

CORNELL UNIVERSITY ANNOUNCEMENTS
ARTS & SCIENCES 1960-1961

COLLEGE OF ARTS AND SCIENCES

THE ACADEMIC CALENDAR

1960-1961

Sept. 16	F	Freshman orientation
Sept. 19	M	Registration, new students
Sept. 20	T	Registration, old students
Sept. 21	W	Instruction begins, 1 p.m.
Nov. 9	W	Midterm grades due
Thanksgiving recess:		
Nov. 23	W	Instruction suspended, 12:50 p.m.
Nov. 28	M	Instruction resumed, 8 a.m.
Christman recess:		
Dec. 20	T	Instruction suspended, 10 p.m.
Jan. 4	W	Instruction resumed, 8 a.m.
Jan. 21	S	First-term instruction ends
Jan. 23	M	Second-term registration, old students
Jan. 24	T	Examinations begin
Feb. 1	W	Examinations end
Feb. 2-3,	Th-F	Midyear recess
Feb. 4	S	Registration, new students
Feb. 6	M	Second-term instruction begins
Mar. 25	S	Midterm grades due
Spring recess:		
Mar. 25	S	Instruction suspended, 12:50 p.m.
Apr. 3	M	Instruction resumed, 8 a.m.
May 27	S	Instruction ends
May 29	M	Examinations begin
June 6	T	Examinations end
June 12	M	Commencement Day

COLLEGE OF ARTS AND SCIENCES

1960-1961

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[This listing of the faculty of the College of Arts and Sciences does not necessarily include all appointments or resignations for 1960-1961.]

COLLEGE OF ARTS AND SCIENCES

THE COLLEGE of Arts and Sciences is liberal and nontechnical in purpose. The definition of a liberal college is found in the subjects which make up its curriculum; namely, those subjects which, in the history of human civilization, have distinguished themselves as the means whereby man has come to understand himself and the world in which he lives. As thus conceived, a liberal education is a special knowledge of some general field of human understanding, erected upon a fundamental training in the humanities, natural sciences, and social studies.

The College of Arts and Sciences offers instruction in classical and modern languages and literatures, philosophy, and music and the fine arts; in history, the social studies, and psychology; and in mathematics and the natural sciences. The faculty requires: (1) that each student before graduation shall pursue a course, or courses, designed to make him competent in the use of the English language; (2) that he shall demonstrate or achieve a working knowledge of a foreign language; and (3) that he shall attain a basic knowledge of certain areas of the humanities, history, the social studies, and the natural sciences. Before the end of the second year the student must have selected a major field of study for the remainder of his work. This requirement is broadly conceived to include a sequential and a related group of courses, by means of which he may secure a degree of mastery of a specialized field of knowledge. The remainder of his course of study is largely elective under the supervision of a faculty adviser whom he chooses and who will assist him in making a reasonable and appropriate selection of courses. Many of the subject offerings of the other colleges of the University are available to him, either as electives or as related subjects for the fulfillment of his major requirements.

The facilities of the College are adequate in staff and equipment to give personal attention to the varying needs of individual students, including requirements of a prevocational and preprofessional nature. Advanced courses and opportunities for research are available in the undergraduate years to those who are qualified to make use of them; and in addition to his regular courses, a student may work informally under the supervision of his major adviser (p. 18). Thus he may complete his education in a manner more flexible than would otherwise be possible. A student is expected to accept a large amount of responsibility for shaping his own course of study, but his adviser stands ready to assist him in all possible ways to make the most of the opportunities offered by the College.

REQUIREMENTS FOR ADMISSION

An applicant for admission to the freshman class in the College of Arts and Sciences must have completed a secondary school course giving satisfactory preparation for the work of the College. Sixteen units of entrance credit are required, representing at least four years' work in a preparatory or high school. The sixteen units should include four years of English, three years of college preparatory mathematics, and (for students entering in the fall of 1962 and thereafter) three of a foreign language, ancient or modern; with the remaining units chosen from laboratory science (at least one unit of biology, chemistry, or physics), social studies (at least one unit of history, government, or geography), and further work in mathematics and foreign language. Wherever possible, these minimum sixteen units should be supplemented by additional courses in similar academic subjects.

As a guide to prospective students and to guidance counselors, the following program of college preparatory work is recommended: English, four units, with emphasis on comprehension in reading and on clarity and facility in expository writing; mathematics, sufficient to enable the student to begin calculus during his first year in college should he wish to do so; foreign languages, ancient or modern, taken every year, with the objective of achieving a really useful knowledge (four units or more) of one language, and some knowledge (at least two units) of a second; social studies (at least one unit); laboratory science (at least one unit—if more than one unit is taken, each unit ordinarily should be taken in a different science). Where the opportunity exists, students are urged to begin the study of a foreign language in the seventh grade or earlier. The most generally useful modern languages for advanced study are French and German. For work in the sciences, Russian is becoming increasingly important; for work in the humanities, the classical languages are of great importance. Students considering a science major in college are advised that thorough preparation in mathematics will be more valuable than extensive concentration in a single science.

Each candidate for admission is required to take the Scholastic Aptitude Test of the College Entrance Examination Board in January and to request the Board to report the result to the Director of Admissions, Cornell University. All accepted applicants must take the English Achievement Test of the College Board not later than May for placement in class sections. Accepted applicants who have studied a modern foreign language for two years in secondary school and who plan to continue this language must take the College Board reading test and (where possible) listening test in the language not later than May. Those who plan to continue Latin or Greek need take no achievement test in these languages.

An applicant for admission who has completed a year or more of

work in another institution of recognized collegiate rank will not be required to have a total of sixteen units of entrance credit as prescribed for freshmen. The total preparation of each candidate will be considered, and, if there appears to be a marked deficiency in preparation, advanced placement credit may be reduced proportionately. An applicant for admission to the sophomore or junior class is required to take the Scholastic Aptitude Test of the College Entrance Examination Board, preferably not later than March. Action will be taken on completed credentials about May 1.

Not all applicants can be admitted. Those that seem best qualified are selected after a comparative study not only of the formal preparation, but also of evidences relating to each applicant's character, seriousness of purpose, and fitness to undertake the work of the College.

Accepted applicants should read carefully the sections on health requirements, health services, and medical care in the *Announcement of General Information*. Some health requirements may be met prior to entrance. That Announcement should be consulted for other matters of general interest, also, such as details on entrance requirements, living expenses, tuition and fees, scholarships, loans, and part-time employment. The *General Information* and other Announcements of Cornell (see list on the cover) may be obtained by writing to the Announcements Office, Edmund Ezra Hall, Ithaca. Application forms may be obtained from the Director of Admissions, Edmund Ezra Day Hall, and all communications concerning admissions should be addressed there.

ADVANCED PLACEMENT

Freshmen may receive advanced placement in English and foreign language or exempt the requirements by demonstrating competence of a high order on the appropriate achievement test or advanced standing examination of the College Entrance Examination Board. Advanced placement and credit toward the degree of Bachelor of Arts may be earned in some subjects other than English and foreign language by attaining high marks on course examinations at entrance and at the end of the first term of residence, or on the advanced standing examinations of the College Entrance Examination Board. In individual cases, adjustment of the requirements of the Common Studies Program will be made by the Committee on Academic Records.

A student admitted to the College of Arts and Sciences from another college of Cornell University, or from any other institution of collegiate rank, will receive credit toward the degree of Bachelor of Arts for the number of hours to which his records may, in the judgment of the faculty, entitle him, provided that the total number does not exceed sixty hours. No more than fifteen hours may be in courses not commonly given by the College of Arts and Sciences. In order, however, to obtain the degree of Bachelor of Arts, a student must, as a candidate

for that degree, have been in residence at least two years in the College of Arts and Sciences, and in that college only.

REGISTRATION IN COURSES

During a period before the opening of each term, every student will, with the aid of an adviser, prepare a program of studies. For the academic year of 1960-1961, registration for the fall term will be held in the period April 27 to May 7, 1960, and registration for the spring term will be held in the period November 14 to November 23, 1960.

Program changes will be permitted, without petition or fee, upon recommendation of the adviser, prior to July 1 for the fall term and prior to December 15 for the spring term, and again during the first ten days of instruction upon the payment of a \$3 fee. After the first ten days of instruction, a course may be canceled prior to the date for reporting midterm grades, when such cancellation is in the best interest of the student, and after a petition has been approved by the Dean. A \$3 fee may be charged. After that date, a course may be canceled for medical reasons only.

Students failing to register for courses during the announced periods may be subject to a \$2 fine unless a more extreme penalty is invoked.

Freshmen will have the opportunity to register by mail in the summer and may expect a communication on the subject early in July from the Chairman of the Advisory Board for Underclassmen.

ADVISERS

During the summer each entering freshman and re-entering underclassman will be assigned to a member of the Advisory Board for Underclassmen, which has jurisdiction over freshmen and sophomores until they have selected major advisers. The function of the underclass adviser is to assist the student in his choice of studies, to advise him during the term regarding his work, and to give him friendly counsel.

SPECIAL PROGRAMS

The facilities of this college are intended primarily for students interested in a liberal arts education but are also available, by means of the following special programs, to students planning eventually to enter certain of the professions.

PREPARATION FOR TEACHING... Students planning to teach in the secondary schools may combine professional preparation with other prescriptions of the College in satisfaction of the requirements for graduation. A fifth year of preparation is required for the permanent certificate in New York State.

Programs for such students have been arranged in English and public

speaking, in foreign languages, in social studies, and in science and mathematics. Advice should be sought early regarding teaching opportunities in these subjects, combination of subjects usually required of teachers, choice of the major subject, and related matters.

Questions may be directed to Professor L. G. Hixon, School of Education, 112 Stone Hall, and to members of the advisory committee representing the various fields of concentration. New students interested in teaching are requested to confer with Professor Hixon in their first term of residence. (See also the *Announcement of the School of Education.*)

PREMEDICAL STUDENTS. . . . All premedical students are requested to report once each semester to Professor L. L. Barnes, Rockefeller 155, who is the chairman of the Premedical Advisory Board.

Certain minimum admissions requirements are prescribed by all medical schools. Since the most substantial of these requirements is in the field of chemistry, it is recommended that the freshman premedical student include chemistry in his course of study. Some freshman premedical students choose to take two sciences: either chemistry and zoology or chemistry and physics. Students who plan to make zoology their major subject will find it advantageous to include zoology in their freshman programs.

Medical educators are quite generally agreed that when a premedical student is planning his college course, he should not allow his interest in science to exclude studies in the humanities. They are also agreed that it would be unfortunate for the future of medicine if all premedical students were to take the same premedical course or major in the same subjects.

The Premedical Advisory Board suggests the following first-semester program: English 111 (three hours), French or German (six hours), or Latin (three hours); chemistry (three hours). The remaining three to six hours should be chosen from the courses listed under "Courses Open to Freshmen" (p. 15).

PRELEGAL STUDENTS. . . . Students planning to take a six-year combined Arts-Law course should confer with the Director of Admissions of the Law School not later than their sophomore year.

PREPARATION FOR NURSING. . . . Students interested in nursing as a career will be assigned to Professor F. G. Marcham as adviser. A representative of the School of Nursing will come to the campus early in the first term for conferences with prospective applicants.

NUMBER OF HOURS

An "hour" ordinarily represents attendance once a week at a lecture or recitation, or at a laboratory exercise lasting two hours and a half or three hours.

Every student must register in each term for at least twelve academic hours (including naval science but excluding basic military science and physical education). Underclassmen may register for no more than seventeen academic hours, in any case for no more than five courses, except by permission of the Dean. No upperclassman may register for more than eighteen hours in any term except by permission of the Dean. In addition to the required work in physical education and military science, a student on probation may not register for more than sixteen hours and five courses a term, except that an upperclassman may register for eighteen hours upon recommendation of his adviser. An average program of fifteen hours a term is necessary to maintain satisfactory progress.

COURSES OPEN TO FRESHMEN

See also "Program of Common Studies," below.

The following are the courses in the College of Arts and Sciences regularly open to freshmen, except that (1) a student may not register for any course for which he has not satisfied the prerequisites, if any are specified (see announcement under each course); (2) a student may not register for any course for which he has presented an acceptable equivalent at entrance. In the section, "Courses of Instruction," the courses open to freshmen are identified by asterisks.

Astronomy 101, 102, 125, 127, 128	Italian 101, 102, 103, 203, 204, 301-302
Biology 1-2	Latin 105-106, 107-108, 109, 111, 112
Botany 1-2	Mathematics 121-122, 133, 161, 162, 182, 191, 192
Chemistry 101-102, 105-106, 113-114, 201	Music 101-102, 103-104, 105-106, 110, 112, 201-202, 401-402, 403-404, 405-406, 407-408, 409-410, 411-412
Chinese 101, 102, 103, 201, 202, 203, 204	Philosophy 101, 102, 103
Economics 103-104	Physics 103, 104, 107, 108, 121, 122
English 111-112, 113-114	Psychology 101, 102, 106, 107, 112
Fine Arts 101-102, 104	Russian 101, 102, 103, 201, 202, 203, 204
French 101, 102, 103, 201, 203, 204, 301-302	Sociology and Anthropology 101, 102, 111, 112, 116
Geology 101-102, 105, 108, 111, 115	Spanish 101, 102, 103, 201, 203, 204, 301-302, 303-304
German 101, 102, 103, 201-202, 203, 204, 301-302, 303-304	Speech and Drama 105-106, 131
Government 101, 104	Thai 101, 102
Greek 101, 103, 201, 203	Vietnamese 101, 102
Hebrew 101-102	Zoology 101-102
Hindi 101, 102	
History 103-104, 105-106, 107-108	
Indonesian 101, 102	

PROGRAM OF COMMON STUDIES

The Program of Common Studies includes both specific and general requirements and is designed to ensure a basic competence in language and to introduce the student to the major areas of human knowledge.

Before graduation a student must satisfy each of the following requirements.

A. LANGUAGE

1. **ENGLISH**, by completing 111-112. The course must be begun in the first year of residence. Students demonstrating in class work and by examination a high level of accomplishment in English 111 may be exempted from English 111. Foreign students may satisfy the requirement by passing English 211 offered by the Division of Modern Languages.

2. **FOREIGN LANGUAGE**. The requirement may be met in either an ancient or a modern foreign language.

In the ancient languages (Latin, Greek, Hebrew), the requirement may be satisfied by completing Latin 107-108, or 109 and 112, or 111-112; or Greek 203; or Hebrew 202.

In the modern languages the requirement may be met, except for students declared qualified at entrance, by passing a qualifying examination in one of the following languages: Chinese, French, German, Hindi, Indonesian, Italian, Spanish, and Russian. If a student is declared qualified at entrance he may satisfy the requirement by passing six hours of more advanced courses (except courses in translation) in the language in which he is qualified, or by six hours in another ancient or modern foreign language. In certain instances a student may satisfy both language and literature requirement with the same courses.

Students wishing to continue a modern foreign language begun in secondary school will be placed in Course 101 or Course 102, or declared qualified, on the basis of their scores on the College Board Achievement Test or a placement examination given by the Division of Modern Languages on November 2 or April 5 of the 1960-1961 academic year. For students in course, the qualifying examination is given as the final examination in Course 102. Students passing Course 102, but failing the qualifying examination, may qualify by earning a satisfactory grade in Course 103.

Students who have had two years or more of a language in high school (or one year or more at a college other than Cornell) will not receive credit for further work in that language unless they have been placed in course as outlined above.

A student who enters from a foreign country and whose mother tongue is not English will satisfy the foreign language requirement by demonstrating competence in English, which shall be defined for the purpose as a modern foreign language.

B. GROUP REQUIREMENTS

Each student is required to earn twenty-four hours by passing at least one six-hour course in each of the following groups:

1. THE HUMANITIES:

Chinese 351-352
 English 113-114, 229-230, 251-252, or 254-255
 French 201-301, 201-302, 301-302, or 305-306
 German 201-202
 Greek 201-203
 Hebrew 201-202
 Italian 301-302
 Latin 112-205, or 205-206
 Literature 101-102, 201-202, or 321-322
 Russian 201, 221, or 221-222
 Spanish 201-301, 201-302, 301-302, or 303-304
 Speech and Drama 105-106
 Fine Arts 101-102, or 111-112
 Music 101-102, or 101-110
 Philosophy 101-102, or 221-222

2. NATURAL SCIENCE:

Astronomy 101-102
 Biology 1-2
 Botany 1-2
 Chemistry 101-102 (or the equivalent)
 Geology 101-102
 Physics 103-104 (or the equivalent)
 Zoology 101-102

3. SOCIAL STUDIES

Economics 103-104
 Government 101-104
 Psychology 101 and one of the following: 102, 107, or 111
 Sociology and Anthropology 101-102, 111-112, or 111 and 101

4. HISTORY

History 103-104, 105-106, 107-108, 151-152, or 153-154

C. SECOND COURSE REQUIREMENT

Each student is required to earn an additional six hours in one of the first three groups below or in mathematics:

1. THE HUMANITIES
2. NATURAL SCIENCE

3. SOCIAL SCIENCE

or

4. MATHEMATICS (Mathematics 121-122, 161-162, or the equivalent)

If the student does not choose mathematics, the requirement may be satisfied by completing six hours of advanced courses in the subject selected under B from Groups 1-3; or by completing a second introductory course from Group 1-3, provided that it deals with a subject other than the one in the group selected under B. The second course must be selected from a group other than that in which the student's major subject is classified.

MAJOR SUBJECTS

1. SELECTION OF MAJOR SUBJECT AND ADVISER. Before the end of the second year of residence, a student *must* select his major subject from options listed below. He must at the same time choose as his major adviser a designated representative of the program selected. During the remainder of his residence, he will consult with his major adviser in arranging his course and must obtain his signature on the study card before it is filed in the Dean's office.

American Studies	French	Philosophy
Astronomy	Geology	Physics
Botany	German	Psychology
Chemistry	Government	Russian Linguistics
Classics	History	Sociology and
Classical Civilization	Italian	Anthropology
Economics	Literature	Spanish
English	Mathematics	Speech and Drama
Far Eastern Studies	Music	Zoology
Fine Arts		

2. MAJOR REQUIREMENTS. Before graduation, a student must complete courses which satisfy the requirement in his major subject. A statement of this requirement, indicating courses and total hours required, appears before the list of courses in each of the subject divisions. The student must also meet the stated requirement of courses in related subjects. No student may count toward the one hundred and twenty hours required for graduation more than forty-eight hours in courses offered by a single department, with the following exceptions: freshman English, the first six hours of intensive courses in modern languages, and the first twelve hours of courses for beginners in Latin and Greek. If a comprehensive examination is included in the requirements of the major subject, this must be passed before graduation.

Upon recommendation of the major adviser, the Dean may excuse a student registered simultaneously in this college and in another college of the University from not more than eighteen hours of his major requirements.

3. **INFORMAL STUDY.** The major requirements in certain subjects may be satisfied in part by informal study. In those subjects in which informal study is arranged, a statement to this effect appears before the list of courses. Departments may require informal study of some or all of their major students or may admit them upon application.

Informal study will consist of reading, reports, experimentation, senior theses, or other work intended to require from the student the expression of initiative in his major subject. This work will be supervised by the major adviser or by a member of the instructing staff approved by him and may be tested by examination at the option of the department.

A student who has sixty credit hours is eligible for informal study. He may earn credit by this means to the amount of six hours in the junior year and of twelve in the senior year.

CREDIT FOR SUMMER SESSION

Credit for work done in summer sessions at Cornell and elsewhere may be granted to the extent of eighteen hours. A student in good standing may earn a maximum of twelve hours in any single summer prior to his senior year. A student on probation may earn a maximum of six hours in any single session. No credit may be earned in a summer session of less than four weeks except by special permission; and no credit will be allowed for a course passed at less than a grade of 70, or C, or the equivalent.

Any student who undertakes summer session work without prior approval of his adviser, the department concerned, and the Dean does so without any assurance that he will receive academic credit.

DOUBLE REGISTRATION

A student who has completed at least ninety hours in courses given in the College of Arts and Sciences, including the program of common studies, the University requirements in military training and physical education, the residence requirement, and the major, may, with the permission of the faculties concerned, be registered both in the College of Arts and Sciences and in the Cornell Law School, or the Cornell Medical College, or the New York State Veterinary College. (See "Major Subjects," 2, p. 18.) It should be noted, however, that admission to the Medical College is closely restricted and that in recent years the Medical College was able to grant this privilege of double registration to only a very small proportion of the fourth-year students of the College of Arts and Sciences who applied and who were formally eligible for it.

A student who has followed a planned program in this College may register also in the College of Engineering in his senior year with the

expectation of receiving his Bachelor of Arts degree at the end of four years and a Bachelor's degree in engineering at the end of six years. In order to receive the Bachelor of Arts degree a student must satisfy within the four-year period all requirements of the degree.

MARKS AND SCHOLASTIC DISCIPLINE

The passing grade is 60. No credit toward graduation will be given for a course in which a mark of less than 60 is recorded, unless the course be repeated and a passing mark received. A student who has received a mark between 50 and 59, inclusive, in any course that is a prerequisite of any other course may, at the discretion of the department concerned, be regarded as having satisfied the prerequisite.

The mark of *inc* will be used to indicate that a course has been left incomplete with respect to specific assignments which may include the final examination. The mark of *inc* will be assigned only in case of illness or prolonged absence beyond the control of the student, and only when the student has a substantial equity in a course. A student will have a substantial equity in a course when the remaining work can be completed without further registration in the course and when he has a passing grade for the completed portion. A mark of *inc* may be removed, with the consent of the Dean, and upon payment of the fee required by the University, by examination or otherwise as the department may direct. An incomplete that is not removed within one term will revert to a failing grade of fifty, unless an extension of time is granted by the Committee on Academic Records.

A student who in any term does not pass twelve hours (excluding courses in basic military science and physical education), with a grade of 70 or better in at least nine of the twelve hours, will be either dropped from the College or placed upon probation. Furthermore, a student's general record may be so unsatisfactory that the faculty will refuse him permission to continue in the College even though he has passed twelve hours in the preceding term.

A student failing in the last term, or summer session, of his senior year to meet the requirements in hours and grades described above, will ordinarily be expected to return for another summer session wherein he will be required to make a satisfactory record before he will be graduated.

LEAVES OF ABSENCE

For reasons satisfactory to the faculty, a student may be given a leave of absence for a definite or indefinite length of time. If, because of financial, family, or health reasons, a student is required to absent himself for a period of time, but with the expectation of returning, he should apply for a leave of absence. Leaves of absence for medical reasons are

issued only upon the recommendation of the University Clinic. Students withdrawing permanently should request an honorable dismissal.

No credit toward graduation may be earned while on leave of absence except in a limited amount by members of the armed services.

REQUIREMENTS FOR GRADUATION

The College of Arts and Sciences offers one degree only, the Bachelor of Arts. This degree will not be conferred upon any student who has not been in residence in Cornell during the last two terms preceding graduation and registered in the College of Arts and Sciences, nor upon any student who has not been in residence during at least two years as a degree candidate in the College of Arts and Sciences and in this college only. The normal period of residence is eight terms and may be exceeded only with special permission.

BACHELOR OF ARTS

A candidate must meet the following requirements for the degree of Bachelor of Arts:

1. Credit for one hundred and twenty hours, of which at least ninety hours must be for courses given in the College of Arts and Sciences. Elementary courses in military training, except naval science, and physical education, which are offered under the jurisdiction of the University, *may not* be counted as part of the thirty hours which a student may elect outside the College of Arts and Sciences, nor as part of the ninety hours required in the College.

2. At least three-fifths of the total hours must be passed with a grade of 70 or better.

At least three-fifths of the hours in the major subjects must be passed with a grade of 70 or better.

3. Election of courses in accordance with the "Program of Common Studies," p. 16.

4. Completion of the work in military training and physical education as prescribed by the University faculty (p. 22).

BACHELOR OF ARTS WITH DISTINCTION

The degree of Bachelor of Arts with Distinction in all subjects will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, (1) have received the grade of 80 or better in at least ninety hours of courses, and of 90 or better in at least sixty of these; (2) have not received a grade below 70 in more than one course; (3) have received no marks lower than 60. To qualify for the degree of Bachelor of Arts with Distinction in all subjects, a candidate must have completed at least sixty hours at Cornell in courses taught in the College of Arts and Sciences; and if he has

received credit toward his degree for work done in another institution, the requirement of grades shall be prorated for the residue of work which must be completed in Arts and Sciences at Cornell.

BACHELOR OF ARTS WITH HONORS

This degree will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, have satisfactorily completed the Honors program in their major subject and have been recommended for the degree by the department representing their major subject.

Honors programs are designed to free the exceptionally promising student for a substantial portion of his time from the ordinary requirements of academic courses in order that he may be able to broaden and deepen his understanding of the field of his special interest, to explore branches of his subject not represented in the regular curriculum, and to gain experience in original investigation. A candidate for the degree of Bachelor of Arts with Honors is usually required to pass a comprehensive examination in his major subject or to submit a thesis or some other satisfactory evidence of capacity for independent work. When performance has been outstanding, the degree of Bachelor of Arts with High Honors will be conferred. When performance does not justify a degree with Honors, the student may receive course credit toward the degree of Bachelor of Arts.

To be eligible for admission to an Honors program, a student must have upperclass standing and a cumulative average grade of at least 80. A student who, after admission to Honors work, fails to maintain this average or for any other reason is found by his department to be unsuited to Honors work, will revert to candidacy for the regular Bachelor of Arts degree.

UNIVERSITY REQUIREMENTS IN MILITARY TRAINING AND PHYSICAL EDUCATION

Unless exempted, all undergraduate men who are citizens are required to complete four terms of military training. All undergraduate men and women are required to complete four terms of physical education. (See the *Announcement of the Independent Divisions and Departments.*)

Credit in advanced courses in the Army or Air ROTC programs to the extent of twelve hours may be counted in the thirty hours allowed outside the College. In the Naval ROTC program eighteen hours may be counted toward the one hundred and twenty hours required for the degree as follows: Naval Science 301 and 302, three hours each, may be counted within the ninety Arts hours; and Naval Science 101, 102, 201, 202, three hours each, may be counted in the thirty hours allowed outside the College.

THE LIBRARIES

The central University Library is one of the chief assets of the College of Arts and Sciences. Its holdings, together with the collections in the college, school, and department libraries—housed in the various academic buildings—amount to more than 2,000,000 volumes. The Library ranks eighth in number of volumes among university libraries in the United States. To the rich resources assembled by the founders and by succeeding scholars and librarians, about 70,000 volumes are being added each year.

The Library not only provides the reference and collateral reading materials necessary for the support and enrichment of teaching and research but also has extensive collections of rare books, newspapers, maps, documents, manuscripts, microfilm, and microcards. Subscriptions to more than 4,000 periodicals are maintained. Many of the collections in special fields are distinguished for completeness of coverage and value of individual items.

A union catalog includes the holdings of all libraries on the Ithaca campus. All books are available for use by undergraduates, although of necessity some must be used under restricted conditions.

Freshman students are scheduled for a library lecture-tour and problem as a means of becoming familiar with the facilities and services of the Library. All students, as well as the public, also enjoy a constantly changing series of exhibitions, displaying the specialized materials and treasures of the Library.

RESIDENTIAL HALLS

On the Cornell campus are dormitories for both men and women. Cafeteria and dining service is also provided in several campus buildings. Male students are not required to live in dormitories and are individually responsible for making their own living or dining arrangements. Each male candidate for admission will, however, receive an application form for the residential halls. Housing in dormitories can be guaranteed for undergraduate men who have been admitted and have filed dormitory applications by June 1.

Inquiries concerning off-campus housing should be addressed to the Off-Campus Housing Office, Edmund Ezra Day Hall.

Women undergraduate students, with few exceptions, are required to live and take their meals in dormitories or in sorority houses (for members only). Permission to live elsewhere in Ithaca is granted only under exceptional circumstances upon written application to the Office of the Dean of Women. An application form for the residential halls for undergraduate women will be sent with the notice of acceptance from the Office of Admissions, Edmund Ezra Day Hall.

Graduate students and married students should write the Department of Residential Halls for information on living accommodations.

SCHOLARSHIPS AND PRIZES

The scholarships listed below are open only to students of the College of Arts and Sciences. For these and others open to all students at entrance a single application form may be secured from the Scholarship Secretary, Office of Admissions, Day Hall. Enrolled students may compete for prizes (see *Announcement of Prize Competitions*, which may be obtained at the Visitor Information Center, Day Hall).

THE DEAN'S SCHOLARSHIPS are open to men and women entering the College of Arts and Sciences. The annual awards vary from \$100 to \$1800, depending upon financial need. The tenure is four years if the scholastic record of the recipient is creditable. At least twenty scholarships are awarded annually. January Scholastic Aptitude Test of the College Entrance Examination Board is required. Final selection and award are based upon academic promise, general character, and financial need. Preference will be given to candidates from areas not well represented in the present student body of the College of Arts and Sciences.

THE SPENCER L. ADAMS SCHOLARSHIPS (two scholarships) are open to freshman men. Annual award, \$800. Tenure is four years, providing academic standing in the upper fifth of the class is maintained. Preference will be shown to students majoring in the humanities, foreign language, or economics.

THE ELIZABETH REAMER CARSON SCHOLARSHIP ENDOWMENT was established by James H. Carson in 1958 as a memorial to his wife, Class of 1927, and is open to any student in the College. Annual award, approximately \$400. The scholarship may be held for four years. Financial need, academic promise, and general character will be considered in making the award.

THE GEORGE C. BOLDT MEMORIAL SCHOLARSHIPS (three scholarships) were created by George C. Boldt, Jr., as a memorial to his father. Each is worth \$500. They will be awarded at the close of the junior year to the three men students of the College who are considered most deserving of this aid. Applications for these scholarships must be filed in the Office of the Dean before March 15 of the academic year preceding the year for which they are awarded. Students enrolled both in this College and in the Law School, the Medical College, or the Graduate School are not eligible.

THE CHESTER BUCHANAN MEMORIAL SCHOLARSHIP is a gift of Mrs. Claire F. Buchanan, in memory of her son, Chester Buchanan. It carries an annual stipend of \$250. It is awarded each year on the recommendation of the Department of Geology to the outstanding male senior who is majoring in this subject.

THE CORNELIS W. de KIEWIET SCHOLARSHIP, established by members of the Board of Trustees in honor of the former Acting President of Cornell University, carries an annual award of \$500. It will be awarded to a student majoring in history who, at the end of his junior year, shows the greatest promise of creative work in history.

