a.m.
Sec. 61: Tues., Thurs.; 8:40-9:55 p.m.
Spring: Tues., Thurs., Sat.; 11:00-11:50 a.m.

QNT206. Intermediate Business Statistics. (Spring) Techniques of statistical analysis applicable to business and economic data, including construction and use of index numbers, time series analysis, correlation, and forecasting. Prerequisite: QNT205.

Credit—three hours.

Tues., Thurs.; 8:40-9:55 p.m.

QNT231. Electronic Data Processing. (Fall)  
A first course in the preparation of data and the use of electronic machines to provide information needed for executive decision. The course will include an introduction to the nature, programming and use of equipment with emphasis on that available at the University of Rochester Computing Center. Typical case studies concerned with current uses in business and government will be investigated with the equipment at the Computing Center.

Credit—three hours.

Mon., Wed.; 7:10-8:25 p.m.

QNT234. Data Processing Systems. (Spring)  
Analysis of the overall design of business systems for electronic data processing. Study of how a complete system relates to the equipment to be used. The last part of the course is devoted to the analysis, charting and solution of a realistic business system and individual assignments in the field of electronic data processing for business. Prerequisite: QNT231.

Credit—three hours.

Mon., Wed.; 7:10-8:25 p.m.

QNT405. Business Statistics. (Spring)  
A condensation of QNT205 and QNT206, intended for college graduates only. The course surveys the basic principles and procedures of statistical analysis essential to the administrator concerned with business policy formation and control. Principal topics include collection, summarization and presentation of statistical data; time series analysis, construction of index numbers; correlation; and statistical inference.

Credit—three hours.

Mon., Wed.; 7:10-8:25 p.m.

FINANCE

FIN118. Credit and Collection Principles. (Spring)  
A basic course providing a working knowledge of credits and collections. It includes a study of the nature and function of credit; types and classifications of credit; retail and mercantile credit contrasted; credit department organization; functions and personnel; credit risk factors; sources of credit information and analysis of credit risks; credit interchange services and uses; interpretation of credit reports; uses of financial statements; and collection procedures.

Credit—two hours.

Mon., 6:30-8:30 p.m.
FIN19. Advanced Credits. (Fall) A continuation of the course Credit and Collection Principles with emphasis upon analysis of financial statements as a source of credit information; legal remedies used in collection of delinquent accounts; handling insolvent accounts and bankruptcies; adjustment problems and the use of adjustment bureaus; credit insurance; activities and services of credit associations; measures of credit department efficiency, and other important phases of credit work. Prerequisite: FIN118.  
Credit—two hours.  
Mon.; 6:30-8:30 p.m.

FIN128. Credit Management Problems. (Spring) This course is designed to provide the student with a working knowledge of credit management and control. A series of cases and problems are used in the course related to the analysis of an account with special consideration given to the nature of the business; current economics; industrial and governmental trends and conditions; credit limits; assignments; adjustments; bankruptcies. Prerequisite: FIN119.  
Credit—two hours.  
Mon.; 6:30-8:30 p.m.

FIN131. General Insurance. (Fall) The historical development and economic significance of the industry as well as the types and organization of insurance carriers and the principles of rate making. Thorough discussion of the workings and basic revisions of the general insurance contract with extended study of fire and marine. Useful to the general business or economic student and prerequisite to FIN134.  
Credit—three hours.  
Mon., Wed.; 4:20-5:55 p.m.

FIN134. Casualty Insurance. (Spring) A continuation of FIN131 studying all of the common casualty insurance contracts, with extended study of public liability, automobile, workmen's compensation, bonds, accident and health, aviation and "package" policies. Thorough discussion of the contract, rates, loss adjustment, insurance law and regulation of the industry. Designed for the general business or economic student as well as for those interested in insurance as a career. Prerequisite: FIN131.  
Credit—three hours.  
Mon., Wed.; 4:20-5:55 p.m.

FIN205. Financial Management. (Fall and Spring) A study of the financial policies and practices essential to effective business administration with major emphasis on corporation finance. Topics treated include corporation securities, promotion, long-term financing, short-term financing, administration of funds, administration of income, expansion, and re-organization. Emphasized throughout is the adaptation of financial principles to specific business situations. Prerequisites: GBA157 and ACC154.  
Credit—three hours.  
Fall: Mon., Wed., Fri.; 10:00-10:50 a.m.  
Spring: Mon., Wed.; 7:10-8:25 p.m.