THE CORNELIA L. HALL SCHOLARSHIP, established by a gift of the late Mary F. Hall, is worth \$120. It is "open to any meritorious young woman of this State, who is pursuing the studies of the A.B. course and who is in need of financial assistance." Under the terms of the bequest, preference must be given to a suitable candidate from Tioga, Tompkins, or Chemung County; within this preferred class, women of senior or junior standing will be regarded as entitled to first consideration. Applications must be filed in the Office of the Dean before March 15 of the academic year preceding the year for which the scholarship is awarded.

THE HUGENOT SOCIETY OF AMERICA SCHOLARSHIP is open to men and women entering the College who establish with the Society their Huguenot descent. The annual award is \$400. The scholarship may be held for four years; only one is available.

THE MYRTLE H. MILLER SCHOLARSHIP is open to men and women entering the College of Arts and Sciences. Annual award varies but may be as high as \$1200. Tenure is four years. One or more scholarships are available each year. January Scholastic Aptitude Test of the College Entrance Examination Board is required. Final selection and award are based upon academic promise, proficiency in mathematics, general character, and financial need.

THE HENRY L. O'BRIEN, JR., SCHOLARSHIP, established by the W. Alton Jones Foundation, Inc., in 1953, as a memorial to Henry L. O'Brien, Jr., is worth \$885 a year. It is awarded to a male citizen of the United States entering the College of Arts and Sciences as a freshman. It may be retained for four years if his scholarship record is satisfactory. Character, scholastic ability, need, and participation in extracurricular activities will be considered in awarding the scholarship. Open in 1961.

THE FREDERICK A. PEEK SCHOLARSHIP FUND is open to men and women entering this College. The annual award varies from \$100 to \$1500 according to financial need. The scholarship may be held for four years, provided the recipient maintains an average in the top half of the class. Financial need, academic promise, and general character will be considered in making the award.

THE JOHN AND CHARLOTTE E. REAMER MEMORIAL ENDOWMENT SCHOLARSHIP is open to men and women entering this College. Annual award varies according to financial need but may be as high as \$1800. Approximately ten scholarships are available each

year. The recipient may hold the scholarship for four years provided his term averages place him in the top half of his class. The January Scholastic Achievement Test of the College Entrance Examination Board is required. Final selection and award will be based upon academic promise, general character, and financial need. Preference will be accorded applicants intending to major in the humanities.

THE FREDERICK A. RICE SCHOLARSHIP ENDOWMENT scholarship is the gift of Frederick A. Rice, '09, and Mrs. Rice, and is open to men students in this College. The annual award is \$140, and the scholarship may be held for four years. Preference is given to candidates from California. Financial need, academic promise, and general character will be considered in making the award.

THE WINTON G. ROSSITER SCHOLARSHIP, worth \$250, is awarded annually to an outstanding senior in this College, who, while earning a good part of his expenses through his own efforts, has nevertheless maintained a distinguished academic record and contributed substantially to the life of the University.

THE GENERAL MOTORS SCHOLARSHIPS were established by the General Motors Corporation in 1955. They are available to freshmen men or women who are citizens of the United States and are entering this College. The tenure is four years, providing the recipient maintains an average which will place him in the top half of his class term by term. Two scholarships will be available each year with a value of from \$200 to \$2000, depending on the demonstrated need of the individual. Final selection and award are based upon outstanding academic promise, general character, and financial need.

THE PROCTER AND GAMBLE SCHOLARSHIPS were established by the Procter and Gamble Company in 1955. One of these scholarships is available each year to either men or women students entering this College. The annual award is designed to cover tuition, fees, books, and supplies. Tenure is four years, but to ensure continuance of the scholarship the recipient must maintain a term-by-term average in the top half of his class. Final selection is based upon academic promise and performance, general character, and financial need. One scholarship will be awarded to a student planning to study in the field of liberal arts, and the other to a student who is considering a major in a scientific area.

COURSES OF INSTRUCTION

THE FOLLOWING list of courses will be offered in the academic year 1960–1961. Courses numbered from 100 to 200 are, in general, introductory and may not be offered, save when so specified by the departments concerned, in partial satisfaction of major requirements. Branches or divisions of a subject are usually indicated through use of the hundreds place digit from 2 to 9 inclusive. Courses primarily for graduates, but open to undergraduates under certain conditions, bear numbers 75 or larger—Geology 395–396, Philosophy 575–576, etc. The courses open to freshmen are identified by asterisks. The student should read carefully the italicized statements preceding the offerings of each department and division in which he selects courses.

A list of rooms in which all lectures, recitations, and laboratory exercises are to be held will be distributed before the commencement of instruction.

AMERICAN STUDIES

Mr. Robert H. Elias, *Chairman*; Messrs. Stuart M. Brown, Jr., David B. Davis, Douglas F. Dowd, Andrew Hacker, Clinton Rossiter (on leave, 1960–1961), Robin M. Williams, Jr.

The aim of major study in the interdepartmental program of American Studies is to enable the student (a) to understand the development of American civilization—its culture, its history, its economic, social, and political institutions—and the way that development is related to its backgrounds; (b) to become acquainted with various disciplines or approaches to the study of the United States; (c) to use a single discipline in advanced exploration.

Students majoring in American Studies must complete (a) 6 hours in American literature, 6 hours in American history, and 6 hours chosen from courses in American philosophy, American government, American society, and the American economy; (b) 18 hours of additional concentrated, advanced work within a single discipline (economics, government, history, literature, or sociology), at least 12 hours of which must be in American subjects; (c) American Studies 401–402; (d) 12 hours of related courses, chosen from among those in European culture, at least 6 hours of which must be on the upperclass level.

When courses outside the American field are taken in partial satisfaction of (b), they may, with the adviser's approval, be credited in partial satisfaction of (d). Courses taken to satisfy Common Studies requirements may, when approved by the adviser, count toward the satisfaction of major requirements.

To be accepted as a major in American Studies a student must have a minimum cumulative average grade of 80 in his courses in the humanities, social studies, and history, and must secure the approval of the Chairman of the Committee on American Studies.

Qualified students who wish to be candidates for Honors shall, in their senior year, take American Studies 490 (or its equivalent) and 491–492. To enter the Honors program, a student must have a minimum cumulative average grade of 80 in all

subjects and of 85 in major subjects, and must apply to the Chairman a week before the preregistration period in the spring of his junior year.

Nonmajors with equivalent preparation and qualifications may seek Honors in American Studies. They must apply for candidacy a week before the preregistration period of their junior year and take, in their senior year, American Studies 401-402, 490 or its equivalent, and 491-492.

[301-302. *STUDIES IN AMERICAN CIVILIZATION*. Throughout the year. Credit three hours a term. T Th S 10. Mr. ———. (Will not be given in 1960-1961.)]

401-402. *SEMINAR IN AMERICAN STUDIES*. Throughout the year. Credit three hours. Required of American Studies majors in the senior year and open to other specially qualified seniors with consent of instructor. Th 2-4. Fall term, Mr. Davis; spring term, Mr. Elias.

An advanced course intended to raise central questions concerning the methods and assumptions of the various disciplines and the relation of these disciplines to each other. Fall term: changing concepts of the American character—a study of images and interpretations of the American character from the early nineteenth century to the present, through an analysis of selected fiction by such writers as Cooper, Twain, James, Howells, Dreiser, Anderson, Lewis, and Fitzgerald, and of commentaries by Tocqueville and modern social scientists. Spring term: the 1920's—the status of the individual as seen in the decade's economy, politics, family relations, justice, literature, fine arts, and philosophy; readings in Veblen, Hoover, J. B. Watson, Hemingway, and Dewey, among others.

490. *READINGS IN AMERICAN STUDIES*. Spring term. Credit three hours. Prerequisites, senior standing and provisional acceptance as a candidate for Honors. Hours to be arranged.

A study of selected texts and problems, under the supervision of members of the staff, culminating in a comprehensive examination.

491-492. *HONORS WORK IN AMERICAN STUDIES*. Throughout the year. Credit three hours a term. Prerequisites, senior standing and provisional acceptance as a candidate for Honors. Hours to be arranged.

An extended study of a special topic, culminating in the writing of an Honors thesis, under the supervision of members of the staff.

[010. *INFORMAL STUDY*. Limited to seniors with an average of 85 or higher in courses in the fields of American Studies. Consent of the instructor required. Mr. Rossiter. (Will be offered in 1961-1962.)]

ASTRONOMY

Mr. T. Gold, *Chairman*; Messrs. J. P. Cox and R. W. Shaw.

For a major in astronomy the following courses must be completed: (1) in astronomy, Courses 101-102, twelve hours of interpretational astronomy, six hours of observational astronomy, six hours of departmental electives; (2) in related subjects at least eighteen hours selected from approved courses in chemistry, geology, mathematics (exclusive of the calculus), and physics. Students who anticipate a major in astronomy should complete Astronomy 101-102 and the calculus not later than the sophomore year. Graduate students must register with the Department on regular registration days at the beginning of each term.

*101. *INTRODUCTION TO ASTRONOMY*. Fall term. Credit three hours. Lectures, T Th 9 or 11. Laboratory, M T W Th F 2-4:30, and S 9-11:30. Mr. Shaw.

Fundamentals of astronomy with emphasis on the planets, moon, comets, meteors, the solar system as a unit, origin of the solar system, and telescopes. Night observation at Fuertes Observatory.

*102. *INTRODUCTION TO ASTRONOMY*. Spring term. Credit three hours. Lectures, T Th 9 or 11. Laboratory, M T W Th F 2-4:30, and S 9-11:30. Mr. Shaw.

Fundamentals of astronomy with emphasis on the sun, stars, the galaxy, the side-real universe, and spectroscopy. Night observation at Fuertes Observatory.

*125. *AIR NAVIGATION*. Fall term. Credit two hours. W F 11. Mr. Shaw.

Contact flying, dead reckoning, wind determination, radio and electronic navigation. Practice in the use of airplane computers, compasses, charts, and radio techniques.

[*127. *NAVIGATION (MARINE) AND NAUTICAL ASTRONOMY I*. Fall term. Credit three hours. Mr. Shaw. Not offered in 1960-1961.]

[*128. *NAVIGATION (CELESTIAL) AND NAUTICAL ASTRONOMY II*. Spring term. Credit three hours. M W F 11. Mr. Shaw. Offered in alternate years. Not given in 1960-1961.]

INTERPRETATIONAL ASTRONOMY

[221. *ORIGIN OF THE SOLAR SYSTEM*. Fall term. Credit three hours. Prerequisites, the Calculus and Astronomy 101 (or consent of the instructor). Mr. Shaw. Not offered in 1960-1961.]

223. *INTRODUCTION TO ASTROPHYSICS*. Fall term. Credit three hours. Prerequisites, the Calculus, Physics 107-108, Astronomy 102 (or consent of the instructor). M W F 12. Mr. Cox.

Solar and stellar physics. Application of radiation theory to astronomical problems. Stellar atmospheres and interiors. Binary, variable, and peculiar stars. Galactic structure and interstellar matter.

[226. *THEORY OF ORBITS*. Fall term. Credit three hours. Prerequisites, the Calculus and the consent of the instructor. Staff. Not offered 1960-1961.]

231. *STELLAR STRUCTURE*. Spring term. Credit three hours. Prerequisites, Astronomy 223 or graduate status and the consent of the instructor. M W F 12. Mr. Cox.

Basic observations of stellar masses, dimensions, and diameters. Stellar atmospheres. Energy sources. Theory of internal structure.

[238. *ASTROCHEMISTRY*. Spring term. Credit three hours. Prerequisites, the Calculus and Astronomy 102 (or graduate status and consent of the instructor). Mr. Shaw. Not offered in 1960-1961.]

259. *SPECIAL TOPICS IN ASTRONOMY*. Fall or spring terms. Credit one to three hours. Prerequisite, consent of the instructor. Staff.

Qualified students may receive instruction in selected topics according to their needs and preparation. Topics occasionally given formally include optics and instrument design, comets and meteors, binary stars, gaseous nebulae, and interstellar matter.

275. *COSMOLOGY AND EVOLUTION*. Fall term. Credit three hours. Open to graduate students with the consent of instructor. M W F 10. Messrs. Cox and Gold.

Special and general theory or relativity. Cosmological models, red shift of extragalactic nebulae, evolution of stars and galaxies.

[276. *THEORETICAL ASTROPHYSICS*. Spring term. Credit three hours. Open to graduate students with the consent of the instructor. Mr. Cox. Not offered in 1960-1961.]

286. *RADIO ASTRONOMY*. Spring term. Credit three hours. Prerequisites, Astronomy 223 or graduate status and consent of the instructor. Hours to be arranged. Mr. Gold.

A survey of astronomical problems to which radio techniques have been applied. Observational characteristics of radio emission from sun, moon, galaxy, discrete sources, and external galaxies with current theories of interpretation.

295. *ADVANCED STUDY AND RESEARCH*. Either term. Credit one to three hours. Prerequisites, advanced standing in astronomy and consent of the instructor. Staff.

OBSERVATIONAL ASTRONOMY

[461. *ASTRONOMICAL SPECTROSCOPY*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Mr. Shaw. Not offered in 1960-1961.]

[464. *ASTROMETRY*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Mr. Shaw. Not offered in 1960-1961.]

468. *GEODETIC ASTRONOMY*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Shaw.

BOTANY

Mr. H. P. Banks, *Chairman*; Messrs. D. W. Bierhorst, D. G. Clark, R. T. Clausen, J. M. Kingsbury, L. F. Randolph, F. C. Steward, J. F. Thompson, C. H. Uhl, C. S. Yocum.

For a major in botany the student must complete Courses 31, 117, and 123; two of the following courses: 112 or 113; 124; 126 or 127; Plant Breeding 101. In related subjects a minimum of eighteen hours must be selected from the following fields to suit the needs of individual students: bacteriology, biochemistry, chemistry, entomology, geology, mathematics, physics, plant pathology, and zoology.

For a major in botany with advanced work in bacteriology, the following courses must be completed: (1) in botany, Course 117; in bacteriology, eight hours of advanced courses approved by the Department of Botany; (2) in related subjects, eighteen hours to be selected from the list given in the paragraph above.

Provisions are made for a limited number of students to undertake informal study.

*1-2. *GENERAL BOTANY*. Throughout the year, but may be entered in the spring term. Credit three hours a term. If taken after general biology, credit two hours a term. Lectures, T Th 9 or 11. Laboratory, M T W Th or F 2-4:30; T 10-12:30; F or S 8-10:30; or S 9-11:30. Messrs. Banks, McDonough, and Assistants.

A survey of the fundamental facts and principles of plant life. The work of the first term deals with the structures and functions of the higher plants, with special emphasis on their nutrition. The work of the second term traces the evolution of the plant kingdom, as illustrated by representatives of the principal groups, and concludes with a brief introduction to the principles of classification of the flowering plants.

For a complete description of the following courses in botany see the Announcement of the College of Agriculture. In satisfaction of degree requirements these courses in botany are counted as courses in the College of Arts and Sciences.

31. *PLANT PHYSIOLOGY*. Either term. Credit four hours.

112. *FRESHWATER ALGAE*. Fall term. Credit three hours.

113. *MARINE ALGAE AND THE BRYOPHYTES*. Spring term. Credit three hours.

117. *TAXONOMY OF VASCULAR PLANTS*. Fall term. Credit four hours.

118. *TAXONOMY AND ECOLOGY OF VASCULAR PLANTS, ADVANCED COURSE*. Spring term. Credit four hours.

123. *PLANT ANATOMY*. Fall term. Credit four hours.

124. *CYTOLOGY*. Fall term. Credit four hours.

[125. *MICROTECHNIQUE*. Spring term. Credit two hours. Not given in 1960-1961.]

[126. *MORPHOLOGY OF VASCULAR PLANTS*. Spring term. Credit four hours a term. Not given in 1960-1961.]

127. *MORPHOLOGY OF VASCULAR PLANTS*. Spring term. Credit four hours a term.

171. *SPECIAL PROBLEMS IN GENERAL BOTANY, ANATOMY, CYTOLOGY, MORPHOLOGY, PALEOBOTANY, PHYCOLOGY, PHYSIOLOGY, TAXONOMY, AND ECOLOGY*. Throughout the year. Credit not less than two hours a term.

217. *SEMINAR IN TAXONOMY AND ECOLOGY OF VASCULAR PLANTS*. Fall term. Credit one hour.

[224. *CYTOGENETICS*. Spring term. Credit three hours. Not given in 1960-1961.]

230-231. *PLANT PHYSIOLOGY, ADVANCED LECTURE COURSE*. Throughout the year. Credit three hours a term.

232-233. *PLANT PHYSIOLOGY, ADVANCED LABORATORY COURSE*. Throughout the year. Credit three hours a term.

239. *SEMINAR IN PLANT PHYSIOLOGY*. Fall and spring terms.

CHEMISTRY

Mr. Franklin A. Long, *Chairman*; Messrs. Andreas C. Albrecht, Simon H. Bauer, Alfred T. Blomquist, W. Donald Cooke, Donald G. Farnum, Melvin J. Goldstein, James L. Hoard, John R. Johnson, Albert W. Laubengayer, Jerrold Meinwald, William T. Miller, Melvin L. Nichols, Robert A. Plane, Richard F. Porter, L. Todd Reynolds, Harold A. Scheraga, Michell J. Sienko, Benjamin Widom, Charles F. Wilcox, Bernhard Wunderlich.

All courses listed below, except Chemistry 224 and 303 (fall term) and 307-308 will be given in the Baker Laboratory of Chemistry.

For a major in chemistry the following courses must be completed: (1) in chemistry: 105-106 and 201, or preferably 113-114; 224; 307-308, 311-312; 407-408, 411-412; 555; and one of the three following courses: 245, 320, and 431; (2) in related subjects: Mathematics 161 or 181, 162, 182 or 192, and 163, 183, or 193; Physics 107 and 108; German 101, unless two units have been offered for entrance.

Acceptance of a student for the major may be deferred by the major adviser until the second term of the sophomore year. Generally a student is not encouraged to undertake the major unless his performance in chemistry, physics, and mathematics courses affords evidence of his capacity to do satisfactory work at a more advanced level.

The Honors program in chemistry offers the superior student an opportunity to do informal study in seminars and gain experience in research during his senior year. It is particularly recommended to those who plan to continue in chemistry after graduation. Completion of the program at a high level of performance leads to the degree of Bachelor of Arts with Honors in Chemistry.

The requirements for admission to the Honors program are a cumulative average grade of at least 80 and permission of the Department. Prospective candidates for Honors should discuss their plans with their advisers by April 15 of their junior year. Candidates for Honors must complete Courses 601 and 602 and offer at least 3 hours of Honors research from Courses 603 and 604.

Students and members of the teaching staff are required to wear either prescription glasses or safety glasses in all chemistry laboratories.

INORGANIC CHEMISTRY

Students exceptionally well prepared in chemistry should read the section on p. 12 in regard to college credit examinations.

*101-102. *GENERAL CHEMISTRY*. Throughout the year. Credit three hours a term. Chemistry 101 is prerequisite to Chemistry 102. A terminal course for those students who do not intend to take more chemistry. Will not serve as a prerequisite for more advanced courses in chemistry. Open to those who have had or have not had high school chemistry. Lectures: fall term, M F 11; spring term, M F 10. Combined discussion-laboratory period, M T W Th or F 1:40-4:30. Mr. Porter and Assistants.

Emphasis on the more important chemical principles and facts and on the relation of chemistry to the other fields of knowledge and to everyday life.

*105-106. *GENERAL CHEMISTRY*. Throughout the year. Credit three hours a term. Chemistry 105 is prerequisite to Chemistry 106. For those students who will take more chemistry, it serves as a prerequisite to the more advanced courses. Open to those who have had or have not had high school chemistry. May be elected by students who do not intend to take more chemistry. Lectures, T Th 9, 10, or 12. Combined discussion-laboratory period, M W F or S 8-11, M T W Th or F 1:40-4:30. Messrs. Goldstein, Sienko, and Assistants.

The important chemical principles and facts are covered, with considerable attention given to the quantitative aspects and to the techniques which are important for further work in chemistry.

*113-114. *GENERAL CHEMISTRY AND INORGANIC QUALITATIVE ANALYSIS*. Throughout the year. Credit four hours a term. Chemistry 113 is prerequisite to Chemistry 114. Open to those who have offered high school chemistry for entrance. Recommended for candidates for the degree of A.B. with a major in chemistry and required of candidates for the degree of B.ChE. Fall term: lectures M W F 8; one three-hour combined discussion-laboratory period, T or Th 8-11, W or F 10-1, or W or F 1:40-4:30. Spring term: lectures, M W 8; two three-hour combined discussion-laboratory periods, T Th 8-11, W F 10-1 or W F 1:40-4:30. Messrs. Laubengayer, Reynolds, and Assistants.

A general study of the laws and concepts of chemistry based upon the more common elements, and application of the theory of chemical equilibrium to the properties and reactions of ions of the common elements and their separation and detection in solution.

555. *INORGANIC CHEMISTRY*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408 or consent of instructor. Lectures, M W F 12. Mr. Porter.

Assigned readings on the descriptive chemistry of the elements. Lectures on theoretical aspects with emphasis on the application of thermodynamic, kinetic, and structural considerations to inorganic systems.

575-576. *ADVANCED INORGANIC CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite or parallel courses, Chemistry 403-404 or 407-408, or consent of the instructor. Chemistry 575 is prerequisite to Chemistry 576. Open to upperclassmen and graduate students. Lectures, M W F 11. Messrs. Laubengayer and Reynolds.

Theories of atomic structure and chemical bonding are applied systematically to the elements as they appear in the Periodic System, with emphasis on the stereochemistry of inorganic substances.

580. *INTRODUCTION TO INORGANIC RESEARCH*. Either term. Credit two to six hours. Prerequisites, Chemistry 403-404 or 407-408 and 411-412 at an average of 80 or better and consent of instructor. Hours to be arranged. Messrs. Laubengayer, Reynolds, and Sienko.

Informal advanced laboratory and library work, planned individually in consultation with a staff member, involving the preparation and characterization of inorganic substances. A written report is required.

585-586. *SELECTED TOPICS IN ADVANCED INORGANIC CHEMISTRY*. Throughout the year. Credit two hours a term. Students may register for either term separately. Prerequisite, Chemistry 404 or 408 and consent of the instructor. Instructors and topics to be announced. Lectures, T Th 12.

Detailed consideration is given each term to one or two special topics selected from the field of theoretical and experimental inorganic chemistry. Topics are varied from year to year.

ANALYTICAL CHEMISTRY

*201. *INTRODUCTORY QUALITATIVE ANALYSIS*. Either term. Credit four hours. Prerequisite, Chemistry 106. Enrollment may be limited in the fall term. Lectures, M W 12. Laboratory, T Th 1:40-4:30 (either term) or T Th 8-11 (fall term only). Mr. Bauer and Assistants.

A study of the properties and reactions of the common elements and acid radicals and their detection in various solutions and solids.

215. *ELEMENTARY QUANTITATIVE ANALYSIS*. Spring term. Credit four hours. Prerequisite, Chemistry 201 or 114. Primarily for students in the premedical and biological curricula. Lectures, M W 12. Laboratory, M W or T Th 2-4:30, or T Th 8-10:30. Mr. Nichols and Assistants.

A study of the fundamental theory and experimental techniques of colorimetric, gravimetric, and volumetric analyses. Also a brief survey of selected topics in modern analytical techniques.

224. *INTRODUCTORY QUANTITATIVE ANALYSIS*. Either term. Credit four hours. Prerequisite, Chemistry 201 or 114. Required of candidates for the degrees of B.Ch.E. and A.B. with a major in chemistry. Lectures, M W 10. Laboratory, T Th 1:40-4:30, F 1:40-4:30 and S 9-12 (either term), T Th 8-11 (fall term only), M W 1:40-4:30 (spring term only). Messrs. Albrecht, Cooke, and Assistants.

A study of the fundamental principles of gravimetric and volumetric analysis, with practice in stoichiometry, and the analyses of a variety of substances by volumetric, gravimetric, and colorimetric methods.

245. *INSTRUMENTAL ANALYSIS*. Fall Term. Credit one hour. Limited to graduate students. Laboratory, one afternoon a week, to be arranged. Spring term. Credit three hours. Prerequisite, Chemistry 403 or 407, or consent of the instructor. Laboratory may be taken separately by graduate students. Enrollment is limited. Lectures, T Th 10. Laboratory, one afternoon a week, to be arranged, Mr. Cooke and Assistant.

A discussion of the broad aspects of modern analytical chemistry including electro-metric titrations; polarography; visible, ultraviolet, and infrared spectroscopy; chromatography and ion exchange; mass spectrometry. Laboratory work will include experiments in each of the above fields.

265. *INTRODUCTION TO ANALYTICAL RESEARCH*. Either term. Credit two to six hours. Prerequisites, Chemistry 403-404 or 407-408 and 411-412 at an average of 80 or better and consent of the instructor. Hours to be arranged. Messrs. Cooke and Nichols.

Informal study of analytical research methods involving both library and laboratory work.

290. *ADVANCED ANALYTICAL CHEMISTRY*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, M W F 8. Mr. Cooke.

A study of the application of modern analytical methods to chemical problems. Topics discussed include polarography and other electrochemical methods, non-aqueous titrations, chromatography, ion exchange, nuclear methods, and mass spectrometry. Given in alternate years.

[292. *ADVANCED ANALYTICAL CHEMISTRY*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, M W F 8. Mr. Cooke.

The application of optical methods to analytical and structural problems. Topics discussed include colorimetry; visible, ultraviolet, infrared, N.M.R., and Raman spectroscopy; fluorescence and other optical procedures. Given in alternate years. Not offered in 1960-1961.]

ORGANIC CHEMISTRY

301. *INTRODUCTION TO ORGANIC CHEMISTRY*. Fall term. Credit two hours. Prerequisite, Chemistry 106. For students in engineering. Lectures, W F 9. Mr. Wilcox.

A brief survey of the principal classes of organic compounds, their industrial sources, manufacture, and utilization.

303. *ELEMENTARY ORGANIC CHEMISTRY*. Either term. Credit four hours. Prerequisite, Chemistry 106. Chemistry 201 is desirable but not required. Enrollment limited in the fall term. Chemistry 305 must be taken with Chemistry 303. Primarily for students in the premedical and biological curricula. Lectures, M W F 8 11. Mr. Miller.

An integrated study of aliphatic and aromatic organic compounds, their occurrence, methods of preparation, reactions, and uses. The relationship of organic chemistry to the biological sciences is stressed.

The student should determine the entrance requirement in organic chemistry for the particular medical school he wishes to enter. Students may obtain six hours' credit by taking Chemistry 303 and 305. An additional two hours' credit in laboratory may be obtained by taking Chemistry 312.

305. *ELEMENTARY ORGANIC LABORATORY*. Either term. Credit two hours. Must be taken with Chemistry 303. Laboratory, M W or T Th 2-4:30. Mr. Farnum and Assistants.

Laboratory experiments on the preparation and reactions of typical aliphatic and aromatic organic compounds.

307-308. *INTRODUCTORY ORGANIC CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 106 or 114. Qualitative analysis is desirable but not required. Chemistry 307 is prerequisite to Chemistry 308. Chemistry 311-312 must be taken with Chemistry 307-308. Required of candidates for the degrees of B.Ch.E. and A.B. with a major in chemistry. Lectures, M W F 9. Mr. Blomquist.

A systematic study of the more important classes of carbon compounds, reactions of their functional groups, methods of synthesis, relations, and uses.

311-312. *INTRODUCTORY ORGANIC LABORATORY*. Throughout the year. Credit two hours a term. Chemistry 311 or 305 is prerequisite to Chemistry 312. Must be taken with Chemistry 307-308. Required of candidates for the degrees of B.Ch.E.

and A.B. with a major in chemistry. Laboratory lecture for all sections, S 8. Laboratory, T Th 1:40-4:30 or F 1:40-4:30 and S 9-12 (either term) or T Th 8-11 (fall term only). Messrs. Blomquist, Goldstein, and Assistants.

Laboratory experiments on the preparation of typical organic compounds, their properties, reactions, and relations.

320. *IDENTIFICATION OF ORGANIC COMPOUNDS*. Fall term. Credit four hours. Prerequisites, Chemistry 307-308 and 311-312, at grades of 75 or better. Enrollment may be limited. Lectures, T Th 8. Laboratory, T Th 2-4:30, or F 2-4:30 and S 10-12:30. Mr. Farnum and Assistants.

The classification reactions of organic compounds and the preparation of solid derivatives are applied to the identification of unknown organic substances.

330. *INTRODUCTION TO ORGANIC RESEARCH*. Either term. Credit two to four hours. Prerequisites, Chemistry 320 and consent of the instructor. Primarily for seniors and graduate students as preparation for advanced and independent work. Enrollment limited for undergraduates to those having a record of 80 or better in prerequisite courses. Laboratory and weekly discussion meeting, hours to be arranged. Messrs. Blomquist, Farnum, Goldstein, Johnson, Meinwald, Miller, and Wilcox.

Informal advanced laboratory and library work, planned individually in consultation with a staff member, involving advanced synthetic procedures and special techniques. A written report is required.

365-366. *ADVANCED ORGANIC CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 320 or consent of the instructor. Primarily for seniors and graduate students intending to do advanced work in organic chemistry or related fields. Enrollment limited for undergraduates to those having a record of 80 or better in prerequisite courses. Lectures, M W F 12. Mr. Johnson.

Fall term: stereochemistry, systematic coverage of various classes of organic compounds, starting with hydrocarbons. Spring term: continuation to other classes of organic compounds.

375. *PHYSICAL ASPECTS OF ORGANIC CHEMISTRY*. Fall term. Credit two hours. Prerequisite, Chemistry 365-366 or consent of the instructor. Primarily for graduate students. Lectures, T Th 12. Mr. Wilcox.

A discussion of recent theoretical developments in organic chemistry and their application to typical reactions.

376. *SELECTED TOPICS IN ORGANIC CHEMISTRY*. Spring term. Credit two hours. Prerequisite, Chemistry 375 or consent of the instructor. Primarily for graduate students. Lectures, M W 12. Messrs. Goldstein and Johnson.

Further topics in theoretical organic chemistry; the application of theoretical knowledge to the solution of advanced synthetic problems.

380. *ORGANIC CHEMISTRY OF HIGH POLYMERS*. Fall term. Credit two hours. Prerequisite, Chemistry 365-366 or consent of the instructor. Primarily for graduate students. Lectures, M W 11. Mr. Miller.

The mechanism of polymerization processes and the chemical structure and properties of high polymers, with examples chosen from the more significant natural and synthetic high molecular weight materials. Given in alternate years.

[395. *CHEMISTRY OF NATURAL PRODUCTS*. Spring term. Credit two hours. Prerequisite, Chemistry 320 and 365-366. Primarily for graduate students. Lectures, T Th 9. Mr. Farnum.

Particular attention will be devoted to methods of structure determination as applied to selected terpenes, steroids, alkaloids, or antibiotics. Not offered in 1960-1961.]

PHYSICAL CHEMISTRY

401. *INTRODUCTION TO PHYSICAL CHEMISTRY*. Fall term. Credit three hours. Prerequisites, Chemistry 106, Mathematics 163, 183, or 193, and Physics 117. For students in electrical engineering. Lectures, T Th 9. Recitation, S 9 or 11. Mr. Widom and Assistant.

A brief survey of physical chemistry.

402. *INTRODUCTION TO PHYSICAL CHEMISTRY*. Spring term. Credit two hours. Prerequisite, Chemistry 106. Prerequisite or parallel courses, Mathematics 163, 183, or 193, and Physics 117. For students in civil and mechanical engineering. Lectures, W F 9. Engineering physics students and others who wish to obtain three hours credit for the course will also meet M 9. Mr. Wunderlich and Assistants.

A brief survey of physical chemistry.

403-404. *INTRODUCTORY PHYSICAL CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisites, Chemistry 224 and 308, Mathematics 163, 183, or 193, and Physics 118. Chemistry 403 is prerequisite to Chemistry 404. Required of candidates for the degree of B.Ch.E. Lectures, M W F 9. Mr. Scheraga.

A systematic treatment of the fundamental principles of physical chemistry. The laws of thermodynamics and of the kinetic theory are applied in a study of the properties of gases, liquids and solids, thermochemistry, properties of solutions, and equilibrium in homogeneous and heterogeneous systems. Chemical kinetics and atomic and molecular structure are also studied.

407-408. *INTRODUCTORY PHYSICAL CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 163, 183, or 193, Physics 107 and 108, and Chemistry 215 or 224; or consent of the instructor. Chemistry 407 is prerequisite to Chemistry 408. Required of candidates for the degree of A.B. with a major in chemistry. Lectures, M W F 10. Mr. Hoard.

A study of the more fundamental principles of physical chemistry from the standpoint of the laws of thermodynamics, and of the kinetic theory. A unified treatment of the properties of matter, thermochemistry, and properties of solutions, and of equilibrium in homogeneous and heterogeneous systems. Chemical kinetics and catalysis are included.

411-412. *INTRODUCTORY PHYSICAL LABORATORY*. Throughout the year. Credit two hours a term. Prerequisite or parallel course, Chemistry 403-404 or 407-408. Chemistry 411 is prerequisite to Chemistry 412. Enrollment may be limited. Required of candidates for the degrees of B.Ch.E. and A.B. with a major in chemistry. Laboratory, M T W Th or F 1:40-4:30. Lecture-recitation, Th or F 12. Mr. Wunderlich and Assistants.

Selected quantitative experiments both in classical and in modern physical chemistry. Experiments in homogeneous and in heterogeneous equilibria, electrochemistry, calorimetry, reaction kinetics, spectroscopy, and other branches of physical chemistry.

416. *CHEMICAL BONDING AND PHYSICAL PROPERTIES OF ORGANIC MOLECULES*. Spring term. Credit three hours. Prerequisite, Chemistry 106. Lectures, T Th S 9. Mr. Wilcox.

Primarily for students who have had no course in organic chemistry but a good background in physics. Emphasis on the physical rather than the chemical properties of organic compounds.

420. *INTRODUCTION TO RESEARCH IN PHYSICAL CHEMISTRY*. Credit two to six hours. Prerequisites, Chemistry 403-404 or 407-408 and 411-412 at an average of 80 or better and consent of the instructor. Hours to be arranged. Messrs. Albrecht, Bauer, Hoard, Long, Scheraga, Widom, and Wunderlich.

431. *ADVANCED PHYSICAL CHEMISTRY*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408. M W F 9. Mr. Bauer.

A discussion of advanced topics in physical chemistry, including an introduction to the principles of quantum theory and statistical mechanics, atomic and molecular spectra, and elementary modern valence theory.

448. *PHYSICAL CHEMISTRY OF PROTEINS*. Spring term. Credit three hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, M W F 8. Mr. Scheraga.

Chemical constitution, molecular weight, and structural basis of proteins; thermodynamic, hydrodynamic, optical, and electrical properties; protein and enzyme reactions.

455. *KINETICS OF CHEMICAL REACTIONS*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Open to undergraduates by consent of the instructor. Lectures, M W F 9. Mr. Long.

A general discussion of rates of reaction including types of reactions, methods of measurement, theories of reaction rates, application to problems.

[461. *RADIOCHEMISTRY*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408, or consent of the instructor. Primarily for graduate students. Lectures, T Th S 9. Mr. ———.

A discussion of properties of the nucleus; spontaneous and induced nuclear reactions; radioactivity measurement; applications of radioisotopes and chemical techniques in the investigation of nuclear phenomena. Given in alternate years. Not offered in 1960-1961.]

472. *THERMODYNAMICS*. Spring term. Credit four hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, M W F 9 and an additional hour to be arranged. Mr. Albrecht.

Development of the general equations of thermodynamics from the first and second laws. Applications to the study of physicochemical equilibria in gases, liquids, solids, and liquid solutions. Problems.

[480. *STATISTICAL MECHANICS*. Fall term. Credit three hours. Chemistry 491 or equivalent is desirable but not required. Primarily for graduate students. Lectures, M W F 11. Mr. Widom.

An introduction to equilibrium and nonequilibrium statistical mechanics, with particular emphasis on physicochemical applications; calculation of thermodynamic functions; equation of state of gases and liquids; properties of crystals; condensation; transport phenomena (diffusion, viscosity, thermal conductivity) of gases and liquids. Given in alternate years. Not offered in 1960-1961.]

482. *PHYSICAL CHEMISTRY OF HIGH POLYMERS*. Spring term. Credit two hours. Prerequisite, Chemistry 380 and 472, or consent of instructor. Primarily for graduate students. Lectures, M W 11. Mr. Wunderlich.

The physical chemistry of high polymers and their solutions in the light of modern theories, and the principles underlying quantitative interpretation of molecular weight, structure, and properties of polymeric substances. Given in alternate years.

[485. *X-RAY CRYSTALLOGRAPHY*. Fall term. Credit three hours. Prerequisite, Physics 225 or consent of the instructor. M W F 12. Mr. Hoard.

Space groups, reciprocal lattices, three dimensional diffraction, interpretation of X-ray diffraction data, structure determination by Fourier synthesis. Given in alternate years. Not offered in 1960-1961.]

491. *INTRODUCTION TO QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Primarily for graduate students. Lectures, M W F 10. Mr. Widom.

Elementary presentation of the fundamentals of quantum mechanics. Given in alternate years.

492. *QUANTUM MECHANICS OF VALENCE*. Spring term. Credit three hours. Prerequisite, Chemistry 491 or its equivalent. Primarily for graduate students. Lectures, M W F 9. Mr. ———. Given in alternate years.

495. *MOLECULAR SPECTRA*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Primarily for graduate students majoring in physical chemistry and physics. Lectures, hours to be arranged. Mr. Bauer.

Description of various types of molecular spectra. The rotational and vibrational spectra of polyatomic molecules (energy levels, normal coordinate treatment, selection rules). Physical methods for structure determination, and empirical relations between molecular structure and molecular constants. Given in alternate years.

601–602. *HONORS SEMINAR*. Throughout the year. Credit one hour a term. Prerequisite, admission to Honors program. W 2. Messrs. Bauer and Blomquist.

Informal presentation and discussion of selected topics in which all members of the seminar participate.

603–604. *HONORS RESEARCH*. Throughout the year. Credit one to four hours a term. Prerequisites, admission to Honors program and consent of staff member who supervises research. Hours to be arranged. Staff.

Individual research on advanced problems in chemistry under the guidance of a staff member. A written report on the research results is required.

BAKER NONRESIDENT LECTURES. T Th 11. Fall term beginning October 4, 1960. Chemistry of the Solid State. Mr. F. A. Kröger, Philips Laboratories, Eindhoven, Netherlands.

THE CLASSICS

Mr. Friedrich Solmsen, *Chairman*; Messrs. Harry Caplan, James Hutton, Gordon M. Kirkwood, Cecil B. Pascal, Isaac Rabinowitz, Frederick O. Waage.

Those whose major study is in the Classics must complete twenty hours of advanced courses in the Department (Greek courses numbered above 201 or Latin courses numbered above 205), and fifteen hours, selected after conference with the adviser, in related subjects. Related subjects for this purpose are ancient history, modern foreign languages and literatures, particularly French, German, and Italian, ancient philosophy, Fine Arts 301, 302, 801, Literature 201–202, 207, 214, 218, and 401, and Linguistics 201–202, 281–282, and 283.

Students whose major study is in the Classics with an emphasis on Latin must include in their program before graduation Latin 205–206, 315–316, and 317–318. By arranging courses early with the School of Education, they may meet the requirements for the N.Y. State certificate for high school teaching.

Those whose major study is in classical civilization must complete (a) eighteen hours in Latin or Greek; (b) Courses 201–202, and 207 in literature, and nine further hours selected from the courses listed below under classical civilization; and (c) fifteen hours in related subjects. Related subjects for this purpose may be any courses in the humanities but selected in conference with the adviser so as to form a coherent and significant experience in the relation between antiquity and subsequent periods in the Western tradition; they may include courses listed under classical civilization which have not been used to satisfy requirement (b).

Candidates for the degree of Bachelor of Arts with Honors in Classics or with Honors in Classical Civilization must fulfill the requirements of the appropriate major study, as prescribed in the foregoing paragraphs, and must also complete successfully the special Honors courses 370, 371, and 372. Part of the credit for

Honors courses may be included in the twenty hours required for the major study. Students who wish to become candidates for Honors and who have a cumulative average of 80 or better should consult some member of the Department before preregistering for the second term of the junior year.

Informal study may be arranged for students who have a special interest and are able to work in areas not covered by the courses.

GREEK

*101. *GREEK FOR BEGINNERS*. Either term. Credit three hours. M W F 12. Fall term, Mr. Hutton; spring term, Mr. Caplan. Introduction to Attic Greek.

*103. *ATTIC GREEK*. Either term. Prerequisite, Greek 101. M W F 12. Fall term, Mr. Solmsen; spring term, Mr. Pascal. Continuation of Greek 101.

*201. *EURIPIDES: IPHIGENIA IN TAURIS AND ALCESTIS*. Either term. Prerequisite, Greek 103. T Th S 9. Fall term, Mr. Pascal; spring term, Mr. Kirkwood.

*203. *HOMER*. Either term. Credit three hours. Prerequisite, Greek 201. T Th S 10. Fall term, Mr. Kirkwood; spring term, Mr. Solmsen.

209-210. *GREEK COMPOSITION*. Throughout the year. Credit one hour a term. Prerequisite, Greek 103 or the equivalent. Th 2. Mr. —.

301-302. *ARISTOPHANES, CLOUDS; SOPHOCLES, OEDIPUS REX; HERODOTUS*. Throughout the year. Credit three hours a term. Prerequisite, Greek 203. T Th S 10. Fall term, Mr. Pascal; spring term, Mr. Hutton.

305-306. *LYRIC POETRY; AESCHYLUS, PROMETHEUS BOUND; THUCYDIDES; DEMOSTHENES, PHILIPPIC ORATIONS*. Throughout the year. Credit three hours a term. Prerequisite, Greek 301-302. T Th S 10. Mr. —.

309-310. *ADVANCED GREEK COMPOSITION*. Throughout the year. Credit three hours a term. Prerequisite, Greek 209-210 or the equivalent. W 2. Mr. Kirkwood.

381-382. *SEMINAR: LYRIC POETRY*. Throughout the year. Credit three hours a term. For graduate students. M 2-4. Mr. Kirkwood.

[*GREEK DIALECTS*. Credit two hours. For graduate students. Not offered in 1960-1961.]

050. *INFORMAL STUDY*. For qualified majors.

500. *ADVANCED READING COURSE*. For graduate students. Fall term. Hours and credit to be arranged. Mr. Hutton.

LATIN

*105-106. *LATIN FOR BEGINNERS*. Throughout the year. Credit three hours a term. T Th S 11. Mr. —.

*107-108. *FRESHMAN COURSE: SELECTIONS FROM CICERO AND VIRGIL*. Throughout the year. Credit three hours a term. Prerequisite, Latin 106 or two units of entrance Latin. T Th S 9. Mr. —.

Primarily designed for students who have had two years of Latin in secondary school. For the sake of those whose study of Latin has been interrupted, a considerable amount of review will be included in the work of the first term.

*109. *FRESHMAN COURSE: VIRGIL AND OVID*. Fall term. Credit three hours. For students offering three units of entrance Latin. M W F 11. Mr. Pascal. (For the second term of Latin 109, see Latin 112.)

*111. *FRESHMAN COURSE: CICERO, DE SENECTUTE; MARTIAL, EPIGRAMS*.

Fall term. Credit three hours. For students offering four units of entrance Latin. M W F 11. Mr. Caplan.

*112. *FRESHMAN COURSE: HORACE, ODES AND EPODES*. Spring term. Credit three hours. Prerequisite, Latin 109 or 111, or the equivalent. M W F 11. Mr. Caplan.

205-206. *TERENCE, ANDRIA; CATULLUS; HORACE, SATIRES AND EPISTLES; VIRGIL, GEORGICS; LIVY*. Throughout the year. Credit three hours a term. Prerequisite, Latin 112. Students may be admitted from Latin 108 with the consent of the instructor. M W F 10. Fall term, Mr. Solmsen; spring term, Mr. Pascal.

221-222. *LATIN COMPOSITION*. Throughout the year. Credit one hour a term. Prerequisite, Latin 108 or 112. W 2. Mr. ———.

315-316. *THE GREATER REPUBLICAN WRITERS: PLAUTUS, CICERO, SALUST, LUCRETIUS*. Throughout the year. Credit three hours a term. Prerequisite, Latin 205-206. M W F 10. Fall term, Mr. Caplan; spring term, Mr. Solmsen.

[317-318. *LITERATURE OF THE EARLY EMPIRE: TACITUS, ANNALS; JUVENAL; PLINY'S LETTERS; SENECA'S LETTERS AND TRAGEDIES*. Throughout the year. Credit three hours a term. Prerequisite, Latin 205-206. Not offered in 1960-1961.]

321-322. *LATIN COMPOSITION*. Advanced course. Throughout the year. Credit one hour a term. For undergraduates who have completed Latin 221-222 and for graduate students. M 2. Mr. Pascal.

[347. *HISTORY OF THE LATIN LANGUAGE*. Fall term. Credit two hours. For upperclassmen and graduate students. Not offered in 1960-1961.]

[350. *COMPARATIVE GRAMMAR OF GREEK AND LATIN*. Credit two hours. For upperclassmen and graduate students. Not offered in 1960-1961.]

[369. *MEDIEVAL LATIN LITERATURE*. Spring term. Credit three hours. Prerequisite, three years of high school Latin or the equivalent. Hours to be arranged. Not offered in 1960-1961.]

381-382. *SEMINAR: HORACE*. Throughout the year. Credit three hours a term. For graduate students. Th 2-4. Mr. Caplan.

[390. *ITALIC DIALECTS*. Credit two hours. For graduate students. Not offered in 1960-1961.]

060. *INFORMAL STUDY*. For qualified majors.

600. *ADVANCED READING COURSE*. For graduate students. Spring term. Hours and credit to be arranged. Mr. Solmsen.

HONORS COURSES

370. *HONORS COURSE*. Spring term. Credit three hours. To be taken in the junior year. Mr. Solmsen.

A program of readings and conferences centered in an author or a topic to be announced before the beginning of the term.

371. *HONORS COURSE*. Fall term. Credit three hours. To be taken in the senior year. Mr. Hutton.

Continuation of 370, with change of author or topic.

372. *HONORS COURSE: SENIOR ESSAY*. Spring term. Credit three hours. For students who have successfully completed 371. Topics must be approved by the Honors adviser at the end of the first term of the senior year.

CLASSICAL CIVILIZATION

[408. *CLASSICAL RHETORIC AND ORATORY*. Spring term. Credit three hours. Primarily for graduate students. Not offered in 1960-1961.]

[410. *LATIN AND GREEK ELEMENTS OF THE ENGLISH LANGUAGE*. Credit two hours. Not offered in 1960-1961.]

ENGLISH TRANSLATIONS OF GREEK AND LATIN CLASSICS. (See Literature 201-202.)

FOUNDATIONS OF WESTERN THOUGHT. (See Literature 207.)

HUMANISM AND THE RENAISSANCE. (See Literature 214.)

[*PRINCIPLES OF LITERARY CRITICISM*. (See Literature 401-402.) Not offered in 1960-1961.]

CLASSIC MYTHS. (See Literature 218.)

ANCIENT HISTORY. (See History 121-122.)

GREEK HISTORY. (See History 211.)

[*THE HELLENISTIC AGE*. (See History 212.) Not offered in 1960-1961.]

[*THE ROMAN REPUBLIC*. (See History 213.) Not offered in 1960-1961.]

[*THE ROMAN EMPIRE*. (See History 214.) Not offered in 1960-1961.]

INTRODUCTION TO ART. (See Fine Arts 101-102.)

GREEK SCULPTURE. (See Fine Arts 301.)

ART OF THE ROMAN EMPIRE. (See Fine Arts 302.)

ARCHAEOLOGY. (See Fine Arts 801-802.)

HISTORY OF PHILOSOPHY. (See Philosophy 301.)

HEBREW

*101-102. *ELEMENTARY CLASSICAL HEBREW*. Throughout the year. Credit three hours a term. The first term is prerequisite to the second term. M W F 11. Mr. Rabinowitz.

201-202. *CLASSICAL HEBREW PROSE AND POETRY*. Throughout the year. Credit three hours a term. Prerequisite, Hebrew 102 or consent of the instructor. M W F 2. Mr. Rabinowitz.

Selected readings in the historical and prophetic books of the Hebrew Old Testament.

301. *POSTBIBLICAL HEBREW TEXTS*. Either term. Credit three hours. Prerequisite, Hebrew 202 and consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

Reading and interpretation of early rabbinic and medieval Hebrew texts.

THE LITERATURE OF THE OLD TESTAMENT. (See Literature 205-206.)

ECONOMICS

Mr. A. E. Kahn, *Chairman*; Messrs. G. P. Adams, Jr., M. G. Clark, M. A. Copeland, M. G. de Chazeau, D. F. Dowd, F. H. Golay, J. G. B. Hutchins, M. S. Kendrick, T. C. Liu, R. E. Montgomery, Chandler Morse, P. M. O'Leary, E. J. Rice.

Students wishing to major in economics must have passed Economics 103-104, or the equivalent, with grades of at least 70, or Economics 103, or the equivalent, with

a grade of at least 80. Such students should report to the Secretary of the Department with a written statement of the courses they propose to take to satisfy the major requirements.

To complete the major, 24 hours of economics courses, in addition to Economics 103-104, must be completed; these must include Economics 811 and either Economics 822 or 825. Principles of Accounting (Business and Public Administration 110, fall term, credit three hours, M W F 9) and Introductory Statistics (Agricultural Economics 111, fall term, credit three hours, lectures T Th 11) may be counted among the courses satisfying the major requirement. Students planning to double-register in their senior year may expect upon petition to receive credit for these two courses within the ninety required Arts hours.

In related subjects, 15 approved, advanced hours must be taken in not more than three of the following subjects: American studies, Far Eastern studies, government, history, mathematics from Course 151 on, philosophy, social psychology, sociology, and statistics. No course offered in satisfaction of the common studies requirement may be counted as a related subject. Programs of related subjects should complement programs of economics subjects, and both must be arranged in consultation with advisers.

For students who double-register in Arts and Sciences and in a professional school the above-listed major requirements will be reduced by six hours, the distribution of which between courses in economics and related subjects will be determined by their advisers.

Students whose work in the College and particularly in the courses comprising their major has been of high quality may be permitted to enroll in informal study in Economics (090) in their senior year.

Candidates for the degree of Bachelor of Arts with Honors in Economics will enroll in the Honors Seminar. They will be expected to complete 24 hours of advanced economics, including the Honors Seminar, and these must be distributed according to the indicated requirements for the major.

Students seeking admission to the Honors program should consult their advisers not later than November 1 of their junior year. Applications will not normally be considered from students whose cumulative average is less than 80 in both their general studies and their courses in economics.

A comprehensive Honors examination, both written and oral, will be given to Honors candidates at the end of their senior year, but those candidates will be exempted from final examinations in their other courses in economics.

I. INTRODUCTORY

***103. MODERN ECONOMIC SOCIETY.** Either term. Credit three hours. Open to a limited number of freshmen. Fall term, M W F 8, 9, 12, 2 or 3; T Th S 8, 9, 11. Spring term, M W F 8, 9; T Th S 9. Messrs. Kahn, Dowd, and Assistants.

A survey of the existing economic order, with particular emphasis on the salient characteristics of the modern American economy. Concentration is on explaining and evaluating the operation of the price system as it regulates production, distribution, and consumption, and as it is in turn modified and influenced by private organization and government policy.

***104. MODERN ECONOMIC SOCIETY.** Either term. Credit three hours. Prerequisite, Economics 103. Fall term, M W F 8, 9; T Th S 9. Spring term, M W F 8, 9, 12, 2 or 3; T Th S 8, 9, 11. Mr. Kahn and Assistants.

Economics 104, a continuation of 103, centers on the determinants of aggregate economic activity. The main areas studied are the monetary and banking systems, the composition and fluctuations of national income, and the major conditions of economic growth, all as influenced by monetary, fiscal, and other policies.

107. *ELEMENTARY ECONOMICS*. Spring term. Credit three hours. Times to be announced. Mr. ———.

A special one-semester terminal course, emphasizing the problems of economic efficiency, stability, and growth, for nonmajors who have had calculus.

II. ECONOMIC HISTORY

206. *AMERICAN ECONOMIC HISTORY*. Spring term. Credit three hours. Open to upperclassmen, or with consent of the instructor. T Th S 9. Mr. Dowd.

An examination and analysis of significant processes and relationships in the economic development of the United States from the colonial period to the present.

207. *ECONOMIC HISTORY OF ANCIENT AND MEDIEVAL EUROPE*. Fall term. Credit three hours. Open to upperclassmen with some background in economics or history, or with consent of the instructor. M W F 10. Mr. Dowd.

An examination and analysis of significant processes and relationships in the economic development of Europe in the ancient and medieval periods. Attention will be given to reciprocal relationships between the social and political context and the behavior of the economy over time.

208. *ECONOMIC HISTORY OF MODERN EUROPE*. Spring term. Credit three hours. Prerequisites, same as for 207. M W F 10. Mr. Dowd.

The period covered is from the close of the Middle Ages to the present.

DEVELOPMENT OF THE AMERICAN ECONOMY AND BUSINESS ENTERPRISE (Business & Public Administration 375). Fall term. Credit three hours. Limited to seniors who have taken Economics 104. M W F 9. Mr. Hutchins.

A study of the development of significant features of the modern economy and of modern business. Attention is particularly focused on the period between 1790 and 1890. European developments of significance to the United States are discussed. Against the general economic background careful study is given to selected case studies illustrating business organization, policy, and practice of the time. The features and concepts of public economic policy are studied, in part by the case method.

See also *AGRICULTURAL ECONOMICS* 138; *ECONOMICS* 308, 603, 275-276.

III. CONTEMPORARY ECONOMIC INSTITUTIONS, PRACTICES, AND PROBLEMS

A. MONEY, BANKING, AND PUBLIC FINANCE

301. *MONEY AND BANKING*. Fall term. Credit three hours. Prerequisite, Economics 104. M W F 11, Mr. O'Leary. T Th S 11, Mr. Rice.

A study of the monetary system of the United States with emphasis on the roles played by the commercial and central banks; included is a survey of monetary theory and the influence of credit and monetary measures on economic stability.

TAXATION (Agricultural Economics 138). Fall term. Credit three hours. Open to upperclassmen who have taken Economics 104 or the equivalent. M W F 11. Mr. Kendrick.

A study of the principles and practices of public finance, with emphasis on taxation. Among the topics examined are the growth of public expenditures and its causes; historical changes over time in sources of revenue; and property, inheritance, business, and personal income taxation.

306. *FEDERAL PUBLIC FINANCE*. Spring term. Credit three hours. Prerequisite, Agricultural Economics 138. M W F 11. Mr. Kendrick.

An examination of national problems of taxation, expenditures, public debt, and fiscal policy.

308. *FINANCIAL HISTORY OF THE UNITED STATES*. Spring term. Credit three hours. Prerequisite, Economics 104. T Th S 10. Mr. O'Leary.

A study of changing financial institutions, problems, and legislation from 1775 until 1940 with a brief introduction covering the colonial period. Monetary media, banking systems, and public finance will be dealt with against the changing background of American economic society. Library readings, lectures, discussions and reports.

See also *ECONOMICS* 606, 822, 375-376, 385-386, 396.

B. LABOR ECONOMICS

401. *ECONOMICS AND PROBLEMS OF LABOR*. Fall term. Credit three hours. Prerequisite, Economics 104 or the equivalent. M W F 10. Mr. Montgomery.

A survey of labor economics; an analysis of the basic industrial-relations problems emerging from modern economic arrangements; an examination of the economic and other implications of various employer, trade-union, and government attacks upon these problems.

402. *ORGANIZED LABOR IN MODERN ECONOMIC LIFE*. Spring term. Credit three hours. Prerequisite, Economics 401 or permission of the instructor. M W F 10. Mr. Montgomery.

A study of the origins, philosophic basis, aims, and policies of organized labor; of the environmental and other determinants of the functional character of labor movements; of the processes of collective bargaining and of the economic issues to which these processes give rise in a system of quasi-competitive capitalism; of the wage, income, employment, investment, and other consequences of the spread of collective bargaining; and of unionism as a political force.

411. *THE STATE IN RELATION TO LABOR*. Spring term. Credit three hours. Consult the instructor before registering. M W F 2. Mr. Montgomery.

An examination of public policy with respect to labor. Among the topics treated: common-law doctrines, antitrust acts, and labor-management statutes relating to the permissible areas of concerted self-help action; injunctions, damage suits, and right-to-work laws; protective legislation and social insurance; and statutory, administrative, and constitutional aspects of the relationships of government to labor.

See also *ECONOMICS* 206, 811, 813, 475-476.

C. ORGANIZATION, PERFORMANCE, AND CONTROL OF INDUSTRY

501. *PRIVATE ENTERPRISE AND PUBLIC POLICY*. Fall term. Credit three hours. Prerequisite, Economics 104. M W F 9. Mr. ———.

The approach to public policy in a private enterprise system in the light of the economist's concepts of competition and monopoly. An analysis and appraisal of the prevalence and effectiveness of competition in the American economy, with particular emphasis on the business organization, the price, production and marketing policies, and the economic performance of a range of industries characterized by varying degrees of market concentration and governmental intervention.

502. *PUBLIC REGULATION OF BUSINESS*. Spring term. Credit three hours. Prerequisite, Economics 501 or consent of the instructor. M W F 9. Mr. Kahn.

A continuation of Economics 501, concentrating mainly on public policies of enforcing, supplementing, or replacing competition, with specific studies of selected industries and recent legal cases.

511. CORPORATE ENTERPRISE IN THE AMERICAN ECONOMY. Either term. Credit three hours. Prerequisite, Economics 104. Fall term, T Th S 10. Spring term, M W F 11. Mr. O'Leary.

An examination of the American business corporation as an economic institution. After an historical introduction, attention will be given to the current status of and problems created by the business corporation as the dominant device for ordering the allocation and administering the use of economic resources in the United States. Among the topics treated will be separation of ownership and management; segments of interest; reinvestment of earnings and the savings-investment process; decision making in relation to taxation of corporations; the various forms of investment contract; government regulation; the public benefit corporation as a special case.

TRANSPORTATION (Business & Public Administration 575). Fall term. Credit three hours. Limited to seniors who have taken Economics 104 or the equivalent. M W F 10. Mr. Hutchins.

A study of American transportation from the points of view of carriers, shippers, and public authorities. The emphasis is on the economics and practices of rate making, especially of railroads. Among the most important topics covered are rates and the location of industry; national traffic flows; theory of rates; classification of freight; rate systems; commodity rate structures; new types of rates; rate divisions, rate bureaus, and other intercarriers relations; the development of regulation; the determination of the general level of rates; reasonableness of particular rates; the long and short haul clause. Lectures, cases, and discussions.

TRANSPORTATION (Business & Public Administration 576). Credit three hours. Limited to seniors who have taken B. & P.A. 575. M W F 10. Mr. Hutchins.

A continuation of B & P.A. 575. New construction and abandonment; new equipment; railroad operations and service; policy problems; railroad finance and its regulation; consolidation; motor carrier transportation, operations and rate structures; tramp shipping, including charters and charter rates; ocean liner services, rates and conferences; merchant marine policy; port and terminal facilities; some aspects of air transportation and air policy.

See also *ECONOMICS* 206; B & P.A. 375; *ECONOMICS* 401-402, 825, 826, 275-276, 375-376, 385-386, 575-576, 581.

D. INTERNATIONAL AND COMPARATIVE ECONOMICS

[603. INTRODUCTION TO INTERNATIONAL ECONOMIC THEORY AND POLICY. Fall term. Credit three hours. Prerequisite, Economics 104 and upperclass standing. T Th S 11. Mr. Morse.

A survey of the principles that have evolved as guides for the determination of international economic policies. Topics include balance of payments, foreign exchange, theory of trade and tariffs, capital movements, and international adjustment mechanisms. Attention is paid to the historical evolution of principles, policies, and institutions from precapitalist origins to 1914. Not offered in 1960-1961.]

604. MODERN INTERNATIONAL ECONOMIC PROBLEMS. Spring term. Credit three hours. Prerequisite, Economics 603 or consent of the instructor. T Th S 11. Mr. Morse.

A continuation of Economics 603, dealing with the major problems, theories, and policies of the period since World War I. Emphasis is placed on the role and development of American policies with respect to the special problems created by two wars and a great depression, and the more general problems of a world in which the United States stands between the older industrialized and the developing but as yet nonindustrialized countries.

[605. *COMMERCIAL POLICY*. Fall term. Credit three hours. Prerequisite, Economics 104 or consent of the instructor. M W F 2. Mr. Golay.