FIN246. Investment Management. (Spring) The general principles of successful investment, as applied to the management of individual and institutional investors' funds. Topics studied include determining investment objectives, formulating general investment policies, classifying investment media, interpreting and forecasting general market trends, analyzing leading industries, and the developing criteria for the selection of individual security issues. Prerequisites: ECOUS151 and GBA158.  
Credit—three hours.  
Mon., Wed., Fri.; 11:00-11:50 a.m.

FIN256. Financial Analysis. (Fall) The analysis of corporation and other financial reports, from the standpoints of investors, short-term creditors, and management. Primary emphasis is placed on the interpretation of balance sheets, income statements and other company and industry data for the purpose of analyzing investment bonds, investment and speculative stocks, and short-term credit risks. Prerequisites: FIN205 and ACC233.  
Credit—three hours.  
Sec. 1: Tues., Thurs., Sat.; 10:00-10:50 a.m.  
Sec. 61: Tues., Thurs.; 7:10-8:25 p.m.

FIN405. Financial Management. (Spring) This course, designed for college graduates with no previous formal training in corporation finance, analyzes the policies and practices required for effectively planning and controlling the finances of corporations and other businesses. Topics include corporation securities, promotion, long-term financing.
short-term financing, administration of funds, administration of income, expansion and reorganization. Emphasized throughout is the adaptation of financial principles to specific business situations. Prerequisites: ACC154 or ACC403, and at least one course in Marketing, Production Management or Fundamentals of Business Administration.

Credit—three hours.
Mon., Wed.: 8:40-9:55 p.m.

REAL ESTATE

R-E121. Fundamentals of Real Estate. (Spring) Introductory study of technical, legal and economic phases of real estate business. Topics covered include ownership, contracts, deeds, bonds and mortgages, leases, title insurance and title closing, appraisal, depreciation, financing, investment, management, planning, rent control, housing, and the growing role of government.

Credit—three hours.
Tues., Thurs.; 8:40-9:55 p.m.

R-E123. Real Estate Brokerage Law and Practice. (Fall) A study of real property law, including real estate contracts, liens and easements, leases, bonds and mortgages, deeds, agency, and forms of voluntary and involuntary alienation.

Credit—three hours.
Tues., Thurs.; 7:10-8:25 p.m.

R-E125. Property Management and Financing. (Spring) A study of property analysis, location, space layout, equipment service, rental policies, vacancy and rental surveys, lease provisions, budgets, accounting, inspection, purchasing, maintenance, building codes, tenant relations, and operating policies. Attention is also given to equities and mortgages, leases, junior liens, mortgage origination, servicing, defaults, and the impact of legislation on financing of real estate investments.

Credit—three hours.
Tues., Thurs.; 7:10-8:25 p.m.

(R-E127. Real Estate Appraisal and Valuation.)

Credit—three hours.
Not offered 1959-60.

MARKETING

MKT203. Marketing. (Fall and Spring) A study of the problems involved in the movement of goods from producers to consumers and industrial users through the different channels of distribution. An analysis of the marketing functions performed by manufacturers, wholesalers, retailers, agent middlemen, and market exchanges. Through the use of the case method, major marketing policies are critically analyzed and evaluated including such topics as pricing, branding, choice of distribution channels, selective selling, and the planning and administration of sales programs. Prerequisite: GBA158.

Credit—three hours.
Fall:
Sec. 1: Mon., Wed., Fri.; 11:00-11:50 a.m.
Sec. 51: Mon., Wed.; 5:45-7:00 p.m.
Spring:
Sec. 51: Mon., Wed.; 5:45-7:00 p.m.

MKT221. Advertising. (Fall) The objective of this course is to develop an understanding of and ability to appraise advertising as a part of the selling program. After surveying the social and economic aspects of advertising, a critical examination is made of the principles and techniques involved in developing good copy, making layouts, and reproducing the advertisement. The case method is used to illustrate and analyze the chief advertising problems faced by businessmen. Topics treated include stimulating primary and selective demand, determining basic promotional strategy, formulating and executing promotional programs, selecting advertising media, determining the appropriation, testing the advertising and maximizing the results. Prerequisite: MKT203.