An analysis of policies used to regulate international trade and payments. Tariff policy, trade and exchange controls, economic nationalism, and trade and payments agreements are emphasized. Not offered in 1960-1961.]

[606. *INTERNATIONAL CAPITAL MOVEMENTS*. Spring term. Credit three hours. Prerequisite, Economics 104 or consent of the instructor. M W F 2. Mr. Golay.

A survey of the theory and institutions of international capital movements including short-term capital, private foreign investment, and economic aid. Not offered in 1960-1961.]

[611. *COMPARATIVE ECONOMIC SYSTEMS: JAPAN, INDIA, AND CHINA*. Fall term. Credit three hours. Not open to freshmen and sophomores. M W F 10. Mr. Golay.

Capitalism, democratic socialism, and communism in the Far East. Comparison of major Asian economies in terms of organization of production, social goals, and economic growth. Not offered in 1960-1961.]

COMPARATIVE ECONOMIC SYSTEMS: SOVIET RUSSIA (Industrial & Labor Relations 341). Spring term. Credit three hours. Prerequisite, Economics 104 or the equivalent, or consent of the instructor. T Th 2-3:30. Mr. Clark.

A comparative analysis of the principles, structure, and performance of the economy of Soviet Russia. Special attention will be devoted to industry and labor.

See also *ECONOMICS* 207-208, 711, 712, 713, 813, 675-676, 686, 775-776.

E. ECONOMIC GROWTH AND DEVELOPMENT

711. *PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT*. Spring term. Credit three hours. Prerequisite, Economics 104 or consent of the instructor. T Th S 9. Mr. Morse.

A consideration of various contributions by economists and others to an understanding of how societies grow and undergo institutional change. Quantitative and qualitative processes are distinguished but treated as closely interdependent. The problems and processes of the transition to modernism are contrasted with those of both older and newer societies of various modern types. Some possibilities of combining elements from economics and other fields to form a broad approach to economic development are explored.

[712. *PUBLIC POLICY AND ECONOMIC DEVELOPMENT*. Spring term. Credit three hours. Prerequisite, Economics 104 or consent of the instructor. M W F 10. Mr. Golay.

A study of the problem of accelerating economic growth with emphasis on the Far East. An analysis of the process of capital formation, the role of the state, and the role of external assistance in economic development. Emphasis is also given to the interaction of cultural change and economic development. Not offered in 1960-1961.]

713. *RESOURCE AVAILABILITY AND REQUIREMENTS*. Spring term. Credit three hours. Prerequisite, Economics 104 and senior standing or consent of the instructor. T Th S 10. Mr. Rice.

An examination of supply conditions in such categories of resources as food, fibers, forest and forest products, and energy; patterns and trends in demand for these resources as influenced by such factors as population growth, the spread of industrialization, and social demands for higher incomes; factors mitigating between supply and demand relationships, such as technological advance and institutional change; and implications for the probability of constantly rising levels of living.

See also *ECONOMICS* 206, 207, 208, 603, 606, 686, 696, 775-776, 875-876.

IV. ECONOMIC THEORY

A. GENERAL

811. INTERMEDIATE ECONOMIC THEORY. Either term. Credit three hours. Not open to sophomores. Required in the junior or senior year of all students majoring in economics. Prerequisite, Economics 104. Fall term: M W F 10, Mr. Copeland; T Th S 9, Mr. Morse. Spring term: M W F 2, Mr. ———.

An analysis of the pricing processes in a free-enterprise economy under varying competitive conditions and their role in the allocation of resources and the functional distribution of the national income.

813. DISSENTING ECONOMIC DOCTRINES AND PROTEST MOVEMENTS. Fall term. Credit three hours. Prerequisite, permission of the instructor. T Th 2-3:30. Mr. Montgomery.

A survey of economic doctrines of unorthodox or dissenting persuasion and a study of movements of social protest and of various types of economic organization proposed or attempted. Among the matters considered: classical economic doctrines; the forerunners of Marx; the Marxian theories and predictions; the politics and economics of Collectivism, Anarchism, British Fabianism and the Welfare State, and Communism; pricing and resource-allocation problems in different types of economic organization.

[815-816. *HISTORY OF ECONOMIC THOUGHT.* Throughout the year. Credit three hours a term. With the consent of the instructor the first term need not be prerequisite to the second. M W F 8. Mr. Adams.

A survey of the development of economic ideas from the early modern period to the twentieth century. Extensive readings from the Mercantilists, Smith, Ricardo, Mill, and Marshall, with class discussion of these. Supplementary readings from other men and schools will provide material for reports and term papers. Will not be offered in 1960-1961.]

817. INTRODUCTION TO MATHEMATICAL ECONOMICS. Fall term. Credit three hours. Prerequisite, Economics 811 and consent of the instructor. M W F 9. Mr. Liu.

Application of elementary mathematical techniques to economic analysis.

B. DETERMINANTS OF INCOME AND EMPLOYMENT

822. MONETARY THEORY AND PUBLIC POLICY. Spring term. Credit three hours. Prerequisite, Economics 301. M W F 11. Mr. Rice.

A further study of monetary theory with emphasis on implications for monetary and fiscal policies; a consideration of international monetary relationships and some proposals for monetary reform.

823. NATIONAL INCOME AND WEALTH. Spring term. Credit three hours. Prerequisite, B. & P.A. 110 or consent of the instructor. M W F 2. Mr. Copeland.

An examination of social accounting measurements and related statistical measurements of general economic activity together with illustrations of their use in aggregative economic analysis and in economic projections.

825. TRADE FLUCTUATIONS. Either term. Credit three hours. Prerequisite, Economics 104 or consent of the instructor. M W F 11. Fall term, Mr. ———; spring term, Mr. Copeland.

A study of the nature and causes of business recessions, revivals, and booms, and of recent business cycle history, together with a brief introduction to methods of current business analysis and forecasting.

[826. *FULL EMPLOYMENT AND FREE ENTERPRISE.* Spring term. Credit three

hours. Prerequisite, Economics 104 or consent of the instructor. M W F 2. Mr. Copeland.

A study of the relations of labor overdemand and of the forms of unemployment to optimum employment and to the system of capitalism and free private enterprise. A critical examination of recent federal policies to promote optimum employment and of various optimum employment plans. Will not be offered in 1960-1961.]

See also *AGRICULTURAL ECONOMICS* 138; *ECONOMICS* 401-402, 501-502, 603, 605-606, 711, 375-376, 385-386, 396, 475-476, 575-576, 675-676, 775-776, 855-856, 875-876, 885-886, 895-896.

V. HONORS

910. *HONORS SEMINAR*. Spring term. Credit three hours. Required of all juniors who plan to be candidates for Honors. Hours to be arranged. Mr. Adams and staff.

The subject of the Honors Seminar is to be "Landmarks in Economic Thought."

911-912. *HONORS SEMINAR*. Throughout the year. Credit three hours in fall, six hours in spring. Required of all seniors who are candidates for Honors. Hours to be arranged. Mr. Adams and staff.

Continuation of Economics 910, together with the writing of an Honors thesis and preparation for the comprehensive Honors examinations.

VI. GRADUATE SEMINARS

These are open to graduates, and, with the consent of the instructor, to qualified seniors. All students should consult the instructor before registering. In all cases credit is three hours a term and hours are to be arranged.

SEMINAR IN ECONOMIC STATISTICS (Industrial & Labor Relations 610). Fall term. Mr. ———.

275-276. *ECONOMIC HISTORY*. Throughout the year. Mr. Dowd.

375-376. *MONETARY AND BUSINESS CYCLE THEORY*. Throughout the year. Mr. Rice.

385-386. *FINANCIAL THEORY, HISTORY, AND POLICY*. Throughout the year. Mr. O'Leary.

396. *PUBLIC FINANCE*. Spring term. Mr. Kendrick.

475-476. *LABOR ECONOMICS*. Throughout the year. Mr. Montgomery.

575-576. *PUBLIC CONTROL OF BUSINESS*. Throughout the year. Mr. Kahn.

581. *TRANSPORTATION*. Fall term. Mr. Hutchins.

675-676. *INTERNATIONAL ECONOMICS*. Throughout the year. Messrs. Golay and Morse.

686. *ECONOMIC PROBLEMS OF SOUTHEAST ASIA*. Spring term. Mr. ———.

775-776. *ECONOMICS OF DEVELOPMENT*. Throughout the year. Messrs. Morse and Golay.

855-856. *MATHEMATICAL ECONOMICS*. Throughout the year. Mr. Liu.

866. *TRADE FLUCTUATIONS*. Spring term. Mr. Copeland.

875-876. *ECONOMIC THEORY*. Throughout the year. Mr. Copeland.

[885-886. *HISTORY OF ECONOMIC THOUGHT*. Throughout the year. Mr. Adams. Not offered in 1960-1961.]

895-896. *ECONOMETRICS*. Throughout the year. Mr. Liu.

ENGLISH

Mr. W. R. Keast, *Chairman*; Messrs. M. H. Abrams, R. M. Adams, R. Bamberg, E. Borkland, Mrs. M. Boynton, Messrs. A. Caputi, G. F. Cronkhite, R. A. Donovan, R. M. Durling, C. R. Edwards, R. H. Elias, J. Feil, Miss R. M. Fisher, Messrs. A. Fletcher, E. G. Fogel, Miss J. Frantz, Messrs. W. H. French, R. Greenberg, B. Hathaway, E. Haun, G. H. Healey, J. Hepburn, L. Lane, Jr., R. W. Langbaum, J. A. Mazzeo, J. McConkey, F. E. Mineka, A. M. Mizener, J. Nabholtz, D. Novarr, J. Palmer, S. M. Parrish, W. Piper, F. Read, J. L. Rosier, W. M. Sale, Jr., Miss J. Scherer, Messrs. J. Senior, W. Slatoff, H. Smith, T. W. Stoeck, J. M. Wallace, S. E. Whicher, M. R. Zirker, Jr.

For major work in English a student is required to complete: (1) English 251-252, to be taken by the end of the sophomore year; (2) twenty-four hours of upperclass courses in English; and (3) fifteen hours in related subjects. Eighteen of the twenty-four hours of upperclass courses must consist of three 400-level courses, each preceded by a different prerequisite at the 300-level. The remaining six of the twenty-four hours are open to election from all upperclass courses and from Literature 211-212, 301-302, 309-310, 401-402.

Students considering English as their major subject are urged to secure from the Department Office, Goldwin Smith 245, a detailed description of requirements in English and related subjects. This description contains special instructions which the student will find useful in planning his program beginning with the sophomore year. As soon as a student decides upon English as his major field, he should consult the Chairman of the Department of English for advice and for assignment to a major adviser. If a student feels that he will meet the requirements of the College of Arts and Sciences for admission to candidacy for Honors (page 22), he can begin planning his course of study for Honors in English as early as the second term of his freshman year.

Courses numbered below 300 are intended for underclassmen and have no prerequisites. All other courses are strictly limited to upperclassmen and carry announced prerequisites, which will not be waived. Students exempting English 112 or having completed English 113 may, in the second term of their freshman year, register in English 201, 203, 230, or 251.

The Department offers a sequence of courses in writing, English 201-202, 203-204, 385-386, and 395-396, a minimum of 15 hours of which may be used in satisfying the related subject requirement.

Prospective teachers of English in secondary schools must elect a special sequence of related courses and should consult the Chairman of the Department, preferably during the second term of their freshman year, before making out their programs for the sophomore year.

***111-112. INTRODUCTORY COURSES IN READING AND WRITING.** Throughout the year. Credit three hours a term. Open to freshmen. English 111 is prerequisite to 112. M W F 8, 9, 10, 11, 12, 2; T Th S 8, 9, 10, 11, 12. Mr. Elias, Mr. Durling, and others.

The aim is to increase the student's ability to communicate his own thought and to understand the thought of others.

***113-114. INTRODUCTION TO LITERATURE.** Throughout the year. Credit three hours a term. First term prerequisite to second. Open only to specially qualified freshmen. M W F 11, 2; T Th S 11. Mr. Sale and others.

An introductory course in the study of the various forms of literature. For freshmen who are candidates for advanced credit as attested by Advanced Placement Examinations or by distinguished work in secondary schools. The course will satisfy the group requirement in the Humanities in the Program of Common

Studies (six hours). At the end of the first term, students whose writing meets the standards of the course will be recommended for three hours of advanced standing credit in English composition.

ENGLISH FOR FOREIGNERS

The following two courses are offered by the Division of Modern Languages. Foreign students should consult a member of that Division in Morrill Hall 108.

*102. *ENGLISH FOR FOREIGNERS*. Fall term. Credit six hours. Prerequisite, placement by the instructor. Hours to be arranged.

*211. *ENGLISH FOR FOREIGNERS*. Fall term. Credit six hours. Prerequisite, a satisfactory proficiency examination. Hours to be arranged.

INTERMEDIATE COURSES

201. *EXPOSITORY WRITING: ORGANIZATION*. Either term. Credit three hours. Prerequisite, English 111 and 112 or the equivalent. Fall term, M W F 9, 10; T Th S 9. Spring term, M W F 9, 10; T Th S 9. Mr. French and others. Sections limited to 20.

Essays and reports; the paragraph; the outline; reading and analyzing expository prose. Frequent practice in writing; personal conferences.

202. *EXPOSITORY WRITING: EXPRESSION*. Spring term. Credit three hours. Prerequisite, English 201 or 203. T Th S 9. Mr. Lane. Sections limited to 20.

Narrative and descriptive techniques; problems of sentence pattern and of usage; study of modern prose style. Practice in writing; personal conferences.

203. *SPECIAL FORMS OF WRITING*. Either term. Credit three hours. Prerequisite, English 111-112 or the equivalent. Fall term, M W 12 or T Th 10, and conferences to be arranged. Spring term, M W 9 or T Th 10, and conferences to be arranged. Mr. McConkey and others. Sections limited to 15.

An introductory course in the practice of writing narrative, verse, and allied forms.

204. *SPECIAL FORMS OF WRITING*. Spring term. Credit three hours. Prerequisite, English 203 or consent of the instructor. M W 12 or T Th 10, and conferences to be arranged. Mr. McConkey and others. Sections limited to 15.

A continuation of English 203: practice in writing narrative, verse, and allied forms.

225-226. *THE TWENTIETH CENTURY*. Throughout the year. Credit three hours a term. First term not prerequisite to the second. M W F 2. Mr. McConkey.

British and American writers. Fall term: Dreiser, O'Neill, Joyce, Yeats, Lawrence, Forster, and others. Spring term: Frost, Eliot, Auden, Huxley, Waugh, Hemingway, Faulkner, and others.

229-230. *THE AMERICAN LITERARY HERITAGE*. Throughout the year. Credit three hours a term. First term not prerequisite to second. Open to freshmen who have completed English 113 or exempted English 112. First term not open to students who have taken or are currently registered in English 251, 252, 254, or 255. M W 10 and discussion sections to be arranged. Fall term, Mr. Slatoff; spring term, Mr. Elias.

A study of American literary masterpieces, together with certain British works chosen because of their relevance to American writing. First term: to the Civil War. Second term: the past hundred years.

251-252. *GREAT ENGLISH WRITERS*. Throughout the year. Credit three hours a term. English 251 prerequisite to English 252. T Th 11 and discussion sections to be arranged. Mr. Abrams, Mr. Donovan, and Staff.

Studies in selected works of great English writers, Chaucer to the twentieth century. Open to all students who have completed the requirement in English composition; those who intend to major in English should take this course in the sophomore year.

251. *GREAT ENGLISH WRITERS*. Spring term. Credit three hours. Open only to freshmen who have completed English 113 or exempted English 112. T Th S 11, Mr. Cronkhite. T Th S 12, Miss Fisher.

Studies in selected works of great English writers, Chaucer to the eighteenth century.

254. *BRITISH LITERATURE*. Spring term. Credit 3 hours. Not open to students who have taken English 251. T Th S 12. Mr. Healey.

A study of works by notable English, Scottish, and Irish authors from the time of Chaucer to that of Boswell.

255. *BRITISH LITERATURE*. Fall term. Credit three hours. English 254 is not prerequisite. Not open to students who have taken English 252. T Th S 12. Mr. Parrish.

A study of works by notable English, Scottish, and Irish authors from the time of Burns to that of Yeats.

COURSES FOR UPPERCLASSMEN

These courses are strictly limited to upperclassmen. Except for the advanced writing courses—English 385, 386, 388, 395, and 396—all courses at the 300-level require English 251–252 or English 254–255 as prerequisite. Non-majors who have exempted English 112 or who have taken English 113–114 may register for one 300-level course in the fourth term, provided they have taken English 254–255 or have taken English 251 and are currently taking English 252. For provisions governing students majoring in English, consult detailed instructions available in the English Office.

309. *THE LATER RENAISSANCE*. Fall term. Credit three hours. M W F 9. Mr. Edwards.

The main traditions in poetry and prose from Spenser to Marvell.

314. *THE EIGHTEENTH CENTURY*. Spring term. Credit three hours. T Th S 10. Mr. Keast.

Major writers from Pope and Swift to Burns and Blake.

318. *THE ROMANTIC PERIOD*. Spring term. Credit three hours. T Th S 11. Mr. Parrish.

The nature of Romanticism, arrived at through a reading of the major poets: Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

321. *THE VICTORIAN PERIOD*. Fall term. Credit three hours. T Th S 11. Mr. Langbaum.

The major poets and prose writers from Carlyle to Bernard Shaw, in relation to the thought of the time and to literature in the twentieth century.

333. *MAJOR AMERICAN WRITERS OF THE NINETEENTH CENTURY*. Fall term. Credit three hours. Not open to students who have taken English 229–230. M W F 2. Mr. Whicher.

A brief survey of the course of American literature and a more detailed study of Poe, Emerson, Thoreau, Hawthorne, Dickinson, Melville, Whitman, Mark Twain, Adams, James, and Crane. Students preregistering should plan to do summer reading; list on request in Goldwin Smith 245.

336. *THE MODERN AMERICAN NOVEL*. Spring term. Credit three hours. Open to students majoring in English and to others by permission of the instructor. Registration limited to 100. M W F 10. Mr. Sale. (Will not be offered in 1961-1962.)

A critical study of American fiction, beginning with Howells and James and concluding with selected contemporary novels.

[338. *THE MODERN ENGLISH NOVEL*. Spring term. Credit three hours. M W F 10. Mr. Sale (Will be offered in 1961-1962.)]

340. *REPRESENTATIVE ENGLISH DRAMAS*. Spring term. Credit three hours. M W F 12. Mr. Caputi.

A study of the principal traditions in the English drama (excluding Shakespeare) from the Middle Ages to the present century.

DRAMA AND THE THEATRE. (See Literature 301-302.)

343. *SHORTER FORMS OF FICTION*. Fall term. Credit three hours. M W F 10. Mr. Hathaway.

A study of the shorter forms of narrative in both prose and verse. Special attention will be given to the short story in the twentieth century.

369. *SHAKESPEARE*. Fall term. Credit three hours. M W F 11. Mr. Mizener.

An introduction to the works of Shakespeare, based on a selection of plays representative of the stages of his artistic development and the range of his achievement.

381. *ADVANCED GRAMMAR*. Fall term. Credit three hours. M W F 12. Mr. Hathaway. (Will not be offered in 1961-1962.)

An inductive study of the grammatical structure of English, particularly of the language of the present day, both oral and written.

382. *THE ENGLISH LANGUAGE*. Spring term. Credit three hours. T Th S 12. Mr. French.

Problems of language: origin, derivation, semantics, usage, and other topics studied historically.

385-386. *NARRATIVE WRITING*. Throughout the year. Credit three hours a term. Prerequisite, English 202 or 204 or consent of the instructor. T Th 11 and conferences to be arranged. Mr. McConkey.

A course in the writing of fiction; study of models; analysis of students' work.

388. *VERSE WRITING*. Spring term. Credit three hours. Prerequisite, consent of the instructor. T Th 2-3:30. Mr. Hathaway. (Will not be offered in 1961-1962.)

The techniques of poetry; study of models; criticism of students' poems; personal conferences.

395-396. *SEMINAR IN WRITING*. Throughout the year. Credit three hours each term. Prerequisite, English 385-386 or 388 or consent of the instructor. W 2-4. Mr. Hathaway.

For advanced writing students, who should be prepared to work out during the year a writing project in verse, narrative, or essay. Exploration of principles of literary theory pertinent to projects undertaken.

405-406. *OLD ENGLISH PROSE AND POETRY*. Throughout the year. Credit three hours a term. T Th S 12. Mr. French and Mr. Rosier.

Philology and literature from the Anglo-Saxon invasion to the Norman Conquest. Most of *Beowulf* will be read in the second term. This course is recommended by the Department to all who intend to become graduate students in English.

SURVEY OF MEDIEVAL LITERATURE. (See Literature 211-212.)

410. *ELIZABETHANS AND METAPHYSICALS*. Spring term. Credit three hours. M W F 10. Prerequisite, English 309. Mr. Adams.

The major poetic traditions of the late sixteenth and the seventeenth century, with special attention to Spenser, Jonson, Donne, Herbert, Marvell, and Dryden.

413. *THE ENGLISH NOVEL FROM DEFOE TO THACKERAY*. Fall term. Credit three hours. Prerequisite, English 314 or 338 or consent of the instructor. T Th S 9. Mr. Donovan.

A critical study of selected novels by Defoe, Richardson, Fielding, Smollett, Sterne, Austen, Scott, Dickens, Thackeray, and others.

415. *LITERATURE AND IDEAS IN THE EIGHTEENTH CENTURY*. Fall term. Credit three hours. Prerequisite, English 314. T Th S 11. Mr. Keast.

A study of characteristic achievements of eighteenth-century writers in satire, criticism, history, biography, and political journalism; among the writers considered will be Dryden, Pope, Johnson, Reynolds, Gibbon, and Burke.

Students preregistering should plan to do summer reading; a reading list is available in Goldwin Smith 245.

417. *MASTERWORKS OF THE ROMANTIC PERIOD*. Fall term. Credit three hours. Prerequisite, English 314 or 318. T Th S 10. Mr. Abrams.

A critical study of major Romantic achievements in various forms: Blake's *The Book of Thel*, Wordsworth's *Prelude*, Shelley's *Prometheus Unbound*, Byron's *Don Juan*, Emily Brontë's *Wuthering Heights*.

420. *ELIZABETHAN AND JACOBEAN DRAMA*. Spring term. Credit three hours. Prerequisite, English 309, 340, or 369. T Th S 11. Mr. Novarr.

Critical study of plays by Marlowe, Marston, Jonson, Webster, Beaumont, Fletcher, Ford, and others. The development of dramatic forms and the main currents of ideas in dramatic representation by contemporaries of Shakespeare and Donne.

422. *BROWNING, DICKENS, AND ARNOLD*. Spring term. Prerequisite, English 318 or 321. Credit three hours. T Th S 10. Mr. Donovan.

Three major Victorian writers of poetry, fiction, and criticism.

439. *ENGLISH AND AMERICAN NOVELISTS*. Either term. Credit three hours. Prerequisite, English 336 or 338 and the consent of the instructor. M W F 12. Fall term, Mr. Sale; spring term, Mr. Slatoff.

For 1960-1961, in the fall term the emphasis will be placed upon the novels of Joseph Conrad; in the spring term the emphasis will be placed upon the novels of Faulkner and Hemingway.

441. *RESTORATION AND EIGHTEENTH-CENTURY DRAMA*. Fall term. Credit three hours. Prerequisite, English 340 or (for 1960-1961 only) English 369. M W F 2. Mr. Mizener.

The drama from Dryden and Congreve to Sheridan and Goldsmith.

[449. *RECENT AMERICAN POETRY*. Fall term. Credit three hours. Prerequisite, English 333 or consent of the instructor. M W F 12. Mr. French. (Will be offered in 1961-1962.)]

465. *CHAUCEER'S EARLY WORKS*. Fall term. Credit three hours. M W F 12. Mr. French. (Will not be offered in 1961-1962.)

Chaucer's life, contemporaries, *The Book of the Duchess*, *House of Fame*, *Parliament of Birds*, *Troilus and Criseyde*, and shorter poems.

466. *CHAUCEER'S CANTERBURY TALES*. Spring term. Credit three hours. Prerequisite, two 300-level courses. M W F 12. Mr. French.

Primarily a literary study; brief reports; readings in writings about the fourteenth century.

470. *SHAKESPEARE*. Either term. Credit three hours. Prerequisite, English 340 or 369. Fall term, M W F 11, Mr. Fogel; spring term, M W F 11, Mr. Caputi.

An intensive study of three or four of Shakespeare's plays.

472. *MILTON*. Spring term. Credit three hours. Prerequisite, English 309 or 369. M W F 9. Mr. Adams.

Intensive study of Milton's poetry and selected prose with special reference to *Paradise Lost*. Topical lectures, class reports, and discussion.

475. *STUDIES IN EARLY AMERICAN AUTHORS*. Fall term. Credit three hours. M W F 9. Prerequisite, English 333, 309, or 314. Mr. Cronkhite. (Will not be offered in 1961-1962.)

The work of such authors as Jonathan Edwards, Edward Taylor, Franklin, Paine, Freneau, C. B. Brown, Irving, Bryant, and Cooper studied in relationship to Puritanism, Deism, and the beginnings of the Romantic movement.

477. *MELVILLE AND WHITMAN*. Fall term. Credit three hours. Prerequisite, English 333 or 318. M W F 10. Mr. Elias.

A study of selected works by these writers together with works by other writers related to them.

478. *READINGS IN NINETEENTH-CENTURY AMERICAN AUTHORS*. Spring term. Credit three hours. Prerequisite, English 333 or 318. M W F 10. Mr. Whicher.

A study of selected texts of importance. Those to be read in 1961 include Emerson, *Nature*; Thoreau, *Walden*; Poe, *A. Gordon Pym* and *Eureka*; Adams, *Education* and *Mont St. Michel*; and selections from Hawthorne, Crane, and Dickinson.

481. *HENRY JAMES AND MARK TWAIN*. Fall term. Credit three hours. Prerequisite, English 333, 336, or 338. T Th S 10. Mr. Elias.

An intensive examination of the work of one of these major American writers, with special attention to his concern with the American character, his technique, and the relation of his work to that of an important contemporary. In 1960-1961 the emphasis will be on the fiction of Henry James.

486. *STUDIES IN MODERN LITERATURE*. Spring term. Credit three hours. Prerequisite, English 321. M W F 2. Mr. Mizener.

A critical examination of selected prose and poetry.

HONORS SEMINARS

All candidates for Honors in English must take at least one seminar numbered 491-495 and also the Honors Essay Seminar, 496. Application for admission to Honors Seminars should be made to the Chairman of the Honors Committee during the week before preregistration. Upon application to the Chairman of the Honors Committee, other majors in English will be admitted to Seminars 491-495, if there are places.

In 1960-1961 Honors Seminars will be offered according to the following schedule; topics for the seminars will be announced later.

491. Fall term. Credit three hours. T 2-4. Mr. Sale.

492. Spring term. Credit three hours. T 2-4. Mr. Whicher.

493. Fall term. Credit three hours. Th 2-4. Mr. Adams.

494. Spring term. Credit three hours. Th 2-4. Mr. Fogel.

495. Fall term. Credit three hours. M 2-4. Mr. Novarr.

496. *HONORS ESSAY SEMINAR*. Spring term. Credit three hours. M 2-4. Mr. Parrish.

FOR GRADUATE STUDENTS

The Department will issue, at the beginning of each term, an announcement of special topics and hours of meeting for each course.

GRADUATE COURSES

These are intended as introductions to advanced study and presuppose reasonable undergraduate preparation, such as one or two courses beyond a general survey. Before registering in graduate courses, all students must secure the consent of the instructor. A few specially qualified undergraduates may be admitted.

501. *INTRODUCTION TO GRADUATE STUDY*. Fall term. Credit three hours. Mr. Parrish. Recommended for all candidates for the Master's degree.

503-504. *MIDDLE ENGLISH LITERATURE*. Both terms. Credit three hours a term. Mr. French.

506. *MEDIEVAL AND EARLY RENAISSANCE LITERATURE*. Spring term. Credit three hours. Mr. Durling.

510. *SHAKESPEARE*. Spring term. Credit three hours. Mr. Fogel.

512. *SEVENTEENTH-CENTURY LITERATURE*. Spring term. Credit three hours. Mr. Novarr.

514. *STUDIES IN THE HISTORY OF CRITICISM*. Spring term. Credit three hours. Mr. Hathaway.

531. *THE ROMANTIC PERIOD*. Fall term. Credit three hours. Mr. Abrams.

535. *VICTORIAN WRITERS*. Fall term. Credit three hours. Mr. Mineka.

539. *THE AESTHETIC MOVEMENT*. Fall term. Credit three hours. Mr. Adams.

546. *STUDIES IN ENGLISH AND AMERICAN NOVELISTS*. Spring term. Credit three hours. Mr. Sale.

555. *STUDIES IN AMERICAN LITERATURE*. Fall term. Credit three hours. Mr. Whicher.

561. *DRAMATIC LITERATURE*. Fall term. Credit three hours. Mr. Caputi.

566. *TWENTIETH-CENTURY LITERATURE*. Spring term. Credit three hours. Mr. Mizener.

595-596. *CREATIVE WRITING*. Both terms. Credit three hours a term. Mr. Hathaway.

GRADUATE SEMINARS

These are intended for students who have completed at least one graduate course in the subject and are considered qualified to undertake independent study. Before enrolling, they must secure the instructor's permission.

607. *SPENSER*. Fall term. Credit three hours. Mr. Edwards.

620. *EIGHTEENTH-CENTURY LITERATURE*. Spring term. Credit three hours. Mr. Keast.

634. *NINETEENTH-CENTURY POETRY*. Spring term. Credit three hours. Mr. Donovan.

636. *VICTORIAN LITERATURE*. Spring term. Credit three hours. Mr. Mineka.
 656. *STUDIES IN AMERICAN LITERATURE*. Spring term. Credit three hours. Mr. Slatoff.
 662. *DRAMATIC LITERATURE*. Spring term. Credit three hours. Mr. Caputi.

FAR EASTERN STUDIES

Mr. John M. Echols, *Chairman*; Messrs. Allen C. Atwell, Knight Biggerstaff, Frank H. Golay, Charles F. Hockett, R. B. Jones, George McT. Kahin, Morris E. Opler, Harold Shadick, Lauriston Sharp, G. William Skinner, Robert J. Smith, Martie W. Young.