Credit—three hours.
Sec. 1: Mon., Wed., Fri.; 9:00-9:50 a.m.
Sec. 51: Mon., Wed.; 7:10-8:25 p.m.

MKT234. Principles of Retailing. (Spring) The objective of this course is to develop the principles of management as applied to retail stores. The techniques of retail merchandising are examined and cases are used to provide the student with training in making decisions. Topics discussed include store location, layout and organization, analysis of
consumer demand, buying, pricing, merchandise control, budgetary control, retail salesmanship, retail advertising and display, sales promotion planning, credits and collections, store personnel work, and general retail management. Prerequisite: MKT203.

Credit—three hours.
Sec. 1: Mon., Wed., Fri.; 9:00-9:50 a.m.
Sec. 51: Mon., Wed.; 8:40-9:55 p.m.

MKT241. Marketing Research and Analysis. (Fall) An investigation and critical examination of facts as a basis for formulating marketing policies and planning sales and promotional strategy. A problem of current interest may be selected for investigation as a class project. Intensive analysis of the topics chosen provides practical experience in the identification of the specific research problem, the types and uses of research techniques, sampling methods, construction of questionnaires, tabulation and analysis of results, preparation of reports, and interpretation of conclusions as a basis for executive action. Prerequisite: MKT203 or permission of the instructor.

Credit—three hours. Not offered 1959-60.

MKT244. Sales Management. (Spring) Comprehensive cases and problems are utilized to develop the management principles involved in product merchandising, selecting wholesale and retail outlets, determining prices and terms of sale, utilizing marketing research in the solution of sales problems, planning sales programs and sales promotion, building a sales organization, managing the sales force, and controlling sales costs. Prerequisite: MKT203.

Credit—three hours.
Sec. 1: Mon., Wed., Fri.; 9:00-9:50 a.m.
Sec. 51: Mon., Wed.; 7:10-8:25 p.m.

MKT403. Managerial Marketing. (Fall) Designed for college graduates without previous formal study in Marketing Management, this course analyzes the theory and practice in planning, organizing and controlling marketing activities from the marketing executive’s viewpoint. Topics covered include integration of major tasks and decisions involved in developing and marketing products, marketing planning, selection of channels of distribution, study of the market structure and forces within the business firm which influence the competitive character of marketing effort, legal restrictions affecting distribution, and theoretical aspects of marketing. Special reports and case materials are emphasized. Admission restricted to graduate students.

Credit—three hours.
Mon., Wed.; 8:40-9:55 p.m.

PRODUCTION

PRD208. Production Management. (Fall and Spring) A study of the issues, concepts and practices encountered in effectively managing the production function. Topics covered include analysis of facilities; research and product development; production planning; organizing and controlling characteristics of the manufacturing processes; control of quality, quantity and cost; consideration of increased automation; and nature and applications of operations research. Case analysis is emphasized, and field studies of industrial plants may be included. Prerequisites: GBA158 and ACC153.

Credit—three hours.
Fall: Mon., Wed.; 8:40-9:55 p.m.
Spring: Mon., 1:20-2:10 p.m; Wed., 1:20-4:10 p.m.

PRD223. Establishment and Analysis of the Production Facility. (Fall) Integration of characteristics and requirements of process, product, and operation into a total production system. Topics include plant location material flow patterns; physical arrangement of direct and auxiliary facilities; utilities and services; characteristics and selection of material handling devices; economic evaluation of alternatives for capital expenditures including MAPI formula and discounted cash flow techniques; and the development of tooling and manufacturing policies. Prerequisites: GBA157 and GBA158 or consent of instructor.

Credit—three hours.
Mon., Wed.; 8:40-9:55 p.m.

PRD231. Work Simplification and Measurement. (Spring) Elements in obtaining optimum utilization of plant with minimum labor and material costs. Topics include
analysis of production systems into unit operations; principles and applications of motion and time study, including process and operation analysis, MTM, standard data and synthetic times; analysis of performance and productivity trends; job description and classification as a factor in establishing wage and salary systems; and analysis of wage rates and productivity in management planning and control. Prerequisites: GBA157 and GBA158 or consent of instructor.

Credit—three hours.