The Far Eastern Studies major must demonstrate proficiency in a Far Eastern language and complete the following: Far Eastern Studies 952 and a seminar to be selected in consultation with the student's major adviser; twenty-seven additional hours selected from the courses listed below; two one-year courses in one of the following fields: anthropology, government, economics, history, linguistics, literature, philosophy, or sociology (one of these must be an advanced course, and neither may be a course listed under Far Eastern Studies); and a comprehensive examination at the end of the senior year. To be admitted to the major a student must have completed one of the courses listed below and be recommended by the professor in charge of that course.

Candidates for the Bachelor of Arts with Honors in Far Eastern Studies must include Far Eastern Studies 901 among the twenty-seven hours stipulated in the preceding paragraph. Applicants to the Honors program must have a cumulative grade average of 80 or above.

FAR EAST, GENERAL

201. *INTRODUCTION TO THE CONTEMPORARY FAR EAST: CHINA AND NORTHEAST ASIA*. Fall term. Credit three hours. M W F 9. Messrs. Biggerstaff and Smith.

Introduction to the land, the people, and the social, political, and economic life and organization of China, Japan, and Korea, together with some consideration of Russia in the Far East. Attention is given to the modernization of these countries, to their external relations, and to contemporary conditions and events.

202. *INTRODUCTION TO THE CONTEMPORARY FAR EAST: SOUTHEAST ASIA AND INDIA*. Spring term. Credit three hours. M W F 9.

Introduction to the land, the people, and the modern social, political, and economic life of Burma, Ceylon, India, Indochina, Indonesia, Malaya, Pakistan, the Philippines, and Thailand. Attention is given to the native culture base, to the background of colonialism or dependence from which this politically awakened region has emerged, and to the problems of modernization now faced by the peoples of the area.

GOVERNMENT AND POLITICS OF ASIA. Spring term. M W F 8. Mr. Kahin. (See Government 314.)

THE UNITED STATES AND ASIA. Fall term. M W F 9. Mr. Kahin. (See Government 417.)

[*COMPARATIVE ECONOMIC SYSTEMS: JAPAN, INDIA, AND CHINA*. Mr. Golay. (See Economics 611.) Not offered in 1960-1961.]

[*PUBLIC POLICY AND ECONOMIC DEVELOPMENT*. Mr. Golay. (See Economics 712.) Not offered in 1960-1961.]

NATIVE CULTURES OF THE PACIFIC. Fall term. W 3-5. Mr. Sharp. (See Sociology and Anthropology 245.)

NATIVE CULTURES OF JAPAN, KOREA, AND NORTHEAST ASIA. Spring term. M W F 2. Mr. Smith. (See Sociology and Anthropology 246.)

[*THE CIVILIZATION OF JAPAN.* Mr. Smith. (See Sociology and Anthropology 247.) Not offered in 1960-1961.]

[*COMPARATIVE SOCIAL ORGANIZATION OF COMPLEX SOCIETIES OF EAST ASIA.* Mr. Skinner. (See Sociology and Anthropology 254.) Not offered in 1960-1961.]

[*SEMINAR: COMPARATIVE MODERNIZATION OF CHINA AND JAPAN.* Messrs. Skinner and Smith. (See Sociology and Anthropology 288.) Not offered in 1960-1961.]

[*INTRODUCTION TO FAR EASTERN ART.* Mr. Young. (See Fine Arts 601.) Not offered in 1960-1961.]

ART OF INDIA AND SOUTHEAST ASIA. Fall term. M W F 11. Mr. Young. (See Fine Arts 603.)

ART OF CHINA AND JAPAN. Spring term. M W F 11. Mr. Young. (See Fine Arts 604.)

[*METHODS OF RESEARCH IN FAR EASTERN ART.* Mr. Young. (See Fine Arts 931.) Not offered in 1960-1961.]

PROBLEMS IN ORIENTAL ART. Fall term. W 2-4. Mr. Young. (See Fine Arts 933.)

SEMINAR: STUDIES IN ASIAN ART. Spring term. Mr. Atwell. (See Art 353, College of Architecture.)

901. *HONORS COURSE.* Fall term. Credit three hours. Time to be arranged.

This course, in which the student writes an Honors essay, is required of all Honors students in their senior year. It is taken with the student's major adviser.

952. *DIRECTED READING IN FAR EASTERN STUDIES.* Spring term. Credit two hours. Open only to undergraduate Far Eastern Studies majors in their senior year. Hours to be arranged. Major advisers.

CHINA

ELEMENTARY CHINESE. T Th 9, daily at 8. Mr. Hockett. (See Chinese 101-102.)

INTRODUCTION TO CLASSICAL CHINESE. M W F 11. Mr. Shadick. (See Chinese 201-202.)

INTERMEDIATE CHINESE. T Th S 11. Mr. Shadick. (See Chinese 203-204.)

READINGS IN CHINESE LITERATURE: CLASSICAL AND MODERN. Mr. Shadick. (See Chinese 351-352.)

[*CHINESE LITERATURE IN TRANSLATION: PHILOSOPHICAL AND HISTORICAL LITERATURE.* Mr. Shadick. (See Literature 321.) Not offered in 1960-1961.]

CHINESE LITERATURE IN TRANSLATION: IMAGINATIVE LITERATURE. Spring term. M W F 10. Mr. Shadick. (See Literature 322.)

375-376. *SEMINAR IN CHINESE LITERATURE.* Hours and credit to be arranged. Mr. Shadick. Only 376 is offered in 1960-1961.

[611-612. *MODERN CHINA.* Seminar for all graduate students in the China Program. Staff. Not offered in 1960-1961.]

HISTORY OF CHINESE CIVILIZATION: TO 1842. Fall term. M W F 12. Mr. Biggerstaff. (See History 161.)

HISTORY OF CHINESE CIVILIZATION: SINCE 1842. Spring term. M W F 12. Mr. Biggerstaff. (See History 162.)

MODERNIZATION OF CHINA. M 3-5. Mr. Biggerstaff. (See History 811-812.)

SEMINAR IN MODERN CHINESE HISTORY. Mr. Biggerstaff. (See History 875-876.)

[*NATIVE CULTURES OF CHINA'S INLAND FRONTIERS.* Mr. Skinner. (See Sociology and Anthropology 243.) Not offered in 1960-1961.]

CHINESE CULTURE AND SOCIETY—I. Fall term. T Th S 10. Mr. Skinner. (See Sociology and Anthropology 251.)

CHINESE CULTURE AND SOCIETY—II. Spring term. T Th S 10. Mr. Skinner. (See Sociology and Anthropology 252.)

[*SOCIAL ORGANIZATION IN COMMUNIST CHINA.* Mr. Skinner. (See Sociology and Anthropology 253.) Not offered in 1960-1961.]

[*CHINESE PAINTING.* Mr. Young. (See Fine Arts 605.) Not offered in 1960-1961.]

1985-1986. *CHINA RESEARCH TRAINING SEMINAR.* Staff.

INDIA

ELEMENTARY HINDI. Hours to be arranged. (See Hindi 101-102.)

HINDI READING. Hours to be arranged. (See Hindi 201-202.)

[*ELEMENTARY SANSKRIT.* Mr. Fairbanks. (See Linguistics 283.) Not offered in 1960-1961.]

NATIVE CULTURES OF INDIA AND SOUTH ASIA. Spring term. T Th 2-3:30. Mr. Opler. (See Sociology and Anthropology 240.)

[*SEMINAR: INDIA AND SOUTH ASIA.* Mr. Opler. (See Sociology and Anthropology 283.) Not offered in 1960-1961.]

SOUTHEAST ASIA

ELEMENTARY BURMESE. Mr. Jones. (See Burmese 101-102.)

BURMESE READING. Mr. Jones. (See Burmese 201-202.)

ELEMENTARY INDONESIAN. Mr. Echols. (See Indonesian 101-102.)

INDONESIAN READING. Mr. Echols. (See Indonesian 201-202.)

INDONESIAN COMPOSITION AND CONVERSATION. Mr. Echols. (See Indonesian 203-204.)

ELEMENTARY THAI. Mr. Jones. (See Thai 101-102.)

THAI READING. Mr. Jones. (See Thai 201-202.)

THAI COMPOSITION AND CONVERSATION. Mr. Jones. (See Thai 203-204.)

ELEMENTARY VIETNAMESE. Mr. Jones. (See Vietnamese 101-102.)

[*CHINESE DIALECTS OF SOUTHEAST ASIA.* Mr. Hockett. (See Chinese 231.) Not offered in 1960-1961.]

SOUTHEAST ASIAN LITERATURE IN TRANSLATION. Spring term. T 2-4. Mr. Echols. (See Literature 318.)

601-602. *SOUTHEAST ASIA*. Throughout the year. Credit three hours a term. Messrs. Echols, Jones, Kahin, Sharp.

A graduate-level survey of the cultures and history of Southeast Asia covering the pre-European, colonial, and postcolonial periods, but with particular emphasis on postwar developments and contemporary problems. Will focus on a different country of Southeast Asia each term.

SEMINAR: POLITICAL PROBLEMS OF ASIA. Throughout the year. Mr. Kahin. (See Government 395-396.)

SEMINAR: ECONOMIC PROBLEMS OF SOUTHEAST ASIA. Spring term. Mr. Hla Myint. (See Economics 686.)

NATIVE CULTURES OF SOUTHEAST ASIA. Spring term. M W F 2. Mr. Sharp. (See Sociology and Anthropology 242.)

[*SEMINAR: SOUTHEAST ASIAN ANTHROPOLOGY*. Mr. Sharp. (See Sociology and Anthropology 285.) Not offered in 1960-1961.]

[*SEMINAR: THE CHINESE OF SOUTHEAST ASIA*. Mr. Skinner. (See Sociology and Anthropology 286.) Not offered in 1960-1961.]

SEMINAR: SOUTHEAST ASIAN HISTORY. One or two terms. Credit three hours a term. (History 885-886.)

977-978. *SEMINAR: FIELD RESEARCH IN SOUTHEAST ASIA*. Prerequisite, consent of the instructor. Mr. Golay.

Research seminars conducted in the field for a limited number of advanced students.

THE FINE ARTS

Mr. F. O. Waage, *Chairman*; Messrs. D. L. Finlayson, N. A. Pattillo, Webster Smith, Alan R. Solomon, James H. Turnure, Martie W. Young.

Students who wish to do their major work in the fine arts will choose one of these two options:

I. *GENERAL COURSE*. In this option the following courses must be completed:

- (1) (a) Music, twelve hours, including Music 101-102.
 (b) Visual arts, twelve hours, including Fine Arts 101-102.
 (c) Literature, twelve hours, including Literature 101-102 or 301-302.
- (2) Fifteen hours of approved advanced courses forming a logically coherent group within one of three fields: (a) literature (literary history, criticism, writing, dramatics); (b) visual arts (history, practice); (c) music (theory, composition, application).

II. *VISUAL ARTS COURSE*. In this option a student is required to complete (1) Fine Arts 101-102, 111-112; (2) eighteen hours of other courses in fine arts; and (3) fifteen hours in related subjects, including History 103-104 or 105-106 or the year course in either ancient, medieval, or modern history. Students electing this option are encouraged, but not required, to elect courses in the practice of art given in the College of Architecture (see the Announcement of that College). A student, however, who, wishing to do graduate work in the practice of art, intends to qualify for admission to the Graduate School as a candidate for the M.F.A. degree, should elect thirty hours of such courses in the practice of art.

Applicants for the degree of Bachelor of Arts with Honors in Fine Arts should apply at the departmental office during the first week in October of their junior year. In order to be eligible for the Honors program, the candidate must have elected the visual arts option as his major subject, have cumulative averages of 80 for all

courses in the College, and 85 for courses in the Department of Fine Arts. The candidate is required to complete Fine Arts 951-952 and 955-956, submit a senior thesis, and pass a senior comprehensive examination. Further information in regard to the Honors program may be obtained at the departmental office, Goldwin Smith 35.

INTRODUCTORY

*101-102. *INTRODUCTION TO ART: PAINTING AND SCULPTURE*. Throughout the year. Credit three hours a term. Fine Arts 101 is prerequisite to Fine Arts 102. (For a course covering the same material as Fine Arts 102 but without prerequisite, see Fine Arts 104.) Open to all students. M W F 12. Preliminary examinations to be scheduled in the evening. Messrs. Waage, Turnure, and Smith.

A survey of the pictorial and sculptural styles and major monuments of our own culture and of those ancestral to it. An attempt to illustrate the evolution of Western civilization in terms of its visual arts by showing how art forms arise as a natural consequence of the character of each culture period.

*104. *INTRODUCTION TO ART: PAINTING AND SCULPTURE FROM THE RENAISSANCE TO THE PRESENT*. (The material covered substantially duplicates that of Fine Arts 102.) Spring term. Credit three hours. Open to all students except those who have had Fine Arts 101 or 102. T Th S 11. Preliminary examinations to be scheduled in the evening. Mr. Pattillo.

A survey beginning with the fourteenth century and dealing chiefly with painting.

SECONDARY

111-112. *INTRODUCTION TO ART: ARCHITECTURE*. Throughout the year. Credit three hours a term. Not open to freshmen. T Th S 9. Mr. Pattillo.

A survey of the architecture of the Western world from ancient times to the present. The first term ends with the Romanesque period; the second begins with the Gothic.

401. *MEDIEVAL ART*. Fall term. Credit three hours. Not open to freshmen. T Th S 10. Mr. Turnure.

A general course in the representative arts of the Middle Ages beginning with the Early Christian period and extending through the Byzantine Empire in the east and to the fifteenth century in western Europe.

402. *THE ART OF THE NORTHERN RENAISSANCE*. Spring term. Credit three hours. Not open to freshmen. T Th S 10. Mr. Turnure.

A general investigation of the development of realism in Flanders and Germany from its beginnings in the Middle Ages to the seventeenth century. Special attention will be given to major artists such as Jan van Eyck and Albrecht Dürer.

505. *FLORENTINE AND CENTRAL ITALIAN PAINTING*. Fall term. Credit three hours. Not open to freshmen. T Th S 11. Mr. Pattillo.

Painting in Florence and central Italy, from Cavallini and Cimabue to Michelangelo and Raphael.

506. *VENETIAN AND NORTHERN ITALIAN PAINTING*. Spring term. Credit three hours. Not open to freshmen. Hours to be announced. Mr. Pattillo.

Painting from the Bellinis and Mantegna to Tintoretto and Veronese.

[601. *INTRODUCTION TO FAR EASTERN ART*. Fall term. Credit three hours. Not open to freshmen. Mr. Young. Not offered in 1960-1961.]

603. *ART OF INDIA AND SOUTHEAST ASIA*. Fall term. Credit three hours. Not open to freshmen. M W F 11. Mr. Young.

A survey of painting, sculpture, and architecture in India and Southeast Asia

from the earliest times to the present, with some consideration of the early periods of art in Iran and Central Asia. Both the physical and metaphysical aspects of the arts will be studied, with particular attention to the development of Buddhism and Hinduism and their influence in formulating the aesthetic expression in these countries.

604. *ART OF CHINA AND JAPAN*. Spring term. Credit three hours. Not open to freshmen. M W F 11. Mr. Young.

A survey of the main trends in sculpture and painting in China and Japan from the earliest periods to the modern era, along with a consideration of the religious and philosophical bases underlying the development of the arts in these two countries.

INTERMEDIATE

[204. *PRIMITIVE ART: THE ART OF EARLY SOCIETIES*. Fall term. Credit three hours. Open to sophomores who have had Fine Arts 101-102 and to upper-classmen without prerequisite. M W F 10. Mr. Waage. Not offered in 1960-1961.]

301. *GREEK SCULPTURE*. Fall term. Credit three hours. Not open to freshmen and sophomores. M W F 10. Mr. Waage.

A study of the sculpture of the first culture whose artistic forms developed beyond those of the archaic stage; the causes of this advance and the factors which conditioned it. Both the Hellenic and the Hellenistic periods are covered.

302. *ART OF THE ROMAN EMPIRE*. Spring term. Credit three hours. Not open to freshmen and sophomores. M W F 10. Mr. Waage.

The visual arts in the service of the first world state. The course starts with the Etruscan and Republican periods and ends with the conflict of styles in the Early Christian period.

507. *RENAISSANCE SCULPTURE*. Fall term. Credit three hours. Not open to freshmen and sophomores. M W F 9. Mr. Smith.

The emphasis will be upon Italian sculptors of the fifteenth and sixteenth centuries. Lectures and discussions.

508. *BAROQUE AND MODERN SCULPTURE*. Spring term. Credit three hours. Not open to freshmen and sophomores. M W F 9. Mr. Smith.

A study of European and American sculptors, from about 1600 to the present day. Lectures and discussions.

510. *MANNERISM IN PAINTING, SCULPTURE, AND ARCHITECTURE*. Spring term. Credit three hours. Not open to freshmen and sophomores. W 2-4 with an additional hour to be arranged. Mr. Smith.

An attempt to define and explain the phenomenon of mannerism as it occurs in the development of styles in Western art and architecture. The most detailed attention will be devoted to the sixteenth century in Europe.

551. *ANALYSIS OF WORKS OF ART*. Spring term. Credit three hours. Not open to freshman and sophomores. Registration limited to 50. T Th S 12 and discussion groups at hours to be arranged. Messrs. Solomon and Young.

The study of selected examples of painting, sculpture, and architecture from various periods, with emphasis on the formal and iconographical problems. No previous experience in the fine arts is expected. Class discussions.

554. *TWENTIETH-CENTURY PAINTING*. Fall term. Credit three hours. Not open to freshmen and sophomores. Registration limited. T Th S 12. Preliminary examinations to be scheduled in the evening. Messrs. Solomon and Young.

Major tendencies in modern art from Cézanne to the present will be considered.

The lectures will cover such key figures as Cézanne, Matisse, Picasso, and Klee in great detail. The development will also be correlated with contemporary trends in sculpture and architecture.

[605. *CHINESE PAINTING*. Spring term. Credit three hours. Not open to freshmen and sophomores. Mr. Young. Not offered in 1960-1961.]

ADVANCED

[931. *METHODS OF RESEARCH IN FAR EASTERN ART*. Credit three hours. Prerequisite, consent of the instructor. Mr. Young. Not offered in 1960-1961.]

933. *PROBLEMS IN ORIENTAL ART*. Fall term. Credit three hours. Prerequisite, consent of the instructor. W 2-4:30. Mr. Young.

Studies in selected topics relating to the arts of India, Southeast Asia, China, and Japan, with emphasis on the question of cultural contacts among these countries.

940. *SEMINAR IN ART HISTORY: PICASSO AND RELATED MOVEMENTS*. Fall term. Credit three hours. Prerequisites, Fine Arts 554 or equivalent and consent of the instructor. Th 2-4:30. Mr. Solomon.

Aspects of the development of twentieth-century painting, with the main emphasis on Picasso. Discussion and individual reports.

[941. *SEMINAR IN ART HISTORY: POST-IMPRESSIONIST PAINTING*. Fall term. Credit three hours. Prerequisites, Fine Arts 554 or equivalent and consent of the instructor. Th 2-4:30. Mr. Solomon. Not offered in 1960-1961.]

942. *SEMINAR IN ART HISTORY: ANTI-RATIONAL TENDENCIES IN TWENTIETH-CENTURY ART*. Spring term. Credit three hours. Prerequisites, Fine Arts 554 or equivalent and consent of the instructor. Th 2-4:30. Mr. Solomon.

Dada, Surrealism, and such artists as Ensor, Redon, Chagall, di Chirico, Klee, and Miro. Discussion and individual reports.

944. *SEMINAR IN ART HISTORY: GREAT MASTERS OF THE BAROQUE*. Spring term. Credit three hours. Prerequisite, consent of the instructor. 2-4:30. Mr. Turnure.

Major personalities in the art of the seventeenth century, including Rembrandt, Rubens, and Caravaggio. Individual reports.

951-952. *HONORS WORK*. Throughout the year. Credit three hours a term. Prerequisite, provisional acceptance as a candidate for Honors. Hours to be arranged.

Independent work; preparation of papers.

955-956. *HONORS WORK*. Throughout the year. Credit three hours a term. Prerequisite, Fine Arts 952. Hours to be arranged.

Preparation of a senior thesis.

991-992. *GRADUATE STUDY*. Throughout the year. Credit three or more hours a term. Open to graduate students alone.

ARCHAEOLOGY

Archaeological material is treated in Fine Arts 101 and especially in 204, 301, and 302; in this sense these are courses in "archaeology" without being so called. The following specialized courses treat specific excavational material and procedures, and are therefore open only to a very limited number of students who have some background in ancient history, ancient languages, anthropology, or art history. Students who wish to study archaeology should consult the instructor.

801. *ARCHAEOLOGY: NUMISMATICS*. Fall term. Credit three hours. Prerequisite, consent of the instructor. T 2-4:30. Mr. Waage.

Students will work with Greek and Roman coins from the University's collection to acquire a knowledge of their archaeological, artistic, and historical importance.

802. *ARCHAEOLOGY: CERAMICS AND THE TECHNIQUES OF EXCAVATION*. Spring term. Credit three hours. Prerequisite, consent of the instructor. T 2-4:30. Mr. Waage.

Pottery specimens will be studied to provide some experience in one of the basic prerequisites of archaeological excavation—the identification of types of pottery. Reports on the use of ceramic and other material for dating and on the technique of conducting excavations.

COURSES IN THE COLLEGE OF ARCHITECTURE

The following courses offered in the College of Architecture, but only these courses, may be counted in the ninety hours of Arts and Sciences courses:

THE ARTS IN AMERICA (Arch. 424, 425). Throughout the year. Credit three hours a term. Not open to freshmen. M W F 2. Mr. Finlayson.

WEST EUROPEAN PAINTING (Arch. 426, 427). Throughout the year. Credit three hours a term. Not open to freshmen. M W F 11. Mr. Finlayson.

GEOLOGY AND GEOGRAPHY

Mr. W. S. Cole, *Chairman*; Messrs. A. L. Anderson, J. D. Burfoot, Jr., G. A. Kiersch, P. M. Orville, J. W. Wells.

For a major in geology the following courses must be completed: (1) in geology, Courses 101-102, 207, 208, 209, 301, 303, 401, 601, 602, 901 and one-hour informal study in one of the divisions of the Department in the second semester of the senior year; (2) in related subjects, Mathematics 133 and 161-162; General Chemistry 105-106; Introductory Physics 107-108; engineering drawing; and plane surveying. The following elective courses outside the Department are recommended: Mathematics 163, English 201-202, Public Speaking 101 and either 202 or 205, statistics, qualitative analysis, quantitative analysis, physical chemistry, advanced physics, and invertebrate zoology.

COURSES WITHOUT PREREQUISITES

These courses are open to freshmen, and others, without prerequisite.

*101-102. *GENERAL GEOLOGY*. Throughout the year; cannot be begun in the spring term. Credit three hours a term (if taken after Geology 115, two hours a term). Satisfies the science requirements of the College of Arts and Sciences. Intended for underclassmen. May also be taken as a terminal course by upperclassmen who have satisfied the science requirement in the biological sciences. Lectures, T Th 11, or M W 10. Scheduled preliminary examinations will be held at 7:30 p.m. Laboratory, M T W Th or F 2-4:30. Messrs. Cole and Wells.

An introduction to the various branches of geologic science; mineralogic, lithologic, geomorphic, glacial, historic, and economic. Provides an adequate base for those who will major in geology and a comprehensive survey of earth science for the general student.

*105. *GENERAL GEOGRAPHY*. Fall term. Credit three hours. M W F 9. Mr. ———.

An introduction to geography including space relationships, world climates, soils, and geographic provinces. Land use, the natural resources of selected regions, and trade in these resources will be emphasized.

*108. *MINERAL RESOURCES*. Spring term. Credit three hours. Intended as a background course for all undergraduates interested in mineral resources for economics, history, government, industry and labor relations, etc. M W F 9. Mr. Anderson.

A geographic, cultural study of the nature, utilization, occurrence, distribution, production, consumption, reserves, and political and commercial control of the world's important mineral resources.

*111. *ANCIENT LIFE*. Spring term. Credit three hours. No prerequisite but may well be preceded by Geology 101-102 or Geology 115. M W F 11. Mr. Wells.

A cultural course devoted to a review of the fossil remains of life in the geologic periods as indicative of the continuity of organic evolution. Attention given chiefly to vertebrate forms from fish to man. For major students in geology the course is a supplement to Geology 601-602.

113. *ENGINEERING GEOLOGY*. Either term. Credit three hours only. Students who have had Geology 101-102 or 115 may take 113 for one hour credit. Lectures: fall term, M W 11; spring term, T Th 9. Laboratory, M W or T Th 2-4:30. Mr. Anderson.

Provides a geologic background so that the engineer will be competent to adapt his work to conform with the limitations imposed by geologic conditions.

*115. *ELEMENTARY GEOLOGY*. Either term. Credit three hours. For underclassmen in agriculture. This course cannot be used to satisfy the science group requirement of the College of Arts and Sciences. Lectures, T Th 11. Laboratory, M T W Th or F 2-4:30, or S 8-10:30; or S 10:30-1. Mr. Kiersch.

Fundamental principles of geology with emphasis on the physical aspects.

SECOND COURSES

[201. *HISTORIC GEOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102 or Geology 115. Lectures, M W 9. Laboratory, W 2-4:30. Mr. Wells. Not offered in 1960-1961.]

204. *GEOGRAPHY OF NORTH AMERICA*. Spring term. Credit three hours. Prerequisite, Geology 101-102 or Geology 105. M W F 9. Mr. —.

The geographic provinces of North America, their geomorphic expression, climates, resources, development and interrelationships.

207-208. *MINERALOGY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 106. Fall term prerequisite to spring term. Fall term: lectures, M W 10; laboratory, F 2-4:30. Spring term: lecture, M 10; laboratories, T F 2-4:30. Mr. Orville.

Fall term: crystallography and fundamentals for identifying minerals by their physical and chemical properties. Spring term: systematic mineralogy and introduction to lithology.

209. *LITHOLOGY*. Spring term. Credit three hours. Prerequisites, Geology 101-102 and 207-208. Lecture, M F 12. Laboratory, Th 2-4:30. Messrs. Orville and —.

The mineral composition, texture, classification, identification, modes of origin, and properties of igneous, sedimentary, and metamorphic rocks.

STRUCTURAL GEOLOGY AND SEDIMENTATION

301. *STRUCTURAL GEOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102. Lectures, M W 11. Laboratory, M 2-4:30. Mr. Kiersch.

Nature and origin of geologic structures and their use in the interpretation of geologic problems.

303. *SEDIMENTATION*. Spring term. Credit three hours. Prerequisite, Geology 101-102. Registration limited. For students who are majoring in geology and those interested in the engineering problems related to sedimentation. Lectures, M W 11. Laboratory, M 2-4:30. Mr. Kiersch.

A study of the accumulation and ordering of sediments, with critical discussions of the problems these present.

[321. *PETROLEUM GEOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102. For students who intend to enter the oil industry. Lectures, M W 9. Laboratory, W 2-4:30. Mr. Kiersch. Not offered in 1960-1961.]

391-392. *SEMINAR IN STRUCTURAL GEOLOGY AND SEDIMENTATION*. Throughout the year. Credit variable. For advanced students. M 4:45. Mr. Kiersch.

395-396. *ADVANCED OR SPECIAL WORK IN SEDIMENTATION, STRUCTURAL, AND PETROLEUM GEOLOGY*. Throughout the year. Credit variable. For advanced and graduate students in geology. Prerequisite, consent of the instructor. F 9-11:30. Mr. Kiersch.

Original investigations, essential to the further training of the student in geologic interpretations.

030. *INFORMAL STUDY*. Mr. Kiersch. See italicized statement, p. 63.

GEOMORPHOLOGY AND GLACIAL GEOLOGY

401. *GEOMORPHOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102. Lectures, T Th 9. Laboratory, T 2-4:30. Mr. ———.

Description and interpretation of land forms in terms of structure, process, and stage.

403. *GLACIERS AND THE PLEISTOCENE EPOCH*. Spring term. Credit three hours. Prerequisite, Geology 101-102. Lectures, T Th 9. Laboratory, T 2-4:30. Mr. ———.

Living glaciers and the phenomena of the glacial period.

491-492. *SEMINAR IN GEOMORPHOLOGY, GLACIAL GEOLOGY, OR GEOGRAPHY*. Throughout the year. Credit one hour a term. Prerequisite, consent of the instructor. Mr. ———.

495-496. *ADVANCED OR SPECIAL WORK IN GEOGRAPHY, GEOMORPHOLOGY, OR GLACIAL GEOLOGY*. Credit variable. Prerequisite, consent of the instructor. For advanced and graduate students. Days and hours to be arranged. Mr. ———.

040. *INFORMAL STUDY*. Mr. ———. See italicized statement, p. 63.

MINERALOGY AND PETROLOGY

501. *OPTICAL MINERALOGY*. Fall term. Credit three hours. Prerequisite, Geology 207-208. Lecture, W 12. Laboratories, F 8-10:30 and S 10:30-1. Mr. Orville.

The theory of optical properties of crystals and application to the determination and study of minerals with the petrographic microscope. The common rock-forming minerals are studied in fragments and thin sections.

502. *PETROGRAPHY*. Spring term. Credit three hours. Prerequisite, Geology 501; prerequisite or parallel, Geology 209. Lecture, W 9. Laboratories, F 8-10:30 and S 9-11:30. Mr. Orville.

A study of the description, classification, and origin of igneous, metamorphic, and sedimentary rocks with the use of the petrographic microscope.

591-592. *SEMINAR IN MINERALOGY AND PETROLOGY*. Throughout the year. Credit one hour a term. Prerequisite, consent of the instructor. W 4:45. Messrs. Orville and Burfoot.

595-596. *ADVANCED OR SPECIAL WORK IN MINERALOGY AND PETROLOGY*. Throughout the year. Credit variable. Prerequisites, variable. Days and hours to be arranged. Messrs. Burfoot and Orville.

Adapted to the needs of the individual student. Advanced methods, special problems, research.

050. *INFORMAL STUDY*. Mr. Orville. See italicized statement, p. 63.

PALEONTOLOGY AND STRATIGRAPHY

601-602. *INVERTEBRATE PALEONTOLOGY*. Throughout the year. Credit three hours a term. Prerequisites, Geology 101-102 and, if possible, invertebrate zoology. For students who are majoring in geology and for students in biology interested in the fossil evidence of the development of organisms. Lectures, T Th 10. Laboratory: fall term, either W or Th 2-4:30; spring term, W 2-4:30. Messrs. Cole and Wells.