PRD234. Problems in Production Management. (Spring) Through specific cases and supporting investigations, consideration is given to issues and problems in production management at the corporation level. Topics include manufacturing policy development, short and long-run objectives, plans and programs; development and establishment of production schedules; selection and utilization of plant and equipment, material and supplies; control and reduction of costs; inventories; warehousing; research projects; interrelationships with financial, personnel, safety, legal, tax, technical, and other control programs; and the coordination and collaboration needed in carrying out executive responsibilities. Prerequisite: PRD208 or PRD223 and PRD226.

Credit—three hours.

INDUSTRIAL & HUMAN RELATIONS

IHR140. Personnel Relations. (Spring) Primarily for non-majors in Business Administration, this course centers upon an analysis of relationships, procedures, and techniques employed in mobilizing human resources. Topics include employee selection, development; employee participation in decision making and the issues involved in extending employee benefit and service programs. Consideration will also be given to labor mobility. A limited number of field studies will be made.

Credit—three hours.

IHR231. Business and Corporate Public Relations. (Spring) Principles and history of public relations as a key function of business management. Requirements for an executive and/or practitioner. Fundamentals of planning and programming, with analysis of typical blueprints for action. Demonstration and practice in publicity techniques for effectively communicating a company's story, through setting up a hypothetical corporation, emphasis on class participation in solving major public relation problems of business and industry.

Credit—three hours.
IHR241. 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: GBA158.

Credit—three hours.
Tues., Thurs.; 7:10–8:25 p.m.

IHR244. Human Relations in Industry. (Spring) A study of the factors related to establishing effective human relationships in industrial and business organizations. Topics to be included are employee motivation, employee morale, developing effective channels of communication, and factors related to leadership and supervisory skills. The course is designed to augment PRD241—Fundamentals of Personnel Administration. Prerequisite: GBA158.

Credit—three hours.
Tues., Thurs.; 7:10–8:25 p.m.

IHR262. Management-Union Relationships and Public Control. (Fall) A study of the 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: ECO151, 152 and GBA 157–158 or consent of instructor.

Credit—three hours.
Tues., Thurs.; 8:40–9:55 p.m.

IHR421. Research and Report Writing. (Fall) Review of basic principles of composition particularly as applied to present-day industrial communications. Preparation for required Master's report. Study of trends in business ideas-communication.

Credit—three hours.
Hours to be arranged.

TRANSPORTATION

TRP227. Principles of Transportation Management. (Fall) A course of study which deals with the economic aspects of the transportation system in the United States from the era of railroad building to the present day. It provides an overall look at the transportation system, indicating the relative importance of the various modes of transport, stressing their similarities and their significant differences. The rate structure, special aspects of administration and organization, and selected carrier problems are examined from the standpoint of theory and practice. Special consideration is given to national transportation policy.

Credit—three hours.
Tues., Thurs.; 8:40–9:55 p.m.

TRP232. ICC Law and Regulations. (Spring) A course designed to provide students with an understanding of the Interstate Commerce Act, particularly the features which provide for the regulation of the several modes of transportation. The case method of study is employed, requiring the student to read decisions of the courts and the commission. Issues arising under the Act include cases affecting common, contract and private carriers and distinctions between the nature of interstate and intrastate transportation. Prerequisite: TRP227.

Credit—three hours.
Mon., Wed.; 7:10–8:25 p.m.

TRP257. Transportation Management. (Fall) Problems of transportation, forming an extension of materials introduced in TRP227 and TRP232. This course is designed to be an integrating course in the field of transportation. Important factual material is covered but emphasis is on the decision-making and management skills developed by use of the case method. Prerequisite: TRP257.

Credit—three hours.
Tues., Thurs.; 8:40–9:55 p.m.
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49. Power Plant
50. Martin Brewer Anderson Road
51. Swinburne Boulder and River Walk
52. Administration Building
53. Dormitory F
Index