Fall term: Paleobiology and classification of important fossil invertebrate organisms. Spring term: key fossils and faunas of the geologic periods.

[605-606. *STRATIGRAPHY*. Throughout the year. Credit three hours a term. Prerequisites, Geology 101-102 and first term of 601-602. Lectures, T Th 9, and an hour to be arranged. Messrs. Cole and Wells. Not offered in 1960-1961.]

675. *MICROPALEONTOLOGY*. Spring term. Credit two hours. Prerequisite, consent of the instructor; preparation should include Geology 101-102, 201, 601-602, and 605. W 9 and hours to be arranged. Mr. Cole.

Microfossils, chiefly Foraminifera.

[681. *STRATIGRAPHY OF NEW YORK STATE*. Spring term. Credit two hours. Prerequisites, Geology 101-102, 605, or consent of the instructor. Lectures in winter months, all-day and week-end field trips in spring months. T Th 12. Mr. Wells. Alternate year course; not offered in 1960-1961.]

695-696. *ADVANCED OR SPECIAL WORK IN PALEONTOLOGY AND STRATIGRAPHY*. Throughout the year. Credit variable. Prerequisite, Geology 601-602 and 605. Intended for upperclassmen majoring in geology, and graduates. Days and hours to be arranged. Messrs. Cole and Wells.

060. *INFORMAL STUDY*. Messrs. Cole and Wells. See italicized statement, p. 63.

ECONOMIC GEOLOGY

701. *GENERAL ECONOMIC GEOLOGY*. Fall term. Credit three hours. Prerequisites, Geology 102 or 113, and 208, or consent of the instructor. Lectures, T Th 11. Laboratory, F 2-4:30. Mr. Anderson.

Principles and processes involved in the formation of mineral deposits; properties, modes of occurrence, distribution, and utilization of the major base metals and precious metals.

[702. *ECONOMIC GEOLOGY OF THE NONMETALS*. Spring term. Credit three hours. Prerequisites, Geology 102 or 113, and 208, or consent of the instructor. Lectures, T Th 11. Laboratory, F 2-4:30. Mr. Anderson. Alternate-year course; not offered in 1960-1961.]

704. *ECONOMIC GEOLOGY OF THE MINOR METALS*. Spring term. Credit three hours. Prerequisites, Geology 701. Lectures, T Th 11. Laboratory, F 2-4:30. Mr. Anderson. Alternate-year course; offered in 1960-1961.

Occurrence, properties, origin, distribution, and economic utilization of the important ferroalloy, light, nuclear, electronic, and rare earth metals.

721. *ORE MICROSCOPY*. Fall term. Credit two hours. Prerequisite, Geology 207-208. F S 8-10:30. Mr. Anderson. Alternate-year course; offered in 1960-1961.

Identification of ore minerals in polished sections with reflected light by means of etch and microchemical reactions, and study and interpretation of mineral relationships. Emphasis on paragenesis. The course is designed to serve as a tool in the genetic study of ore deposits.

732. *MINING GEOLOGY*. Spring term. Credit three hours. Prerequisite, Geology 701. Lectures, M W F 8 or hours otherwise arranged. Mr. Anderson. Alternate-year course; offered in 1960-1961.

Mapping, sampling, and evaluation techniques in the investigation of ore deposits, and geological principles of ore search and ore appraisal.

[775-776. *MINERAL DEPOSITS*. A two-term course. Credit three hours a term. Prerequisite, Geology 701 or equivalent. Lectures, M W F 8 or hours otherwise arranged. Mr. Anderson. Alternate-year course; not offered in 1960-1961.]

791-792. *SEMINAR IN ECONOMIC GEOLOGY*. Throughout the year. Credit one hour a term. Registration by invitation of the instructor. For majors and minors in economic geology. T 4:45. Mr. Anderson.

Seminar designed to keep the student abreast of current advances in the field of economic geology.

795-796. *ADVANCED OR SPECIAL WORK IN ECONOMIC GEOLOGY*. Throughout the year. Credit variable. Prerequisites dependent on nature of the work, but Geology 208, 501, and 701-702 (or 721-722) are ordinarily required. Intended for graduate majors in economic geology. T 12. Mr. Anderson.

070. *INFORMAL STUDY*. Mr. Anderson. See italicized statement, p. 63.

FIELD COURSES

901. *GEOLOGIC MAPPING*. Given at the Summer Field Camp. Credit six hours. Mr. ———.

Instruction in the fundamental methods used in geologic mapping, with practical work in the field. For students majoring in geology.

[912. *GEOLOGIC INTERPRETATION OF AERIAL PHOTOGRAPHS*. Fall term. Credit three hours. Prerequisite, Geology 301. For majors in geology. Lecture, M 12. Two laboratories by arrangement. Mr. Wells. Alternate-year course; not offered in 1960-1961.]

GOVERNMENT

Mr. Mario Einaudi, *Chairman*; Messrs. Walter Berns, Herbert W. Briggs, Archie T. Dotson, Andrew Hacker, George McT. Kahin, Theodore Lowi, Steven Muller, Clinton Rossiter, Jan F. Triska, Richard P. Longaker.

For a major in government the following courses must be completed: (1) Government 101 and 104. Members of the Class of 1962 and succeeding classes must also complete Government 203; (2) twenty-four additional hours in the Department; (3) in related subjects, eighteen hours selected with the approval of the adviser from courses (other than the introductory courses) in economics, history, philosophy, and sociology and anthropology. Of the related hours, at least six must be in history. Courses in American studies, subject to the approval of the adviser, may be counted as government or history courses.

Juniors and seniors majoring in the Department who have a grade of 85 or bet-

ter in one half of the hours they have passed may take informal study in government. Consent of the instructor is required.

Candidates for the degree of Bachelor of Arts with Honors in Government will complete Government 101, 104, 203, and thirty additional hours of work in the Department, including Government 620, 621 and 622, as well as eighteen hours in related subjects.

Students seeking admission to the Department's Honors program must file applications on forms obtainable from the departmental secretary by October 15th of their junior year. Applications should be submitted only by students who have a cumulative average of 85 or better in all courses completed in the Department, or who can present evidence of exceptional promise.

Students registered in the combined Arts-Law course with a major in government will be required to take (1) Government 101, Government 104, and Government 203; (2) fifteen additional hours in the Department; (3) in related subjects, twelve hours.

INTRODUCTORY COURSES

*101. *AMERICAN GOVERNMENT*. Fall term. Credit three hours. Open to all students. Lectures, T Th 2. Discussion sections, Th 3, F 10, 11, 2, 3, S 10, 11. Messrs. Hacker, Berns, Longaker, Lowi, and Staff.

A general introduction to American national government and politics. Emphasis will be placed on historical development, organization, powers, practical working, and problems of federalism.

*101. *AMERICAN GOVERNMENT*. Spring term. Credit three hours. Primarily for non-Arts students. Lectures, T Th 9. Discussion sections, Th 3, F 8, 12. Mr. Lowi and Staff.

A general introduction to American national government and politics. Emphasis will be placed on historical development, organization, powers, practical working, and problems of federalism.

*104. *COMPARATIVE GOVERNMENT*. Spring term. Credit three hours. Open to all students. Lectures, T Th 2. Discussion sections, Th 3, F 10, 11, 2, 3, S 10, 11. Messrs. Einaudi, Muller, and Staff.

A comparative study of major contemporary political currents and of governmental institutions and processes.

203. *INTRODUCTION TO POLITICAL THEORY*. Fall term. Credit three hours. For majors and prospective majors in the Department. Prerequisite, Government 101 and 104. Lectures, T Th 2. Discussion sections to be arranged. Mr. Muller.

A survey of the development of Western political theory from Plato to the present. Readings from the work of the major theorists and an examination of the relevance of their ideas to contemporary politics will be stressed.

AMERICAN GOVERNMENT AND INSTITUTIONS

212 *PROBLEMS IN STATE AND LOCAL GOVERNMENT*. Spring term. Credit three hours. Open to sophomores with consent of instructor, and to upperclassmen. Prerequisite, Government 101. M W F 2. Mr. Dotson.

An intensive examination of selected issues in state and local government. Such topics as governmental conflict and cooperation, forms of local government, metropolitan government, the planning process, and proposals for regional government will be considered. Special attention will be given to theories of self-government. Wherever possible, current newspaper and case materials will be used.

216. *THE AMERICAN PRESIDENCY* (formerly American Studies 312). Spring term.

Credit three hours. No prerequisite, but Government 101 and History 151-152 are recommended preliminary courses. T Th S 10. Mr. Longaker.

Analysis of the office and powers of the President, with emphasis on his activities as administrator, diplomat, commander, legislator, politician, and head of state. The lives and accomplishments of the important Presidents are studied at length.

217. *THE POLITICAL PROCESS: AMERICAN POLITICAL PARTIES*. Fall term. Credit three hours. Open to sophomores and upperclassmen. Prerequisite, Government 101. T Th S 11. Mr. Hacker.

The efforts of Democrats, Republicans, and private organizations to secure public support. The roles of public opinion and the extent of public participation will be emphasized.

218. *THE POLITICAL PROCESS: THE AMERICAN CONGRESS*. Spring term. Credit three hours. Open to sophomores and upperclassmen. Prerequisite, Government 101. T Th 2-3:30. Mr. Lowi.

An intensive study in politics and public policy formulation. Congress serves as the laboratory. Special emphasis will be placed on means of analyzing political behavior in a representative assembly.

231. *INTRODUCTION TO PUBLIC ADMINISTRATION*. Fall term. Credit three hours. Open to sophomores and upperclassmen. Prerequisite, Government 101 or consent of instructor. M W F 12. Mr. Dotson.

An introduction to public administration. An elementary examination of key concepts in organization and administrative procedure. An extensive study of departmental systems, regulatory commissions, government corporations, the civil service, and the basic problems of these agencies.

234. *PUBLIC ADMINISTRATION AND PUBLIC POLICY*. Spring term. Credit three hours. Open to sophomores and upperclassmen. Prerequisite, Government 101 or consent of instructor. M W F 12. Mr. Dotson.

A study of the role of the administrator in the formulation of public policy. An examination of the processes, problems, and effects of executive influence in legislation and adjudication. An effort at redefinition of democratic responsibility in the light of modern political requirements.

237. *THE ADMINISTRATIVE PROCESS*. Fall term. Credit three hours. Open to sophomores with consent of instructor and to upperclassmen. Prerequisite, Government 101 or consent of instructor. M W 2-3:30. Mr. Dotson.

An examination of the law governing the administrative process. An investigation of elements of administrative law, the powers and procedures of and the limitations upon administrative officers and agencies. Case materials are employed throughout.

241. *THE AMERICAN CONSTITUTIONAL PROCESS*. Fall term. Credit three hours. Open to juniors and seniors only. Prerequisite, Government 101. T Th S 11. Mr. Berns.

The role of the Supreme Court in American government, from the days of John Marshall to the present, but with emphasis on the historical development. The course will be conducted primarily through discussion of assigned cases.

242. *THE CONTEMPORARY SUPREME COURT*. Spring term. Credit three hours. Prerequisite, Government 241. T Th S 11. Mr. Berns.

A study of the contemporary law of the Constitution, primarily in the area of civil liberties and civil rights.

255. *POLITICAL BEHAVIOR*. Fall and spring terms. Credit three hours. Prerequisite, Government 217 or 218 and consent of the instructor. T Th 9 and a third hour to be announced. Mr. Hacker.

An examination of selected problems in political psychology and political sociology.

275-276. *SEMINAR IN CONSTITUTIONAL LAW AND JURISPRUDENCE*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors who have taken Government 241-242. Hours to be arranged. Mr. Berns.

A study of the nature of law, along with intensive work in those areas of constitutional law that are of contemporary importance to students of government.

285-286. *SEMINAR IN PROBLEMS OF PUBLIC ADMINISTRATION*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Dotson.

296. *SEMINAR IN AMERICAN POLITICAL THOUGHT AND INSTITUTIONS*. Spring term. Credit three hours. Open to graduate students and qualified seniors. Hours to be arranged. Messrs. Hacker and Longaker.

020. *INFORMAL STUDY*. Mr. Hacker. See italicized statement, page 67.

[050. *INFORMAL STUDY*. Mr. Rossiter. See italicized statement, page 67. Not given in 1960-1961.]

070. *INFORMAL STUDY*. Mr. Dotson. See italicized statement, page 67.

090. *INFORMAL STUDY*. Mr. Berns. See italicized statement, page 67.

COMPARATIVE GOVERNMENT

312. *CONSTITUTIONAL GOVERNMENT IN EUROPE*. Spring term. Credit three hours. Prerequisite, Government 104. T Th S 9. Mr. Muller.

An analysis of the major problems of constitutional government in Europe. Historical difficulties. The aftermath of totalitarianism and war. Forms and realities of constitutionalism. A comparative study of parties and of their role in political life. Extraconstitutional forces and their relationship to institutions.

313. *GOVERNMENT AND POLITICS IN THE COMMONWEALTH*. Fall term. Credit three hour. Prerequisite, Government 104. T Th S 9. Mr. Muller.

An analysis of constitutional development in the member states of the Commonwealth. The British model of parliamentary government and Commonwealth variations. The nature of the Commonwealth association. United Kingdom dependencies and problems of political autonomy. Parties and party-systems in the Commonwealth.

314. *GOVERNMENT AND POLITICS OF ASIA*. Spring term. Credit three hours. Prerequisite, Government 104 or consent of the instructor. M W F 8. Mr. Kahin.

Analysis of political organization and the functioning of government in the principal countries of Asia, with attention being given to the nature of the social and economic environments which condition them.

331. *PUBLIC CONTROL OF ECONOMIC LIFE*. Fall term. Credit three hours. Open to upperclassmen. M W F 10. Mr. Lowi.

Comparative analysis of governmental action and its political and economic framework. Special emphasis on the formulation of economic policy and the variety of control techniques available to policy makers.

341. *GOVERNMENT AND POLITICS OF THE SOVIET UNION*. Fall term. Credit three hours. Prerequisite, Government 104 or consent of instructor. M W F 9. Mr. Triska.

A study of the process through which the conflict of Communist ideology with reality—reflected in the demography, history, social and ethnic structure of Russia, as well as in forced industrialization at home and “capitalist encirclement” abroad—has resulted in “postponement” of Communism. Particular attention is devoted to the forms of Soviet constitutionalism and the role of the Communist party.

342. *GOVERNMENT AND POLITICS OF THE SOVIET UNION*. Spring term. Credit three hours. Prerequisite, Government 104 or consent of instructor. M W F 9. Mr. Triska.

The nature, organization, and role of the Soviet government, of the Soviets of the localities and the Republics, and of Soviet public administration will be discussed, together with the Soviet courts, prosecutors, and the secret police; the armed forces; trade unions, cooperatives, and planning in industry and in agriculture. Power, ideology, leadership, and the cohesiveness of the Soviet system will be analyzed.

355-356. *SEMINAR IN POLITICAL PROBLEMS OF THE SOVIET UNION*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors with the consent of the instructor. Hours to be arranged. Mr. Triska.

385. *SEMINAR IN COMPARATIVE GOVERNMENT*. Fall term. Credit three hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Muller.

395-396. *SEMINAR IN POLITICAL PROBLEMS OF ASIA*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors with the consent of the instructor. Hours to be arranged. Mr. Kahin.

POLITICAL THEORY

235. *AMERICAN POLITICAL THOUGHT* (formerly American Studies 311). Fall term. Credit three hours. No prerequisite, but Government 101 and History 151-152 are recommended preliminary courses. T Th S 10. Mr. Longaker.

Survey of the development of American political thought, with emphasis on the origins and uses of ideas. Other kinds of thought—constitutional, social, religious, economic, educational, cultural—are considered in their relations to political thought.

320. *ORIGINS OF WESTERN POLITICAL THOUGHT*. Spring term. Credit three hours. Open to sophomores and upperclassmen. T Th S 12. Mr. Berns.

Analysis of selected political writings of Plato and Aristotle.

321. *DEVELOPMENT OF MODERN POLITICAL THOUGHT*. Fall term. Credit three hours. Open to sophomores with consent of instructor and to upperclassmen. Lectures, T Th 10. Discussion sections, Th 2, 3, F 2, 3. Mr. Einaudi.

The development of political thought from the late Middle Ages to the eighteenth century. The course is built around certain essential concepts of political theory; the nature of law, the state and sovereignty, individual rights and the community. Particular attention will be given to Marsilius, Bodin, Hobbes, Locke, the Enlightenment, and Rousseau.

322. *CONTEMPORARY POLITICAL THOUGHT*. Spring term. Credit three hours. Prerequisite, Government 321 or consent of instructor. Lectures, T Th 10. Discussion sections, Th 2, 3, F 2, 3. Mr. Einaudi.

Political thought from the industrial revolution to the present. Special emphasis will be placed on the historical and theoretical development as well as on the current significance of Marxism.

[366. *SEMINAR IN POLITICAL THEORY*. Spring term. Credit three hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Berns. Not offered in 1960-1961.]

375-376. *SEMINAR IN POLITICAL THEORY*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Einaudi.

030. *INFORMAL STUDY*. Mr. Muller. See italicized statement, page 67.

060. *INFORMAL STUDY*. Mr. Einaudi. See italicized statement, page 67.

INTERNATIONAL RELATIONS

411. *INTERNATIONAL RELATIONS*. Fall term. Credit three hours. Open to sophomores and upperclassmen. M W F 11. Mr. Triska.

An analysis of the basic issues, concepts, contents, and methods which characterize relations among states. Ideological, legal, military, and economic elements which may contribute to harmony and dissent will be discussed in terms of both international society and national foreign policies. The over-all frame of reference will consist chiefly of theories, practices, and institutions developed in the last forty years.

414. *INTERNATIONAL ORGANIZATION*. Spring term. Credit three hours. Open to sophomores and upperclassmen. M W F 9. Mr. Briggs.

An analysis of international governmental procedures and institutions; international administration; international legislation; power politics and collective efforts to maintain international peace and security; the League of Nations; the United Nations and specialized agencies; the judicial function and the International Court of Justice.

417. *THE UNITED STATES AND ASIA*. Fall term. Credit three hours. Open to sophomores and upperclassmen. M W F 9. Mr. Kahin.

An analysis of the relations of the United States with the major states of Asia and with those smaller countries with which it is particularly concerned; attention is also given to the relationship of American policy to the Asian policies of France, Great Britain, and Soviet Russia. Deals primarily with the period since 1945.

422. *THE FOREIGN POLICY OF THE SOVIET UNION*. Spring term. Credit three hours. Open to upperclassmen. M W F 11. Mr. Triska.

An analysis of Soviet foreign policy from 1917 to the present. Emphasis is placed on topics such as the formulation, administration, and execution of Soviet foreign policy; Soviet diplomacy; the Soviet concept of international relations; Soviet attitudes to and participation in international organization; war, disarmament, and coexistence; treaties and agreements in theory, practice, and policy of the Soviet Union; Soviet trade, aid, and technical assistance; and foreign Communist parties, the Comintern and the Cominform.

441-442. *INTERNATIONAL LAW*. Throughout the year. Credit three hours a term. Open to qualified upperclassmen. M W F 11. Mr. Briggs.

A systematic study of the nature, development, and judicial application of the principles of international law. Cases, readings, and discussions.

475-476. *SEMINAR IN INTERNATIONAL LAW AND INTERNATIONAL ORGANIZATION*. Throughout the year. Credit three hours a term. Open to graduate students and law students. Hours to be arranged. Mr. Briggs.

010. *INFORMAL STUDY*. Mr. Triska. See italicized statement, page 67.

040. *INFORMAL STUDY*. Mr. Kahin. See italicized statement, page 67.

080. *INFORMAL STUDY*. Mr. Briggs. See italicized statement, p. 67.

HONORS PROGRAM

620. *JUNIOR HONORS SEMINAR*. Spring term. Credit three hours. Open only to juniors accepted as candidates for Honors in Government. Hours to be arranged. Mr. Muller.

An examination of the development and scope of the study of government, combined with training in advanced research.

621-622. **SENIOR HONORS PROGRAM.** Throughout the year. Credit six hours each term. Prerequisite, Government 620. Hours to be arranged. Members of the Department.

Extensive reading in the fields of government with tutorial supervision, seminar work, and the preparation of an honors thesis.

HISTORY

Mr. Knight Biggerstaff, *Chairman*; Messrs. David B. Davis, Edward W. Fox, Paul W. Gates, Henry Guerlac, Donald Kagan, Walter F. LaFeber, Frederick G. Marcham, Curtis P. Nettels, Eugene F. Rice, Walter M. Simon, Marc Szeftel, Brian Tierney, and L. Pearce Williams.

For a major in history the following courses must be completed: (1) in history, thirty hours, of which at least twelve must be in courses above the 100's; (2) in related subjects, at least eighteen hours to be determined in consultation with the adviser. Of the hours in related subjects at least six must be in other than introductory courses.

Honors program: The purpose is to offer an opportunity for unusually able students to do independent work under suitable guidance by relieving them of a portion of their course obligations. To this end the Department of History offers a four-term sequence of instruction, for a total of twelve credit hours, leading to the degree of B.A. with Honors or High Honors in History. This sequence includes training in historical method, the writing of an Honors essay, and independent reading in the candidate's fields of special interest. Honors candidates will take History 614 in the fall term of their junior year, enroll in History 615-616 during the following year, and take History 618 (a supervised reading course in preparation for the comprehensive examination) during their last term in the University (see special section below headed "Honors Program"). At the discretion of instructors, they may also be admitted to graduate seminars in their senior year.

The minimum requirements for admission to candidacy for honors include (a) a cumulative average of 80 in all academic courses; (b) a cumulative average of 85 in courses in the humanities and social sciences; (c) enrollment and superior performance in at least one course in history before the spring term of the sophomore year.

The criteria for the award of the degree with Honors include (a) maintenance of the averages named above in History 614-615-616; (b) completion of an Honors essay of high quality; (c) passing a comprehensive examination at the end of the senior year.

The program is supervised by a departmental committee consisting of Messrs. Rice (chairman), Gates, Fox, and Williams. Applications for candidacy in 1960-1961 should be made to the Department of History prior to preregistration in the spring term of 1960.

*103-104. **DEVELOPMENT OF WESTERN CIVILIZATION.** Throughout the year. Credit three hours a term. History 103 or consent of the instructor is prerequisite to History 104. For freshmen and sophomores; open to juniors and seniors by permission only. May not be taken for credit by students who have taken History 105-106, or 107-108. M W F 10. Mr. Fox and Assistants.

A broad introductory survey of European history and of Europe's place in world affairs from the time of the ancient Hebrews and Greeks to the present, emphasizing the chief intellectual, political, and economic developments that have contributed to the formation of our Western civilization. Designed to provide a systematic introduction (1) to the narrative history of Europe, (2) to the study of history at the college level, and (3) to the relation of historical methods and materials both to

other academic subjects and to contemporary problems. A lecture course with weekly section meetings.

*105-106. *INTRODUCTION TO WESTERN CIVILIZATION*. Throughout the year. Credit three hours a term. For freshmen and sophomores; open to juniors and seniors by permission only. May not be taken for credit by students who have taken History 103-104 or 107-108. First term prerequisite to second except by permission. T Th S 9. Mr. Rice and Assistants.

A survey of European history since antiquity. Attention is given equally to the major political and social developments and to the intellectual heritage of the West. A considerable portion of the reading is in contemporary sources.

*107-108. *ENGLISH HISTORY FROM ANGLO-SAXON TIMES TO THE PRESENT*. Throughout the year. Credit three hours a term. Course 107 not prerequisite to 108. Students who have taken History 103-104 or 105-106 must secure the consent of the instructor. T Th S 8. Mr. Marcham and Assistants.

This introductory course traces the growth of government, economic life, religion, the arts, and society among the English people. It illustrates in the history of one nation some of the principal developments of Western civilization since early modern times, such as the nation-state, the late Renaissance, the industrial revolution, the overseas empire, and state socialism. Lectures and discussion groups. Some of the written work is designed to give elementary training in the interpretation of documentary evidence. Work for the first term ends with the civil wars of the seventeenth century.

121-122. *ANCIENT HISTORY*. Throughout the year. Credit three hours a term. Course 121 not prerequisite to 122. M W F 11. Mr. Kagan.

131-132. *MEDIEVAL HISTORY*. Throughout the year. Credit three hours a term. Course 131 not prerequisite to 132. T Th S 10. Mr. Tierney.

A survey of political, social, religious, and intellectual developments in Europe from the fourth century to the fifteenth.

147. *HISTORY OF RUSSIA TO 1894*. Fall term. Credit three hours. M W F 9. Mr. Szeftel.

Beginnings of Russia, evolution of political institutions and social structure under the Empire, economic development, reform and revolutionary action, main cultural trends, external relations.

148. *THE DECLINE OF THE RUSSIAN MONARCHY AND THE SOVIET PERIOD*. Spring term. Credit three hours. M W F 9. Mr. Szeftel.

The last years of Autocracy and the Revolution of 1905. The Constitutional regime and its end in 1917. Problems of economic, social, political, and cultural life from the October Revolution to the present.

151-152. *AMERICAN HISTORY*. Throughout the year. Credit 3 hours a term. Not open to freshmen. History 151 not prerequisite to History 152. M W F 9. Mr. Gates.

History 151: to 1865. History 152: since 1865.

153-154. *AMERICAN HISTORY*. Throughout the year. Credit 3 hours a term. Not open to freshmen. History 153 not prerequisite to History 154. T Th S 9. Mr. LaFeber.

History 153-154 covers the same material as History 151-152.

161. *HISTORY OF CHINESE CIVILIZATION: TO 1842*. Fall term. Credit three hours. M W F 12. Mr. Biggerstaff.

A rapid survey of the more significant Chinese cultural developments from earliest times until the establishment of formal relations with the West.

162. *HISTORY OF CHINESE CIVILIZATION: SINCE 1842*. Spring term. Credit three hours. M W F 12. Mr. Biggerstaff.

A detailed survey of the impact of the West on China and of the revolutionary changes that have resulted.

165-166. *SCIENCE IN WESTERN CIVILIZATION*. Throughout the year. Credit three hours a term. Prerequisite, one year of college science. History 165 or consent of the instructor prerequisite to History 166. M W F 11. Messrs. Guerlac and Williams.

A survey of the development of science in its relation to the main currents of European and American civilization from classical antiquity to the present day.

211. *GREEK HISTORY, 500-336 B.C.* Spring term. Credit 3 hours. Prerequisite, History 121-122 or consent of the instructor. M W F 2. Mr. Kagan.

[212. *HELLENISTIC AGE*. Spring term. Credit three hours. M W F 2. Mr. Kagan. Not offered in 1960-1961.]

[213. *THE ROMAN REPUBLIC, 133-30 B.C.* Fall term. Credit three hours. Not offered in 1960-1961.]

[214. *THE ROMAN EMPIRE, 30 B.C.-180 A.D.* Spring term. Credit three hours. Not offered in 1960-1961.]

[321. *CHURCH AND STATE DURING THE MIDDLE AGES*. Fall term. Credit three hours. Prerequisite, History 131-132 or consent of the instructor. T Th S 12. Mr. Tierney. Not offered in 1960-1961.]

322. *MEDIEVAL CULTURE, 1150-1300*. Spring term. Credit three hours. Prerequisite, History 131-132 or consent of the instructor. T Th S 12. Mr. Tierney.

A survey of selected medieval institutions and the forms of literary, artistic, and intellectual life associated with them.

[326. *FRANCE IN THE HIGH MIDDLE AGES*. Spring term. Credit three hours. Prerequisite, History 131-132, or consent of the instructor. T Th S 12. Mr. Tierney. Not offered in 1960-1961.]

401. *EUROPE IN THE NINETEENTH CENTURY*. Fall term. Credit three hours. Prerequisite, History 104, 106, or the equivalent. W F 2-3:30. Mr. Fox.

An intermediate-level course open to upperclassmen and graduate students. The impact of the industrial revolution (in England) and the political revolution (in France) on the economic, social, and political development of the continent with special emphasis on France and Germany.

[402. *EUROPE IN THE TWENTIETH CENTURY*. Spring term. Credit three hours a term. Prerequisite, History 104, 106, or 401. Not offered in 1960-1961.]

[419-420. *EUROPE IN THE AGE OF THE REFORMATION AND COUNTER-REFORMATION*. Throughout the year. Credit three hours a term. Prerequisite, at least six hours in European history. T Th S 11. Mr. Rice. Not offered in 1960-1961.]

421. *THE ITALIAN RENAISSANCE*. Fall term. Credit three hours. Open to upperclassmen and graduate students. T Th S 11. Mr. Rice.

A study of Italian thought and institutions in the age of the Renaissance.

422. *FRANCE AND WESTERN EUROPE IN THE FIFTEENTH AND SIXTEENTH CENTURIES*. Spring term. Credit three hours. Open to upperclassmen and graduate students. T Th S 11. Mr. Rice.

An advanced course on the Renaissance in Northern Europe, centered on the institutional and intellectual history of France from the end of the Hundred Years War to the reign of Henry IV.

[425-426. *HISTORY OF GERMANY SINCE 1648*. Throughout the year. Credit three hours a term. Open to upperclassmen and graduate students. Prerequisite, six hours in European history. May be entered the second term with the consent of the instructor. T Th S 11. Mr. Simon. Not offered in 1960-1961.]

429. *THE HISTORIOGRAPHY OF MODERN EUROPE*. Spring term. Credit three hours. Open to seniors with the consent of the instructor and to graduate students. Conducted as a seminar. T 4-6. Mr. ———.

The works and achievements of selected historians of modern Europe, their methods and ideas.

430. *INTELLECTUAL HISTORY OF EUROPE IN THE NINETEENTH CENTURY*. Spring term. Credit three hours. Open to upperclassmen and graduate students. Prerequisite, six hours in European history or consent of the instructor. T Th 2-3:30. Mr. ———.

[431. *THE EUROPEAN REVOLUTION, 1789-1848*. Spring term. Credit three hours. Open to upperclassmen with consent of the instructor and to graduate students. A reading knowledge of French is required. W F 2-3:30. Mr. Fox. Not offered in 1960-1961.]

432. *EVOLUTION OF THE FRENCH REPUBLIC*. Spring term. Credit three hours. Open to upperclassmen with consent of the instructor and to graduate students. A reading knowledge of French is required. W F 2-3:30. Mr. Fox.

Beginning with a review of the Restoration, July Monarchy, Second Republic, and Second Empire, it emphasizes the period of the Third and Fourth Republics. A discussion course conducted at an advanced level.