A
Abbott, George, Scholarships 52
Activities, Undergraduate 88
Administration Building 20
Administrative Officers 286
Admission 35
Advanced Standing 39
Application for 35
Deposit 38
Requirements for 37
Scholastic Aptitude Test 38
Advisory Program for Students 67
Air Reserve Officers' Training Corps 84
Air Science, Courses 132
Alexander Alumni Award 65
All-University Symphonic Orchestra 102
Alumnae Prize 63
Alumnae Scholarships for Women 56
Alumni Regional Scholarships 53
Alumni War Memorial Scholarships 54
American Institute of Chemical Engineers Rochester Section Scholarship 53
American Studies Concentration in 110
Courses in 133
Anderson Prize 63
Anthropology 223
Appelt Memorial Prize 63
Applications for Admission, Time for Submitting 35
Application Fee 44
Arts and Science, College of 103
Administrative Officers 118
Arts Course 104
Comprehensive Examination 107
Courses of Instruction 131
Courses, Department of Nursing 191
Courses Leading to Bachelor of Science Degree 114
Astrophysics 211
Biology 134
Chemistry 139
Geology 170
Nursing 191
Optics 197
Physics 208
Faculty 118
Honors Program 112
Honors Seminars 126
Interdepartmental Programs of Concentration 109
American Studies 110
General Science 109
Non-Western Civilizations 110
Music, Courses in 186
Preparation for Advanced and Professional Study 115
Registration for Studies 114
Requirements of Distribution 105
Requirements, Field of Concentration 106
Requirements, Freshman Year 104
Arts, Fine, Courses in 154
Arvin Memorial Prize 63
Astronomy, Courses in 214
Astrophysics, Synopsis of the Course in 211
Athletic Activities, Undergraduate 90
Atomic Energy Project 31
Attendance 71
Auditorium, Strong 20

B
Bachelor's Degree, Courses for 78
Bands, Marching and Concert 102
Bausch and Lomb Memorial Laboratory 19
Bausch and Lomb Science Scholarships 51
Bigelow Awards 66
Biology, Courses in 134
Board of Trustees 285
Bradley Scholarship 55
Broughton, Geoffrey. Memorial Scholarship 53
Brown Prize Scholarship 54
Buildings, General Description of 17
Bureau of Educational Placement 68
Burton Hall 21
Business Administration, School of 29, 266
Administrative Officer 266
Admission Requirements 271
Courses of Instruction 275
Degree Programs Offered 267
Faculty 274
Graduate Program 272
History of 29
292
Purpose 266
Specializations 268
(Accounting, Finance, Marketing, Production Management)
Synopsis of Courses for
Bachelor of Science 267
Bachelor of Science, Major in Business Administration 267
Bachelor of Science, Major in Accounting 269
Bachelor of Science, Major in Industrial Management 270

C
Caldwell Prize 63
Calendar 2
Canadian Studies Program 28
Carlson, Ella Hawkins Scholarship 53
Casey-Long Alumni Scholarships 55
Centennial Prize Scholarships 50
Chambers Loan Fund 59
Chapel, University 100
Charles Memorial Award 61
Chemical Engineering Courses in
Synopsis of the Course in 246
Chemistry, Courses in 139
Classics, Courses in 161
College Cabinet 87
College Entrance Examination Board 38
College of Arts and Science 25, 103
College of Education 29, 229
College of Engineering 30, 243
College Scholarships 54
College Setting 11
Comfort, Milton S., Scholarships 52
Comprehensive Examination 107
Conferences, Student 102
Courses of Instruction 131
Credit, Advanced Standing 39
Credit, Hours and Points of 73
Crosby Hall 21

D
Davis Prizes 63
Deficiency in Academic Work 74
Degree Programs
Offered on River Campus 77
Dentistry, Preparation for 117
Department of Nursing 31
Dewey Building 19
Dewey Prizes 63
Dewey Scholarships 62
Distinction, Degree with 75
Distribution, Requirements for 105
Dormitories
For Men 21
For Women 22
Dormitory Fees
Men 93
Women 95
Dutton Prize 65

E
Eastman School of Music 30
Administrative Officers 289
Courses for Art Students 186
Fees for Courses 44
Eastman Theatre 14
Eastwood, William, Scholarship 55
Economics, Courses in 145
Education, College of
Administrative Officers 288
Admission 230
Courses in 234
Elementary Education, Synopsis of Courses in 231
Faculty 233
History of Secondary Education, Synopsis of Courses in 232
Education, Nursing 237
Educational Aims and Purposes 7
Educational Placement Bureau 68
Electrical Engineering, Courses in 258
Synopsis for the Course in 246, 249
Elementary Education, Synopsis of Course 231
Ellison Prize 64
Employment, Student 60
Engineering, College of
Administrative Officers 30, 243
Admission Policy 245
Chemical Engineering, Courses in
Synopsis in 255
Courses in 246, 249
Electrical Engineering, Courses in 258
Synopsis in 246, 249
Faculty 254
Five Year—Two Degree Courses 245
Four Year Accredited Courses 244
Mechanical Engineering, Courses in 260
Synopsis in 246, 251
Metallurgical Option 245
English, Courses in 149
European Literature in Translation, Course in 163
Evening Session 32
Examinations
Comprehensive 107
Delinquent 73
### Failure, and
- Final: 73
- Expenses, Estimated: 46