[442. *THE AGE OF AUTHORITY, 1589-1715*. Spring term. Credit three hours. Open to upperclassmen and graduate students who have completed six hours of work in history. M W F 9. Mr. Guerlac. Not offered in 1960-1961.]

444. *THE CENTURY OF ENLIGHTENMENT*. Spring term. Credit three hours. Open to upperclassmen and graduate students who have completed six hours of work in history. M W F 9. Mr. Guerlac.

France in the eighteenth century, with special attention to the thinkers of the Age of Reason from Bayle and Fontenelle to the French Revolution.

[451. *HISTORY OF THE WESTERN SLAVS*. Fall term. Credit three hours. Prerequisite, History 103-104, 105-106, or 147-148. M W 2-3:30. Mr. Szeftel. Not offered in 1960-1961.]

[452. *HISTORY OF THE SOUTHERN SLAVS*. Spring term. Credit three hours. Prerequisite, History 103-104, 105-106, or 147-148. M W 2-3:30. Mr. Szeftel. Not offered in 1960-1961.]

455-456. *HISTORY OF RUSSIAN CULTURE*. Throughout the year. Credit three hours a term. Prerequisite, History 147-148 or consent of the instructor. M W 2-3:30. Mr. Szeftel.

Development of political, religious, philosophical, educational, literary, and artistic ideas from the beginning of Russian history to our times, including the evolution of Marxist ideology under the Soviet regime.

[457. *RUSSIAN CONSTITUTIONAL HISTORY TO PETER THE GREAT*. Spring term. Credit three hours. Prerequisite, History 147-148 or consent of the instructor. For upperclassmen and graduate students. M W 2-3:30. Mr. Szeftel. Not offered in 1960-1961.]

[458. *RUSSIAN HISTORIOGRAPHY*. Spring term. Credit three hours. Prerequisite, History 147-148 or consent of the instructor. M W 2-3:30. Mr. Szeftel. Not offered in 1960-1961.]

511. *ENGLISH CONSTITUTIONAL HISTORY, I: TO 1485*. Fall term. Credit three hours. Prerequisite, History 131-132, History 107, or consent of the instructor. T Th S 12. Mr. Tierney.

512. *ENGLISH CONSTITUTIONAL HISTORY, II: SINCE 1485*. Spring term. Credit three hours. Prerequisite, History 107-108, History 511, or consent of the instructor. T Th S 10. Mr. Marcham.

[515-516. *HISTORY OF ENGLAND UNDER THE TUDORS AND STUARTS*. Throughout the year. Credit three hours a term. Prerequisite, History 107-108 or consent of the instructor. T Th S 10. Mr. Marcham. Not offered in 1960-1961.]

517. *HISTORY OF ENGLAND IN THE NINETEENTH CENTURY*. Fall term. Credit three hours. Prerequisite, History 107-108 or consent of the instructor. T Th S 10. Mr. Marcham.

The study of Great Britain and her empire from the end of the Napoleonic Wars to the death of Queen Victoria. All aspects of the public life of the period will be considered. Much of the reading will be in Victorian literature.

[518. *HISTORY OF ENGLAND IN THE TWENTIETH CENTURY*. Spring term. Credit three hours. Prerequisite, History 107-108 or consent of the instructor. T Th S 10. Mr. Marcham. Not offered in 1960-1961.]

711. *AMERICAN COLONIAL HISTORY TO 1763*. Fall term. Credit three hours. For upperclassmen and graduates. M W F 9. Mr. Nettels.

712. *THE AGE OF WASHINGTON, 1763-1800*. Spring term. Credit three hours. For upperclassmen and graduates. M W F 9. Mr. Nettels.

The struggle for American independence, the making of the Constitution, the founding of the federal government, and the shaping of national policies.

715. *ECONOMIC HISTORY OF THE UNITED STATES, 1775-1815*. Fall term. Credit three hours. For upperclassmen and graduates. M W F 11. Mr. Nettels.

A survey of all aspects of economic activity of the period, with emphasis on the formation of a national economy, internal expansion, the role of government, and commercial relations with the outside world.

717. *AMERICAN BIOGRAPHY*. Spring term. Credit three hours. For upperclassmen and graduates. M W F 11. Mr. Nettels.

Studies of American leaders in most fields of endeavor, 1775-1945. Special attention is given to critical acts and decisions of well-known men, and to distinctive persons who do not figure prominently in the general history of the United States.

721-722. *AMERICAN HISTORY: HISTORY OF THE WEST*. Throughout the year. Credit three hours a term. For upperclassmen and graduate students. M W F 12. Mr. Gates.

Western migration, internal improvements, agriculture, growth of democracy and nationalism, federal and state relations.

[725-726. *RECENT AMERICAN HISTORY*. Throughout the year. Credit three hours. An intensive course for upperclassmen and graduate students. M W F 12. Mr. Gates. Not offered in 1960-1961.]

731-732. *AMERICAN CULTURAL AND INTELLECTUAL HISTORY*. Throughout the year. Credit three hours a term. Open to upperclassmen and graduate students. T Th S 12. Mr. Davis.

Readings will include selected works of theologians, historians, philosophers,

political, economic, and legal theorists, and writers of fiction. Major themes will be the American adaptation and modification of European ideologies, the development of a dominant current of liberal thought, and the repeated challenges to this liberal philosophy. Some attempt will be made to relate ideology with economic background and social institutions.

736. *THE AMERICAN REFORM IMPULSE, 1800-1860*. Spring term. Credit three hours. Open to upperclassmen and graduate students. T Th S 10. Mr. Davis.

Major emphasis will fall on abolitionism, women's rights, temperance, and prison reform. Specific reform movements will be related to changes in religion and social philosophy. Research paper and considerable reading in primary sources.

741-742. *HISTORY OF AMERICAN FOREIGN RELATIONS*. Throughout the year. Credit three hours a term. Prerequisite, History 151-152, 153-154 or permission of the instructor. Course 741 prerequisite to 742 except by permission of the instructor. T Th S 11. Mr. LaFeber.

748. *MOTIVATIONS OF AMERICAN FOREIGN POLICY*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Th 3-5. Mr. LaFeber.

A study of the changes in the United States economic, political, and social structures as these changes were reflected in American foreign policy in the period 1850-1929. Special attention is given to important interpretations of foreign policy and their validity when applied to the period.

811-812. *MODERNIZATION OF CHINA*. Throughout the year. Prerequisite, History 162 with grade of 85 or better or permission of the instructor; 811 prerequisite to 812. Conducted as a seminar. M 3-5. Mr. Biggerstaff.

Topical study of the impact of Western civilization upon traditional China and of the changes in China during the twentieth century.

911. *ORIGINS OF MODERN SCIENCE*. Fall term. Credit three hours. Prerequisite, History 165-166 or consent of the instructor. T Th 2. Mr. Guerlac.

Reading and discussion of scientific classics important for understanding the Scientific Revolution of the seventeenth century from Galileo to Newton.

912. *SCIENCE IN THE EIGHTEENTH CENTURY*. Spring term. Credit three hours. Prerequisite, History 165-166 or consent of the instructor. T Th 2. Mr. Guerlac.

922. *SCIENCE AND THE MODERN WORLD*. Spring term. Credit three hours. Prerequisite, History 103-104 or 105-106 plus fulfillment of the science requirement, or History 165-166. M W F 3. Mr. Williams.

A study of the impact of modern science on industry, agriculture, population, and society.

HONORS PROGRAM

614. *HONORS PROSEMINAR*. Fall term. Credit three hours. Open only to juniors accepted as candidates for Honors in History. T 3-5. Mr. Williams.

Training and practice in the use of historical materials and in historical writing; discussion of various methods of research and various types of historical explanation. Considerable time will be devoted to the systematic composition of a term paper.

615-616. *SENIOR HONORS GUIDANCE*. Throughout the year. Credit three hours a term. Prerequisite, History 614.

The year will be devoted to the writing of an Honors essay under the guidance of a member of the department, and to extensive reading in preparation for a comprehensive oral examination in the field of history.

GRADUATE SEMINARS

[275-276. *SEMINAR IN ANCIENT HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. Kagan. Not offered in 1960-1961.]

379-380. *SEMINAR IN MEDIEVAL HISTORY*. Throughout the year. Hours to be arranged. Mr. Tierney.

477-478. *SEMINAR IN EUROPEAN HISTORY DURING THE ERA OF THE REFORMATION*. Throughout the year. Hours to be arranged. Mr. Rice.

481-482. *SEMINAR IN MODERN EUROPEAN HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. Fox.

483. *SEMINAR IN MODERN EUROPEAN HISTORY*. Spring term. Credit three hours. Hours to be arranged. Mr. Simon.

[495-496. *SEMINAR IN RUSSIAN AREA STUDIES*. Throughout the year. Credit and hours to be arranged. Open to senior and graduate students. Prerequisite, consent of Mr. Szeftel. Messrs. Szeftel, Clark, Fairbanks, and others. Not offered in 1960-1961.]

498. *SEMINAR IN RUSSIAN HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. Szeftel.

575-576. *SEMINAR IN TUDOR AND STUART HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. Marcham.

775-776. *SEMINAR IN AMERICAN HISTORY*. Throughout the year. Credit three hours. Hours to be arranged. Mr. Nettels.

781-782. *SEMINAR IN AMERICAN HISTORY*. One or two terms. Credit three hours each term. Hours to be arranged. Mr. Gates.

785-786. *SEMINAR IN AMERICAN CULTURAL AND INTELLECTUAL HISTORY*. One or two terms. Credit three hours a term. Hours to be arranged. Mr. Davis.

791. *SEMINAR IN THE HISTORY OF AMERICAN FOREIGN RELATIONS*. Fall term. Credit three hours. Hours to be arranged. Mr. LaFeber.

875-876. *SEMINAR IN MODERN CHINESE HISTORY*. One or two terms. Credit three hours a term. Hours to be arranged. Mr. Biggerstaff.

885-886. *SEMINAR IN SOUTHEAST ASIAN HISTORY*. One or two terms. Credit three hours a term. Hours to be arranged.

975-976. *SEMINAR IN THE HISTORY OF EARLY MODERN SCIENCE*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. Guerlac.

[985-986. *SEMINAR IN THE HISTORY OF SCIENCE DURING THE NINETEENTH AND TWENTIETH CENTURIES*. One or two terms. Credit three hours each term. Mr. Williams. Not offered in 1960-1961.]

LITERATURE

Mr. Robert M. Adams, *Chairman*; Messrs. Eric Blackall, Harry Caplan, Anthony Caputi, J.-J. Demorest, Robert Durling, J. M. Echols, E. G. Fogel, James Hutton, W. R. Keast, Gordon M. Kirkwood, Robert Langbaum, G. A. McCalmon, Joseph A. Mazzeo, Burton E. Pike, I. Rabinowitz, H. E. Shadick, Friedrich Solmsen, H. A. Wichelns.

The aim of major study in literature is two-fold: to combine a wide perspective upon the various areas and periods of world literature with a relatively detailed knowledge of at least two of them. These aims may be satisfied in a variety of ways,

depending on the student's interests and abilities; a detailed statement of the various possibilities, including typical programs, may be obtained from the Chairman.

The literature major requires 30 hours of study in the major field, comprising 12 hours in the basic sequences, 101-102, 303-304; and 18 hours of advanced work, 12 in a major and 6 in a minor area of concentration. These areas may be chosen from among the following fields: (a) Biblical, classical, medieval, or Chinese literature; (b) the literature of a relatively recent period, such as the Renaissance, the Age of Reason, the Romantic Period, or the 19th Century and After; or, alternately, the literature of a major form, such as drama or fiction.

Eighteen hours of related courses must also be elected; they may be chosen from history, Far Eastern studies, philosophy, government, English or other literatures, music, fine arts or architecture, and are expected to form an intelligent pattern of relation to the student's field of major interest. At least 9 hours of literature must be studied in a foreign language, either under (a) and (b) above, or as related courses.

Honors candidates must have a general academic average of 80 or better, and a demonstrated proficiency in the field of literary study. During their senior year they will be expected to work, under the supervision of an instructor of their choice, on an Honors essay; and at the end of the senior year they will be asked to take a comprehensive examination. All candidates for the Honors program should consult the Chairman during the spring term of their junior year.

101-102. *MASTERWORKS OF WESTERN LITERATURE*. Throughout the year. Credit three hours a term. First term prerequisite to second. For sophomores and upperclassmen. Prospective majors in literature should ensure a place in the course by applying to the Chairman before or during the first three days of preregistration. M W F 9, 10, 11, 12, 2; T Th S 9, 10, 11. Mr. Langbaum and others.

Literature 101 will also be offered in the spring term, but only for freshmen exempted from English 112. No others will be admitted. Hours for spring term. M W F 11, 12; T Th S 10. Literature 102 will be offered M W F 11, 12; T Th S 10 in the fall term but only for those who had 101 in the spring term of 1959.

A study of epic, drama, lyric poetry, and prose fiction selected from the literature of the Western world. Literature 101: *Iliad*, Greek Tragedies, *Aeneid*, *Book of Job*, *Divine Comedy*, *Tristan and Iseult*, *Hamlet*. Literature 102: *Don Quixote*, *Paradise Lost*, Molière comedies, *Faust*, Keats's poems and letters, *Madame Bovary*, Chekhov plays and short stories, and Mann's short novels.

201-202. *ENGLISH TRANSLATIONS OF GREEK AND LATIN CLASSICS*. Throughout the year. Credit three hours a term. First term prerequisite to the second. For sophomores and upperclassmen. T 2-4 or Th 2-4, and an hour to be arranged. Mr. Hutton.

Rapid reading in the best translations with emphasis upon Greek masterpieces, for example, the *Iliad* and the *Odyssey*, the tragedies of Sophocles, and several dialogues of Plato. Translations from the Latin will be chosen for the bearing of the original works upon modern literature.

205. *THE LITERATURE OF THE OLD TESTAMENT*. Fall term. Credit three hours. For sophomores and upperclassmen. M W F 9. Mr. Rabinowitz.

Readings, in translation, from books of the Old Testament composed during the pre-exilic and exilic periods of Israel's history (to c. 520 B.C.). The various genres of classical Hebrew literature, and the ancient Israelite ideas and institutions essential to comprehension of the texts, will be studied.

206. *THE LITERATURE OF POST-EXILIC JUDAISM*. Spring term. Credit three hours. For sophomores and upperclassmen. M W F 9. Mr. Rabinowitz.

Readings, in translation, from the later books of the Old Testament, the apocry-

phal literature, and the Qumran (Dead Sea) Scrolls. An introduction to the thought of the culture which produced both normative Judaism and early Christianity.

207. *FOUNDATIONS OF WESTERN THOUGHT*. Fall term. Credit three hours. For sophomores and upperclassmen. T Th S 11. Mr. Solmsen.

The beliefs and ideas—religious, moral, social, and scientific—that were current or advanced in the Greek, Roman, and Early Christian period of Western civilization; the history of these ideas and their integration into coherent bodies of thought. Popular thought and practices as well as the ideas of leading thinkers and poets. The influence of these ideas on later thought and their relation to present-day problems. Reading of representative material in translation. Lectures and discussion.

211–212. *MEDIEVAL LITERATURE*. Throughout the year. Credit three hours a term. First term prerequisite to the second. For upperclassmen, and sophomores with the consent of the instructor. M W F 10. Mr. Durling.

Fall term: Continental European literature of the twelfth and thirteenth centuries, with special emphasis on Chretien de Troyes and Gottfried von Strassburg. Spring term: Dante and his circle. Lectures, discussions, and reports.

214. *HUMANISM AND THE RENAISSANCE*. Spring term. Credit three hours. For upperclassmen, and sophomores by permission of the instructor. M W F 10. Mr. Hutton.

Readings in translation from Petrarch, Erasmus, Ariosto, Rabelais, Tasso, Montaigne, and others, designed to bring out typical ideas and attitudes of the Renaissance period. Attention will be given to such topics as fifteenth-century Humanism; neo-Latin literature; Ciceronianism; Renaissance Platonism; theories of poetry; the influence of the Counter-Reformation.

218. *CLASSIC MYTHS*. Spring term. Credit three hours. For sophomores and upperclassmen. T Th S 9. Mr. Kirkwood.

The principal cycles of Greek mythology—for example, the myths of the Gods, the Trojan Cycle, the Argive and Theban Cycles—with special emphasis on their representation in literature. Anthropological aspects of the myths and their background in prehistory. Lectures will be illustrated from the collection of slides in the possession of the Department of Classics.

301–302. *DRAMA AND THE THEATRE*. Throughout the year. Credit three hours a term. Students with specialized interest in drama or the theatre should elect this course, preferably as early as the sophomore year. M W F 11. Fall term, Mr. Caputi. Spring term, Mr. McCalmon.

An introduction to representative types and forms of drama as interpreted in the theatre, designed to increase appreciation of the drama as literature and of the theatre as art form and social institution. The development of dramatic literature, the distinguishing qualities of its chief types (tragedy, comedy, melodrama, farce), and the basic principles of dramaturgy will be illustrated by ancient and modern plays. This survey will be paralleled by tracing the development of the physical stage and of the changing theories and techniques of theatrical production in the important stylistic periods from the Greeks to the present.

303–304. *THE LITERATURE OF EUROPE*. Throughout the year. Credit three hours a term. Prerequisite, Literature 101–102, or consent of the instructor. First term prerequisite to second. T Th S 10. Fall term, Mr. Fogel. Spring term, Mr. Langbaum.

Fall term: reading of such representative authors as Chaucer, Boccaccio, Malory, Erasmus, Machiavelli, Rabelais, Montaigne, Shakespeare, and Donne. Spring term: reading of such representative authors as Pope, Rousseau, Diderot, Byron, Stendhal, Dostoyevsky, Nietzsche, and Shaw.

309-310. *THE DEVELOPMENT OF THE EUROPEAN NOVEL*. Throughout the year. Credit three hours a term. T Th S 12. Mr. Blackall and Mr. Pike.

Representative European novels, with special emphasis upon the evolution of the forms of fiction. The first term will analyze certain French, English, and German contributions to the history of the novel before 1830; the second term will be devoted to a study of selected works of the nineteenth and twentieth centuries. All foreign works will be read in English translation.

318. *SOUTHEAST ASIAN LITERATURE IN TRANSLATION*. Fall term. Credit three hours. T 2-4. Mr. Echols.

[321. *CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION*. Will not be offered in 1960-1961.]

322. *CHINESE IMAGINATIVE LITERATURE IN TRANSLATION*. Spring term. Credit three hours. M W F 10. Mr. Shadick.

Imaginative literature, including poetry, classical prose, fiction, drama, and the new writing of the twentieth century.

325-326. *RUSSIAN LITERATURE IN TRANSLATION*. Throughout the year. Credit three hours a term. For upperclassmen, and sophomores with the permission of the instructor. M W F 11. Mr. ———.

Works by Pushkin, Lermontov, Blok, Bunin, Gogol, Dostoyevsky, Tolstoi, Chekhov, Babel, Gorky, Sholokhov, and others.

[329. *EUROPEAN LITERATURE, 1900-1930*. Will not be offered in 1960-1961.]

[330. *EUROPEAN LITERATURE, 1930-——*. Will not be offered in 1960-1961.]

[401-402. *PRINCIPLES OF LITERARY CRITICISM*. Will not be offered in 1960-1961.]

010. *INFORMAL STUDY*. Credit three hours. For seniors registered for honors in Literature. The main work will be the writing of an honors thesis under the supervision of a member of the staff.

MATHEMATICS

Mr. R. J. Walker, *Chairman*; Messrs. A. Aepli, R. P. Agnew, W. Browder, C. R. Curjel, R. H. Farrell, W. Feit, W. H. J. Fuchs, I. N. Herstein, D. Hertz, C. S. Herz, R. G. Heyneman, R. C. W. Hourston, M. Kac, C. Kassimatis, J. C. Kiefer, Mrs. M. R. Kinsolving, Messrs. S. Kochen, G. R. Livesay, I. Namioka, A. Nerode, P. E. Ney, P. Olum, S. V. Parter, H. Pollard, J. J. Price, W. Rindler, J. B. Rosser, M. Schreiber, S. J. Taylor, H. Widom, J. Wolfowitz.

A student will ordinarily not be accepted as a major in mathematics unless he has passed 183 (or 193). Exceptions to this rule can be granted by the Department to students who have completed 163 and at least one more advanced course in mathematics.

There are three options available for students intending to major in mathematics.

Option I (Regular). Eighteen hours of courses numbered above 193 other than 608, 609, 610. These eighteen hours must include two one-year sequences selected from full-year courses with numbers between 300 and 599.

Option II (Applied). Twenty-one hours of courses numbered above 193 other than 608, 609, 610. These must include 612, 613, 614, a one-year sequence from 300 to 599, and a further one-year sequence from 600-799.

Option III (Teaching). For prospective secondary school teachers. In mathematics, eighteen hours of courses numbered above 193, which must include 240-241 and a one-year sequence from 400-499. In education, nine hours.

Students who wish to take the Honors program in mathematics must take twenty-one hours of courses numbered above 193, including 281, 282, 371, 372 and 501, 502. They must pass a comprehensive examination in mathematics.

Students who plan to teach in secondary schools should make themselves familiar with the New York State requirements. They should bear in mind that the teaching of mathematics is frequently combined with the teaching of physical science or general science. For permanent certification the State Education Department has approved the following program: Courses 161, 182 (or, with permission, 162), 240 or 241, at least one of 371, 401, 501, and at least nine additional hours from 183 or courses numbered above 300.

Students wishing to take any of the courses numbered above 183 are invited to confer, before registering, with the instructor concerned.

Qualified students may register for informal study. Undergraduates should register for Courses 031-071; graduate students should register for Courses 931-971.

ELEMENTARY AND GENERAL

*121-122. *SELECTED TOPICS IN MATHEMATICS.* Throughout the year. Credit three hours a term. Prerequisites, plane geometry and intermediate algebra. First term prerequisite to the second. Fall term, M W F 10, T Th S 9. Spring term, M W F 10. Mr. Hourston.

Intended for students who do not plan to take many courses in mathematics, but who nevertheless wish to become acquainted with the principal ideas of modern mathematics. The object will be to make clear the fundamental aims, methods, and results of a number of subjects, rather than to develop the technique of any one subject. Although this course is not designed to satisfy prerequisites for courses in analytic geometry and calculus, a student who has passed it with a sufficiently high grade may be admitted to such courses. Will not serve the purpose of a review course to improve faulty preparation in elementary mathematics.

*133. *PLANE TRIGONOMETRY.* Either term. Credit three hours except for students offering trigonometry for entrance. Prerequisites, plane geometry and intermediate algebra. T Th S 9.

151. *MATHEMATICS FOR THE SOCIAL SCIENCES.* Fall term. Credit four hours. Prerequisite, intermediate algebra. M W F S 11. Mr. ———.

Courses 151-152-153 form a sequence intended to present the basic mathematics useful in the social sciences and humanities. Students other than graduate students and upperclassmen in these fields will be admitted only with the consent of the teacher. No credit will be given to students who have already taken Mathematics 161, 162, 163, or 182, 183.

The sequence begins with a month's review of elementary mathematics and then takes up the study of the logical basis of mathematics, set theory, and axiomatics. Considerable attention is given to calculus in one and several variables. The course concludes with topics from modern algebra such as group or lattice theory, linear programming, and difference equations.

Students are warned that neither probability nor statistics will be treated. Mathematics 153 will serve as a prerequisite to Mathematics 711, however.

152. *MATHEMATICS FOR THE SOCIAL SCIENCES.* Spring term. Credit three hours. Prerequisite, Mathematics 151. M W F 11. Mr. ———.

153. *MATHEMATICS FOR THE SOCIAL SCIENCES.* Fall term. Credit three hours. Prerequisite, Mathematics 152. M W F 11. Mr. ———.

*161. *ANALYTIC GEOMETRY AND CALCULUS.* Either term. Credit three hours. Prerequisite, three years of college preparatory mathematics. Hours to be arranged.

Plane analytic geometry through conics. Differentiation and integration of polynomials with applications to rates, maxima, volumes, pressures, etc.

Courses 161-162-163 represent a standard three-term calculus sequence, presenting the main ideas and techniques of the calculus and analytic geometry; the material is so arranged that the first two terms (161-162) provide a reasonably complete introduction to the subject.

This sequence is not intended as preparatory to more advanced courses in mathematics, although admission to such courses can be obtained following this sequence by special permission. Students majoring in mathematics or in those physical sciences where mathematics is extensively used or who have special mathematical competence should elect the 161-182-183 sequence instead.

*162. *ANALYTIC GEOMETRY AND CALCULUS*. Either term. Credit three hours. Prerequisite, Mathematics 161. Fall term, hours to be arranged; spring term, lectures M W F 9, 10 or 12; T Th S 9, 10 or 12, one hour to be arranged.

Differentiation and integration of algebraic, trigonometric, logarithmic, and exponential functions, with applications. Related topics, including polar coordinates, parametric equations, and vectors.

163. *ANALYTIC GEOMETRY AND CALCULUS*. Either term. Credit three hours. Prerequisite, Mathematics 162 or 182. Fall term, lectures M W F 10 or 12, T Th S 10 or 12, one hour to be arranged; spring term, hours to be arranged.

Infinite series, solid analytic geometry, partial derivatives, and multiple integrals.

*182. *ANALYTIC GEOMETRY AND CALCULUS*. Either term. Credit three hours. Prerequisite, a grade of 80 or more in Mathematics 161. Hours to be arranged.

Topics similar to those of Mathematics 162.

183. *ANALYTIC GEOMETRY AND CALCULUS*. Either term. Credit three hours. Prerequisite, a grade of 80 or more in Mathematics 182. Hours to be arranged.

Topics similar to those of Mathematics 163.

*192. *CALCULUS*. Spring term. Credit three hours. Prerequisite, consent of the instructor. M W F 12. Mr. Nerode.

The sequence Mathematics 192, 193, and 194 is intended for students with exceptional ability and interest in mathematics. It will cover the principal material of Mathematics 182, 183, 501, 502, 612 and 613. Passing the 192-193-194 sequence serves to fulfill any requirement satisfied by these courses.

193. *CALCULUS*. Fall term. Credit three hours. Prerequisite, Mathematics 192 or consent of the instructor. M W F 12. Mr. Heyneman.

Continuation of Mathematics 192, and a substitute for Mathematics 183.

194. *CALCULUS*. Spring term. Credit three hours. Prerequisite, Mathematics 193 or consent of the instructor. Serves as a prerequisite for all courses which require 501, 502 or 612, 613 as a prerequisite. M W F 12. Mr. Heyneman.

Continuation of Mathematics 193. Includes a treatment of differential equations.

240. *INTRODUCTION TO MODERN MATHEMATICS*. Fall term. Credit three hours. Prerequisite, Mathematics 162. T Th S 11. Mr. Herz.

Primarily for undergraduates, particularly for prospective teachers and those with a cultural interest in mathematics. A study of the development of the postulational approach in geometry, algebra, and analysis.

241. *SURVEY OF MATHEMATICS*. Spring term. Credit three hours. Prerequisite, Mathematics 163 or 240. T Th S 11. Mr. Herz.

Intended for the same audience as Mathematics 240. Selected topics of elementary mathematics from a more advanced viewpoint. Introduction to the general character of higher mathematics.

281-282. *HONORS SEMINAR*. Throughout the year. Credit three hours a term. Prerequisite, provisional acceptance as a candidate for Honors. Hours to be arranged. Messrs. Nerode and Aepli.

For juniors and seniors. Students will discuss mathematical topics under the guidance of one or more members of the staff. This seminar is required of all students expecting to graduate with Honors in mathematics.

291. *GRADUATE SEMINAR*. Spring term. Credit three hours. Prerequisite, candidacy for an advanced degree with major in mathematics. Hours to be arranged. Mr. Livesay.

Presentation by students of material in mathematical literature. Required of all graduate students majoring in mathematics.

ALGEBRA AND LOGIC

341. *ELEMENTARY THEORY OF NUMBERS*. Spring term. Credit three hours. Prerequisite, Mathematics 182. M W F 10. Mrs. Kinsolving.

Primarily for undergraduates. A study of properties of divisibility, linear and quadratic congruences, primitive roots, quadratic residues, and other topics.

371-372. *INTRODUCTION TO MODERN ALGEBRA*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 183. First term prerequisite to second. M W F 11. Mr. Feit.

Primarily for undergraduates. First semester, the theory of matrices and vector spaces. Second semester, introduction to algebraic systems such as fields, groups, rings and their applications.

373-374. *MODERN ALGEBRA*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 371-372 or consent of the instructor. First term prerequisite to second. Hours to be arranged. Mr. Hertzog.

For graduate students and qualified undergraduates. First term, theory of groups, with emphasis on finite groups, the Galois theory of fields, valuation theory. Second term, subject matter varying from year to year, chosen from such areas as the theory of algebras, ideal theory of commutative rings, algebraic number theory, etc.

381. *FOUNDATIONS OF MATHEMATICS*. Fall term. Credit three hours. Prerequisite, at least three semester hours of mathematics beyond the calculus. M W F 9. Mr. Nerode.

For graduate students and qualified undergraduates. A careful study of a system of symbolic logic; its value in furnishing a test for the validity of mathematical reasoning will be stressed.

382. *SYMBOLIC LOGIC*. Spring term. Credit three hours. Prerequisite, Mathematics 381. M W F 9. Mr. Hourston.

For graduate students and qualified undergraduates. A study of advanced topics in symbolic logic. Applications to mathematical reasoning will be stressed.

387-388. *SEMINAR IN MATHEMATICAL LOGIC*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 382 or consent of the instructor. Hours to be arranged. Mr. Kochen.

For graduate students or qualified undergraduates. Topics in mathematical logic of interest to students and teacher.

GEOMETRY

401-402. *PROJECTIVE GEOMETRY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 182. First term prerequisite to second. T Th S 10. Mrs. Kinsolving.

Primarily for undergraduates. An axiomatic treatment of projective geometry, including such topics as order and continuity on the line and in the plane, projections, conics, and the relation of projective to euclidean and affine geometrics.

[415-416. *ALGEBRAIC TOPOLOGY*. Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. Not given in 1960-1961.]

417-418. *ADVANCED TOPOLOGY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 415-416. First term prerequisite to second. Hours to be arranged. Mr. Namioka.

The technique for the calculation of homology and homotopy groups. Includes spectral sequences of fiber spaces, the C-theory of Serre, triads, and cohomology operations.

427-428. *SEMINAR IN TOPOLOGY*. Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Olum.

For graduate students and qualified undergraduates. Topics in topology of interest to students and teacher.