### Faculty
- Arts and Science: 118
- Business Administration: 274
- Education: 233
- Engineering: 254

### Failure, Examinations and
- Final: 73
- Fees, General: 43
- Fellowships and Prizes: 61
- Fine Arts, Courses in: 154
- Firearms: 75
- Foreign Languages, Courses in: 159
- Fraternities: 92
- Fraternity Houses: 22
- French, Courses in: 163

### Freshman Week
- 41

### G
- Gamma Phi Prize: 65
- Gavett Hall: 20
- General Regulations: 71
- General Science Concentration: 109
- Geneseo Scholarships: 51
- Geography, Courses in: 174
- Geology, Courses in: 170
- Geometrical Optics, Courses in: 199
- German, Courses in: 165
- Glee Clubs: 101
- Grades: 72
- Graduate Record Examinations: 69
- Graduate Studies: 32, 79
- Graflex Prize Scholarship: 55
- Greek, Courses in: 162
- Group Relations, Center for Study of: 28
- Guidance, Vocational: 67
- Gymnasium, Alumni: 21
- Gymnasium, Women's: 22

### H
- Harkness Hall: 30
- Hastings Prize: 62
- Havens, Samuel N., Prize Scholarships: 52
- Health Service: 69
- Heuman Scholarships: 55
- Historical Sketch of University: 24
- History, Courses in: 175
- Hoeing Hall: 21
- Hoeing Scholarship: 56
- Hofheinz, Katy B., Scholarship: 52
- Holt Prize Scholarship: 55
- Honorary Prize Scholarships: 50
- Honorary Societies: 92
- Honors Seminars: 126
- Comparative Literature: 126
- Economics: 126
- English: 127
- Foreign Languages: 128
- History: 128
- Philosophy: 130
- Political Science: 131
- Honors Program: 112
- Admission and Plan of Study: 112
- Advisory Committee: 113
- Departments Offering Honors Studies: 113
- Examinations and Grades: 112
- Planning a Program: 113
- Hooker Scholarship: 57
- Hospital: 31
- Municipal: 31
- Strong Memorial: 31
- Hours of Credit: 73
- Howe Prize Scholarship: 55
- Hull Prize: 63

### I
- Illness, Report of: 71
- Industrial Management, Course in: 270
- Interdepartmental Programs of Concentration: 109

### J
- Junior Year Abroad: 72

### K
- Kellogg Loan Fund: 59
- Kreyer Prize: 63
- Kuichling Prize: 62

### L
- Laboratories
  - Biological: 19
  - Chemical: 19
  - Engineering: 20
  - Geological: 19
  - Physical: 19
  - Psychological: 19
- Latin, Courses in: 161
- Lattimore Hall: 19
- Law, Preparation for: 117
- Lectures, Public: 102
- Leet Prize: 62
- Lehmann Prize: 62
- Libraries
  - Art: 17
INDEX  |  295

Medical  18  
Rush Rhees  17  
Sibley Music  18  
Staff  287  
Loans, Scholarships and  48  
Loans, Student  58  
Lovejoy Hall  21  

M  
MacKenzie Prizes  64  
Mairs Prize  62  
Marching Band  102  
Marking System  72  
Marriage, Students  71  
Master Keys  75  
Mathematics, Courses in  180  
McGill Memorial Prize  64  
Mechanical Design, Courses in  201  
Mechanical Engineering  
Courses in  260  
Synopsis of the Course in  246, 251  
Medical Center  31  
Medical Library  18  
Medicine, Preparation for  115  
School of  31  
Memorial Art Gallery, Description of  23  
Director of  288  
Men's Dining Hall  22, 98  
Metallurgical Option in Engineering  245  
Metals Scholarship in Metallurgy  54  
Miles Scholarship Fund  52  
Moore, Rida S., Scholarship  51  
Morey Hall  19  
Morey Scholarship  57  
Music, Activities  101  
Concentration in  185  
Courses in  186  
Fees for Courses in  44  

N  
Naval Reserve  
Officers' Training Corps  81  
Naval Science, Courses in  188  
Newton Prize  62  
New York Alumnae Scholarship  56  
New York Alumni  
Prize Scholarship  55  
New York State Scholarships  49  
Non-Western Civilizations,  
Courses in  111, 190  
Concentration in  110  
Nursing  
Courses in  191  
Department of  31  
Nursing Education, Division of  237  
Courses in  240  

Degree Program  238  
Faculty  233  
General Information  237  
Requirements  238  

O  
Officer Candidate Programs  81  
O'Connor Graduate Study  
Endowment Fund  66  
O'Hern Scholarships  65  
Optics  
Courses in  197  
Faculty  124  
Institute of  19, 30  

P  
Pfaudler Scholarship  52  
Philosophy, Courses in  202  
Photography, Courses in  201  
Physical Education, Courses in  206  
Physical Optics, Courses in  199  
Physics, Courses in  208  
Physiological Optics, Courses in  200  
Placement, Student  68  
Platoon Leaders' Class,  
U. S. Marine Corps  85  
Points of Credit  73  
Political Science, Courses in  215  
Prince Street Campus  23, 26  
Prizes, List of Undergraduate  61  
Probation and Warning  74  
Professional Studies, Description of  29  
Professional Study, Preparation for  115  
Program Approval  72  
Psychiatric Clinic  31  
Psychology, Courses in  218  

R  
Regulations, General  71  
Religion, Courses in  222  
Religious Activities  99  
Requirements  
For Concentration  106  
For Degrees with Distinction  73  
For Distribution  105  
Freshman Year  104  
Residence Requirement  72  
Rhees Prize Scholarship  56  
River Campus  11  
Rochester City Scholarships  51  
Rochester National Scholarships  50  
Rochester Prize Scholarships  50  
Rochester Section of American  
Institute of Chemical  
Engineers Scholarship  53
Room Deposit 98
Rosenberger Prizes 65
Rush Rhees Library 17
Rush Rhees Scholarships 51, 56
Russian, Courses in 167

S
Scholarship Cups 66
Scholarships and Loans 48
Scholarships for
Either Men or Women 50
For Men 54
For Women 56
Scholastic Aptitude Test 38
School of
Business Administration 29, 266
School of Medicine and Dentistry 31
Administrative Officers 289
Hospital
Municipal 31
Strong Memorial 31
Science Courses 114
Registration for Studies 114
Requirements
for Degree with Distinction 73
for Distribution 105
Secondary Education,
Synopsis of Course 232
Sherman Fellowship 62
Sigma Kappa Upsilon Scholarship
Prize 64
Societies, Honorary 92
Sociology, Courses in 223
Sororities 92
Spanish, Courses in 168
Special Services for Undergraduates 67
Special Students 40
Stoddard Prizes 64
Strong Auditorium 20
Strong Memorial Hospital 31
Student Activities 87
Expenses 46
Fee 44
Student Advisory Program 67
Student Cars 72
Student Conferences 102
Student Employment 60
Student Life and Interests 87
Student Loans 58
Student Residence 98
For Men 93
For Women 95
Student Services 67
Summer Sessions 32

T
Taylor Hall 20
Terms and Vacations 2, 71
Terry Prize 65
Testing and Counseling Service 68
Theta Eta Prize 65
Tiernan Hall 21
Tiernan Loan Awards 59
Tiernan Prize Scholarships 55
Todd Union 21
Townsend Fellowship 64
Transcript Fee 44
Trustees, Board of 285
Tuition and Fees 43
Tuttle Prize 64

U
Undergraduate Prizes 61
Union Carbide
and Carbon Scholarship 56
University Chapel Choir 102
University Medical Center 31
University School of
Liberal and Applied Studies 32

V
Vacations 2, 71
Vaccinations 70
Vocational Guidance 67

W
Warning and Probation 74
Welles Prize Scholarships 55
White Memorial Scholarship 56
Wilbraham, Hazel,
Memorial Scholarship 57
Wile Prizes 62
Williams Memorial Prize 63
Wilson, Joseph R., Scholarship 53
Wilson, Katherine Upton,
Scholarship 53
Withdrawal 74
Women's Dining Hall 98
Women's Residence Halls 22
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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>College of Arts and Science</td>
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<tr>
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<td></td>
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