431. *DIFFERENTIAL GEOMETRY*. Spring term. Credit three hours. Prerequisite, Mathematics 183. Hours to be arranged. Mr. Rindler.

Primarily for undergraduates intending to major in mathematics. The classical differential geometry of space curves and surfaces, with an introduction to tensor methods and Riemannian geometry.

[445-446. *DIFFERENTIAL GEOMETRY AND RELATIVITY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 502 or 612, or consent of the instructor. Not given in 1960-1961.]

[451-452. *ALGEBRAIC GEOMETRY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 183, and consent of the instructor. Not given in 1960-1961.]

497-498. *LIE GROUPS*. Throughout the year. Credit three hours a term. Prerequisites, Mathematics 372, 505 or consent of the instructor. First term prerequisite to second. Hours to be arranged. Mr. Browder.

An introduction to theory of Lie groups: manifolds, tangent spaces, the exterior differential calculus, analytic groups, Lie algebras, covering spaces. Special topics such as semi-simple Lie algebras and groups, cohomology of Lie algebras, topology of Lie groups as time permits.

ANALYSIS

501-502. *ADVANCED CALCULUS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 183 or consent of the instructor. First term prerequisite to second. T Th S 11. Mr. Schreiber.

For undergraduate and graduate students. An introduction to the theory of functions of real variables, stressing rigorous logical development of the subject rather than technique of applications. Topics include the real number system, continuity, differentiability, Riemann integrals, series and the elementary functions; functions of several variables, line and surface integrals, implicit function theorem, Green's theorem.

505. *GENERAL TOPOLOGY*. Fall term. Credit three hours. Prerequisite, Mathematics 502 or consent of the instructor. Hours to be arranged. Mr. Rindler.

For graduate students and qualified undergraduates. A study of basic set-theoretic and general topological notions of modern mathematics. Topics include set theory

and cardinal numbers, topological spaces, metric spaces, elementary discussion of function spaces.

507-508. *REAL VARIABLES*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 502 or the equivalent, and consent of the instructor. Hours to be arranged. Mr. Widom.

The modern theory of real functions. Topics will include Lebesgue measure and integration in Euclidean space, differentiation, abstract measure and integration, the Lebesgue spaces, and an introduction to Fourier series.

[517. *FUNCTIONAL ANALYSIS*. Fall term. Credit three hours. Prerequisites, Mathematics 372 and 505. Not given in 1960-1961.]

527-528. *SEMINAR IN ANALYSIS*. Throughout the year. Credit three hours a term. Prerequisites, Mathematics 506 and consent of the instructor. Hours to be arranged. Mr. Taylor.

For graduate students and qualified undergraduates. Topics in advanced analysis of interest to students and instructor.

532. *COMPLEX VARIABLES*. Spring term. Credit three hours. Prerequisite, Mathematics 505 and 615, or consent of the instructor. Hours to be arranged. Mr. Taylor.

A rigorous treatment of the basic theory of complex variables: Cauchy's theorem, analytic continuation, conformal mapping, Riemann surfaces. Entire and meromorphic functions. Algebraic functions. Dirichlet series.

[537-538. *FOURIER ANALYSIS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 506. Not given in 1960-1961.]

541. *FUNCTIONS OF SEVERAL COMPLEX VARIABLES*. Fall term. Prerequisite, Mathematics 532 or consent of the instructor. Hours to be arranged. Mr. Aeppli.

For graduate students and qualified undergraduates. Local power-series, Weierstrass preparation theorem, analytic mappings, Cartan uniqueness theorem, analytic completion and theory of holomorphy domains. Possible continuation in the spring as a seminar.

[543-544. *ANALYTIC NUMBER THEORY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 532. Not given in 1960-1961.]

[561. *HILBERT SPACE AND INTEGRAL EQUATIONS*. Spring term. Credit three hours. Prerequisite, Mathematics 372, 506 or the equivalent, or consent of the instructor. Not given in 1960-1961.]

585. *CALCULUS OF VARIATIONS IN THE LARGE*. Fall term. Credit three hours. Prerequisite, Mathematics 505 or the equivalent. Hours to be arranged. Mr. Livesay.

For graduate students and qualified undergraduates. An introduction to the theory of Morse, following essentially Seifert-Threlfall. Relations between the homological properties of a space and the critical values of differentiable functions defined on the space.

APPLIED MATHEMATICS

608. *ELEMENTARY DIFFERENTIAL EQUATIONS*. Either term. Credit three hours. Prerequisite, Mathematics 163. T Th S 11.

Solution of ordinary differential equations by analytic and numerical methods.

609-610. *HIGHER CALCULUS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 608. First term prerequisite to second. T Th S 10. Mr. Kac.

Primarily for undergraduates who have not taken 183 or who do not have the time available to take the sequence 612-616. Partial differentiation, multiple and line integrals, Fourier series, partial differential equations, vector analysis, complex

variables, calculus of variations, Laplace transforms. Emphasis is placed on a wide range of formal applications of the calculus rather than on the logical development.

612. *METHODS OF APPLIED MATHEMATICS*. Spring term. Credit three hours. Prerequisite, Mathematics 183 or consent of the instructor. T Th S 10. Mr. Fuchs.

This constitutes the first semester of a five-semester sequence. Roughly half of the course will be devoted to ordinary differential equations with emphasis on setting up and discussing physical problems. The remainder will cover an introduction to vector analysis, in preparation for Physics 225. Further topics in vector analysis (in particular, curvilinear coordinates) will be treated in 613, while additional material in differential equations will be taken up in 614.

613-614. *METHODS OF APPLIED MATHEMATICS*. Throughout the year. Credit three hours a term. Prerequisites, Mathematics 612. First term prerequisite to second. T Th S 10. Mr. Kassimatis.

Functions of several variables. Line, surface and volume integrals. Change of variables and Jacobians. Integral vector calculus with emphasis on curvilinear coordinate systems. Infinite series with numerical terms. Infinite series of functions. Uniform convergence. Power series. Fourier series and integrals. Applications to ordinary differential equations. Theory of matrices.

615. *METHODS OF APPLIED MATHEMATICS*. Fall term. Credit three hours. Prerequisite, Mathematics 614 or consent of the instructor. M W F 12. Mr. Price.

For graduate students and qualified undergraduates. A one-semester course in functions of a complex variable, stressing technique rather than rigor, and serving also as preparation for Mathematics 532. The elements of the theory and other topics, including conformal mapping and linear transformations, singularities, analytic continuation, Riemann surfaces, asymptotic expansions.

616. *METHODS OF APPLIED MATHEMATICS*. Spring term. Credit three hours. Prerequisite, Mathematics 614 and 615. M W F 12. Mr. Price.

Partial differential equations, special functions, calculus of variations.

621-622. *MATHEMATICAL METHODS IN PHYSICS*. Throughout the year. Credit four hours a term. Prerequisites, a good knowledge of the techniques of the calculus, such as given by 609-610, and at least two years of general physics. First term prerequisite to second. T W Th F 12. Mr. Fuchs.

For mature students who wish to acquire a wide background of mathematical techniques in one year. Lectures and problem work designed to give a working knowledge of the principal mathematical methods used in advanced physics. Topics include infinite series, Fourier series and integrals, Laplace transforms, complex variables, calculus of variations, matrices, integral equations, and eigenvalue problems.

641-642. *PARTIAL DIFFERENTIAL EQUATIONS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 610. First term prerequisite to second. M W F 10. Mr. Agnew.

For graduate students and qualified undergraduates. A survey of differential equations arising in engineering and physics and mathematical devices required for their solution. Emphasis is on a wide range of application rather than a rigorous development.

661. *NUMERICAL ANALYSIS*. Fall term. Credit three hours. Prerequisite, Mathematics 183 and 608 or consent of the instructor. M W F 9. Mr. Walker.

Primarily for undergraduates. The elements of modern numerical computation, including interpolation, numerical differentiation and integration, and the solution of linear and nonlinear ordinary differential equations. The facilities of the Cornell

Computing Center are available to the students, and coding for the automatic calculator will be taught.

662. *NUMERICAL ANALYSIS*. Spring term. Credit three hours. Prerequisite, Mathematics 661 or 621 or consent of the instructor. M W F 9. Mr. Walker.

Primarily for undergraduates. Solution of linear equations and matrix inversion and eigenvalue problems. Numerical solution of partial differential equations. Use of automatic calculating machines.

[663-664. *SEMINAR IN NUMERICAL ANALYSIS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 662 or consent of the instructor. Not given in 1960-1961.]

PROBABILITY AND STATISTICS

711-712. *ELEMENTARY MATHEMATICAL STATISTICS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 153, 163 or 183. First term prerequisite to second. M W F 12. Mr. Ney.

Primarily for undergraduates or for graduate students in areas of applications of statistics. Topics in probability which are essential to an understanding of statistics; introduction to the mathematical principles underlying modern statistical inference. Emphasis on the rationale underlying the choice of statistical methods in various situations.

721. *PROBABILITY*. Fall term. Credit three hours. Prerequisite, either Mathematics 502, 610, 614, 622, or consent of the instructor. M W F 12. Mr. Kiefer.

Fundamentals. Combinatorial problems. Distribution functions in one or several dimensions. Important probability laws. Expectation, moments, and characteristic functions. Stochastic convergence and the law of large numbers. The central limit theorem.

722. *STATISTICAL INFERENCE*. Spring term. Credit three hours. Prerequisite, Mathematics 721 or consent of the instructor. M W F 12. Mr. Kiefer.

Introduction to the theory of point estimation. Consistency, efficiency, and sufficiency; the method of maximum likelihood. The classical tests of hypotheses and their power. The theory of confidence intervals. The basic concepts of statistical decision theory.

Intended to furnish a rigorous introduction to mathematical statistics, the course is prerequisite to all advanced courses in statistics.

[724. *ADVANCED PROBABILITY*. Spring term. Credit three hours. Prerequisite, Mathematics 721. Not given in 1960-1961.]

[725. *STOCHASTIC PROCESSES*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Not given in 1960-1961.]

731-732. *ANALYSIS OF VARIANCE AND DESIGN OF EXPERIMENTS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 722 or consent of the instructor. First term prerequisite to second. M W F 2. Mr. —.

Estimation of regression coefficients. The general linear hypothesis and other models. Power of the tests and their optimum properties. Analysis of covariance. Multi-decision problems. The theory of construction and analysis of various experimental designs.

[741-742. *STATISTICAL ESTIMATION, TESTS, AND DECISION FUNCTIONS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 722, or consent of the instructor. First term prerequisite to second. Not given in 1960-1961.]

[747. *SEQUENTIAL ANALYSIS*. Fall term. Credit three hours. Prerequisite, Mathematics 722 or consent of the teacher. Not given in 1960-1961.]

761-762. *SEMINAR IN ADVANCED MATHEMATICAL STATISTICS*. Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. M 4-6. Mr. Kiefer.

For graduate students and qualified undergraduates. Detailed discussion of selected advance topics which will vary from year to year. Discussion of current research and recent literature.

READING, RESEARCH, AND INFORMAL STUDY

For properly qualified students, members of the Department will direct reading and research not necessarily associated with any course. Undergraduates should register for courses 031-071; graduate students should register for Courses 931-971.

031, 931. *READING IN ALGEBRA*.

041, 941. *READING IN GEOMETRY*.

051, 951. *READING IN ANALYSIS*.

061, 961. *READING IN APPLIED MATHEMATICS*.

071, 971. *READING IN PROBABILITY AND STATISTICS*.

MODERN FOREIGN LANGUAGES AND LITERATURES

Courses in modern foreign languages and literatures are offered by the following divisions of the College:

Department of German Literature, Mr. E. A. Blackall, *Chairman*

Division of Modern Languages, Mr. J. M. Cowan, *Director*

Department of Romance Literature, Mr. J.-J. Demorest, *Chairman*

BURMESE

Mr. R. B. Jones, Jr., and Staff.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged.

CHINESE

Messrs. C. F. Hockett, H. E. Shadick, and Staff.

(For a major involving Chinese studies, see *Department of Far Eastern Studies*.)

*101-102. *ELEMENTARY CHINESE*. Throughout the year. Credit six hours a term. T Th 9 and daily at 8.

*103. *ELEMENTARY CHINESE*. Fall term. No credit. Open only to students who have completed Chinese 102. Hours to be arranged.

*201. *INTRODUCTION TO CLASSICAL CHINESE*. Fall term. Credit three hours. Prerequisite, a satisfactory qualifying examination or Chinese 107. M W F 11.

*202. *INTERMEDIATE CLASSICAL CHINESE*. Spring term. Credit three hours. Prerequisite, Chinese 201. M W F 11.

*203. *INTERMEDIATE CHINESE*. Fall term. Credit three hours. Prerequisite, a satisfactory qualifying examination or Chinese 103. T Th S 11.

*204. *INTERMEDIATE CHINESE*. Spring term. Credit three hours. Prerequisite, Chinese 203. T Th S 11.

[*CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION*. Not offered in 1960-1961. (See Literature 321.)]

CHINESE IMAGINATIVE LITERATURE IN TRANSLATION. (See Literature 322.)

351-352. *READINGS IN CHINESE LITERATURE: CLASSICAL AND MODERN*. Throughout the year. Credit three hours a term. Prerequisite, Chinese 202 and 204.

CZECH

Mr. R. L. Leed.

111-112. *ELEMENTARY COURSE*. Throughout the year. Credit three hours a term. Open to graduate students and upperclassmen who have qualified in Russian.

DUTCH

Mr. W. G. Moulton.

111-112. *ELEMENTARY COURSE*. Throughout the year. Credit three hours a term. Open to graduate students and upperclassmen who have qualified in German.

Hours to be arranged.

ENGLISH FOR FOREIGNERS

The following two courses are offered by the Division of Modern Languages. Foreign students should consult a member of that Division at Morrill Hall 108.

*102. *ENGLISH FOR FOREIGNERS*. Fall term. Credit six hours. Prerequisite, placement by the instructor. Hours to be arranged.

*211. *ENGLISH FOR FOREIGNERS*. Fall term. Credit six hours. Prerequisite, a satisfactory qualifying examination. T Th 3 plus additional hours to be arranged.

FRENCH

Messrs. J.-J. Demorest, R. A. Hall, Jr., Mrs. Joffe, Messrs. L. C. Porter, B. L. Rideout, A. Seznec, and Staff.

For a major in French the following are to be completed: (1) French 204 or evidence of equivalent attainment, 301-302; (2) either (a) fifteen further hours numbered from 301 to 399 (also 010), or (b) Linguistics 201-202 and French 241-242, 243-244; and (3) eighteen hours in related subjects.

Students desiring to major in French should consult both Mr. Demorest and Mr. Hall.

Informal study (French 010) may be undertaken by majors in French who have sixty credit hours, on the terms specified in the introduction. The informal study may consist of additional work in connection with a course, or it may consist of reading and reports on an assigned subject.

The Honors program in French offers the superior student an opportunity to do independent reading and to write a senior thesis, both under departmental guidance. A candidate should have a general academic average of at least 80 and an average of at least 85 in departmental and related courses. He may apply for admission to

the program by consulting his adviser not later than the beginning of the second term of his junior year. Honors work in the junior year will consist of independent reading and written reports, and in the senior year of the preparation of a thesis.

*101. *ELEMENTARY COURSE*. Either term. Credit six hours. Students who have previously studied French should consult pages 11 and 16 before registering for this course. Fall term, drill daily at 8, 9, 10, 11, or 12; lecture M W 8 or 10, or W F 12 or T Th 8. Spring term, drill daily at 8, 9, 10, or 11; lecture M W 11 or T Th 9.

*102. *ELEMENTARY COURSE*. Either term. Credit six hours. Prerequisite, French 101 or its equivalent. Students who have previously studied French should consult pages 11 and 16 before registering for this course. Drill daily at 8, 9, 10, 11, or 12; lecture: fall term M W 8 or 11, or T Th 8, 9, or 2; spring term M W 8 or 10, or W F 12 or T Th 8.

*103. *ELEMENTARY COURSE*. Either term. No credit. Open only to students who have completed French 102. M W F 2 or T Th S 8.

151. *GRADUATE READING COURSE*. Either term. Credit three hours. Open only to graduate students. M W F 4:30 and/or 7 p.m.

152. *GRADUATE READING COURSE*. Either term. Credit three hours. Prerequisite, French 151 or one year of college French or two years of high school French. M W F 4:30 and/or 7 p.m.

*201. *INTERMEDIATE READING COURSE*. Either term. Credit three hours. Prerequisite, a satisfactory qualifying examination or French 107. Fall term: M W F 9, 12, T Th S 9, 10. Spring term: M W F 12, T Th S 9, 10. Mrs. Joffe and Staff.

Reading of texts of established literary quality. The purpose is double: to increase reading facility, knowledge of vocabulary and idiom, and to develop methods and habits of critical appreciation of a foreign literature. The class discussion is conducted mainly in French.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, a satisfactory qualifying examination or French 107. Fall term, M W F 11, 2, 3, or T Th S 8, 10. Spring term, M W F 9, 12, 2, or T Th S 8, 9.

Guided conversation, grammar drill, and oral and written composition, Emphasis is placed upon increasing the student's oral and written command of French.

*204. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, French 203. M W F 12 or T Th S 12.

Continuation of the work of French 203, with especial attention to accurate and idiomatic expression in French. Oral and written drill.

223. *ADVANCED COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, French 204. Hours to be arranged.

Study of stylistic resources of modern French, based on reading and analysis of a selected text. Detailed study of present-day syntax. Discussion, oral and written drill.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, French 204. Hours to be arranged.

Study of stylistic resources of modern French, based on reading and analysis of a selected text. Detailed study of present-day syntax. Discussion, oral and written drill.

241-242. *HISTORY OF THE FRENCH LANGUAGE TO 1300*. Throughout the year in alternate years. Credit three hours a term. Prerequisite, qualification in French

and Linguistics 201-202. Open only to juniors, seniors, and graduate students. M W F 3. Mr. Porter.

The external history and structural development of French from Latin to the end of the Old French period. The earliest documents; the rise of the standard language. Analysis of changes in sounds and forms. Lectures, discussions, extensive reading and analysis of Old French texts.

[243-244. *HISTORY OF THE FRENCH LANGUAGE SINCE 1300*. Throughout the year in alternate years. Credit three hours a term. Prerequisite, qualification in French and Linguistics 201-202. Open only to juniors, seniors, and graduate students. M W F 3. Mr. Porter. Not offered in 1960-1961.]

251-252. *HONORS WORK IN FRENCH LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the junior year. Course 251 is normally prerequisite to Course 252; in exceptional cases it may be taken concurrently with Course 252 in the spring term. Hours to be arranged. Mr. Hall.

Selected readings in general linguistics and in the structure and history of French, with oral and written reports.

253-254. *HONORS THESIS IN FRENCH LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the senior year. Mr. Hall.

The preparation of a thesis in French linguistics.

290. *SEMINAR IN FRENCH LINGUISTICS*. Offered in accordance with student needs. Credit three hours a term. Hours to be arranged. Mr. Hall.

*301-302. *SURVEY OF FRENCH LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, French 201 or four years of entrance French or consent of the instructor. May be entered in the second term. Fall term, M W F 10, T Th S 9, 10. Spring term, M W F 9, 10, 11. Mrs. Joffe, Mr. Seznec, and Staff.

Lectures in French and classroom discussion on French literature from the medieval period to the present. The ability to read French easily and to understand and speak French with some readiness is expected of the students.

[311-312. *LITERATURE OF THE SIXTEENTH CENTURY*. Not offered in 1960-1961.]

[313-314. *LITERATURE OF THE SEVENTEENTH CENTURY*. Not offered in 1960-1961.]

315-316. *LITERATURE OF THE EIGHTEENTH CENTURY*. Throughout the year. Credit three hours a term. Prerequisite, French 301 or its equivalent. May be entered in the spring term. Fall term, T Th 2-3:30. Spring term, T Th S 10. Mr. Seznec.

Lectures in French and classroom discussion. The Age of Enlightenment, with its dominating figures: Voltaire, Diderot, and Rousseau.

317-318. *LITERATURE OF THE EARLY NINETEENTH CENTURY*. Throughout the year. Credit three hours a term. Prerequisite, French 302 or its equivalent. May be entered in the second term. M W F 12. Mr. ———.

Romanticism, its theory, development, and achievement. Extensive reading of the poets, novelists, and dramatists of the period.

[319-320. *LITERATURE OF THE LATE NINETEENTH CENTURY*. Not offered in 1960-1961.]

321-322. *LITERATURE OF THE TWENTIETH CENTURY*. Throughout the year. Credit three hours a term. Prerequisite, French 302 or its equivalent. May be entered in the second term. M W F 10. Mr. Demorest.

Lectures in French and classroom discussion. The dominant ideas of the century

and their expression in literature: the precursors, the writers of the *entre-deux-guerres*, the tendencies of our own time.

341-342. *UNDERGRADUATE SEMINAR IN FRENCH LITERATURE*. Throughout the year. Credit three hours a term. May be entered in the second term. By consent of the instructor. W 3:30. Mr. Demorest.

Fall term: Stendhal. Spring term: Flaubert.

351. *FRENCH FOR TEACHERS*. Fall term. Credit three hours. Hours to be arranged. Mr. Rideout.

Phonetics, important points of syntax, exercises in translation, the use of textbooks and realia, and a quick survey of French culture. Recommended especially to candidates seeking certification by a state education department.

361-362. *GRADUATE SEMINAR*. Throughout the year. Credit three hours a term. May be entered in the second term. Open to candidates for Honors. Fall term, M 3:30. Mr. ———.

Fall term: to be announced. Spring term: Baudelaire.

375-376. *GRADUATE SEMINAR*. Throughout the year. May be entered in the second semester. Credit three hours a term. T 3:30. Mr. Demorest.

Fall term: seventeenth-century novel; the student is expected to have recently read Don Quixote. Spring term: Pascal and Racine; the student should be acquainted with the thought of Saint Augustine and with the tragedies of Euripides.

010. *INFORMAL STUDY IN FRENCH LITERATURE*. Open to qualified students. Messrs. Demorest and Seznec, and Staff.

GERMAN

Messrs. E. A. Blackall, A. Bonawitz, A. G. de Capua, J. M. Cowan, H. L. Kufner, W. G. Moulton, B. E. Pike, and Staff.

For a major in German, the following are to be completed: (1) German 224, 301-302, 303-304; (2) either (a) German 311, 313, 314, 316, or (b) Linguistics 201-202, German 232, 241-242; (3) fifteen hours of related subjects, which may include some of the courses in the option not elected under (2) above; and (4) a comprehensive examination at the end of the senior year.

The Honors program in German offers the superior student an opportunity to do independent readings and to write a senior thesis, both under departmental guidance. A candidate should have a general academic average of at least 80 and an average of at least 85 in departmental and related courses. He may apply for admission to the program by consulting his adviser not later than the beginning of the second term of the junior year. Honors work in the junior year will consist of independent readings and written reports, and in the senior year of the preparation of a thesis.

Summer reading: The prerequisite for courses numbered in the 300's is normally German 201. However, students who become qualified in German upon completion of German 102 may prepare themselves for these more advanced courses by means of independent reading during the summer. A student wishing to avail himself of this opportunity must obtain the permission of the Department before the end of the spring term. Evidence of satisfactory completion of the reading must be presented to the Department on or before registration day of the following fall term.

COURSES FOR UNDERGRADUATES

*101. *ELEMENTARY COURSE*. Either term. Credit six hours. Students who have previously studied German should consult pages 11 and 16 before registering for this course. Fall term, drill daily at 8, 9, 10, 11, or 12; lecture M W 9 or 11, or T Th 11 or 2. Spring term, drill daily at 8 or 9; lecture T Th 12.

*102. *ELEMENTARY COURSE*. Either term. Credit six hours. Prerequisite, German 101 or its equivalent. Students who have previously studied German should consult pages 11 and 16 before registering for this course. Fall term, drill daily at 8 or 9; lecture T Th 12. Spring term, drill daily at 8, 9, 10, 11, or 12; lecture M W 9 or 11, or T Th 9 or 2.

*103. *ELEMENTARY COURSE*. Either term. No credit. Open only to students who have completed German 102. T Th S 10.

*201-202. *MASTERPIECES OF GERMAN LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, qualification in German. M W F 11 or T Th S 11. Messrs. Bonawitz and Pike.

The aim is to introduce the student to German literature. During the first term simpler and shorter works in prose and verse from the time of Goethe to the present day will be read. In the second term longer works will be studied.

*201. *MASTERPIECES OF GERMAN LITERATURE*. Spring term. Credit three hours. Prerequisite, qualification in German. Equivalent to the first term of German 201-202. M W F 9. Mr. Pike.

*203-204. *COMPOSITION AND CONVERSATION*. Throughout the year. Credit three hours a term. Prerequisite, qualification in German. Course 203 or consent of the instructor is prerequisite to Course 204. T Th S 11 or 12.

224. *STUDIES IN GERMAN LANGUAGE AND STYLE*. Spring term. Credit three hours. Prerequisite, German 204 or consent of the instructor. T Th S 9. Mr. Kufner.

A study of the stylistic resources of German. Selected texts will serve as the basis for practice in written and oral expression.

232. *LINGUISTIC STRUCTURE OF GERMAN*. Spring term in alternate years. Credit three hours. Prerequisites, qualification in German, and Linguistics 201. Open only to juniors, seniors, and graduate students. T Th S 11. Mr. Moulton.

A study of the sounds, forms, and structure of modern standard German, using recorded materials and a selected text. Problems in the teaching of German to speakers of English.

[241-242. *MEDIEVAL GERMAN*. Throughout the year in alternate years. Credit three hours a term. Open only to juniors, seniors, and graduate students. T Th S 9. Mr. Moulton. Not offered in 1960-1961.]

*301-302. *PROSE AND DRAMA OF THE NINETEENTH CENTURY*. Throughout the year in alternate years. Credit three hours a term. Prerequisites are German 201 or summer reading or (for freshmen) advanced placement. M W F 10. Mr. de Capua.

*303-304. *GOETHE*. Credit three hours a term. Prerequisite, German 201 or summer reading or (for freshmen) advanced placement. M W F 9. Mr. Bonawitz and Mr. Blackall.

311. *A SURVEY OF GERMAN LITERATURE TO 1700*. Fall term. Credit three hours. Prerequisite, German 202 or consent of the instructor. T Th S 10. Mr. de Capua.

313. *PROSE AND DRAMA OF THE TWENTIETH CENTURY*. Fall term. Credit three hours. Prerequisite, German 202 or consent of the instructor. T Th S 10. Mr. Pike.

314. *LYRIC POETRY, 1700-1832*. Spring term. Credit three hours. Prerequisite, German 202 or consent of the instructor. T Th S 10. Mr. de Capua.

[316. *LYRIC POETRY, 1832 TO THE PRESENT*. Credit three hours. Prerequisite, German 202 or consent of the instructor. Mr. Pike. Not offered in 1960-1961.]

090. *INFORMAL STUDY*. Open to qualified juniors and seniors.

COURSES FOR GRADUATE STUDENTS

151. *GRADUATE READING COURSE*. Either term. Credit three hours. Open only to graduate students. M W F 4:30 and/or 7 p.m.

152. *GRADUATE READING COURSE*. Either term. Credit three hours. Prerequisite, German 151 or one year of college German or two years of high school German. M W F 4:30 and/or 7 p.m.

281-282. *GOTHIC AND COMPARATIVE GERMAN LINGUISTICS*. Throughout the year in alternate years. Credit three hours a term. W 2-4. Mr. Kufner.

[283-284. *OLD SAXON AND OLD HIGH GERMAN*. Throughout the year in alternate years. Credit three hours a term. Mr. Moulton. Not offered in 1960-1961.]

290. *SEMINAR IN GERMAN LINGUISTICS*. Spring term. Offered in accordance with student needs. Hours and credits to be arranged. Mr. Moulton.

501. *BIBLIOGRAPHY AND METHOD*. Fall term. Credit one hour. Th 4:30-5:30. Messrs. Blackall, Moulton, and others.

An introduction to advanced studies in German language and literature. Required for all graduate students.

503. *MEDIEVAL GERMAN LITERATURE*. Fall term. Credit three hours. Hours to be arranged. Mr. Moulton.

511-512. *THE GERMAN LANGUAGE SINCE 1500*. Throughout the year. Credit three hours a term. T 2-4. Mr. Blackall.

[521. *GERMAN LITERATURE IN THE PERIOD OF THE REFORMATION*. Fall term. Credit three hours. Mr. de Capua. Not offered in 1960-1961.]

[522. *THE AGE OF THE BAROQUE*. Spring term. Credit three hours. Mr. de Capua. Not offered in 1960-1961.]

[531. *LESSING AND THE ENLIGHTENMENT*. Fall term. Credit three hours. Mr. de Capua. Not offered in 1960-1961.]

[532. *SCHILLER*. Spring term. Credit three hours. Mr. de Capua. Not offered in 1960-1961.]

[541-542. *GOETHE*. Throughout the year. Credit three hours a term. Mr. Blackall. Not offered in 1960-1961.]

[552. *GERMAN ROMANTICISM*. Spring term. Credit three hours. Mr. Pike. Not offered in 1960-1961.]

561-562. *GERMAN LITERATURE 1832-1890*. Throughout the year. Credit three hours a term. Mr. de Capua. Hours to be arranged.

[571-572. *GERMAN LITERATURE SINCE 1890*. Throughout the year. Credit three hours a term. Mr. Pike. Not offered in 1960-1961.]

591-592. *SEMINAR IN GERMAN LITERATURE*. Throughout the year. Credit three hours a term. Mr. Blackall and others. Details to be arranged.

HISTORY OF GERMANY SINCE 1648. (See History 425-426.)

HINDI

Mr. G. H. Fairbanks and Staff.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged.

201-202. *HINDI READING*. Throughout the year. Credit three hours a term. Prerequisite for 201, qualification in Hindi; for 202, Course 201 or consent of the instructor. Hours to be arranged.

INDONESIAN

Mr. J. M. Echols and Staff.

101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged.

201-202. *INDONESIAN READING*. Throughout the year. Credit three hours a term. Prerequisite for 201, qualification in Indonesian; for 202, Course 201 or consent of the instructor. Hours to be arranged. Mr. Echols.

203-204. *COMPOSITION AND CONVERSATION*. Throughout the year. Credit three hours a term. Prerequisite for 203, qualification in Indonesian; for 204, Course 203 or consent of the instructor. Hours to be arranged. Mr. Echols.

ITALIAN

Messrs. R. A. Hall, Jr., J. A. Mazzeo, and Staff.

For a major in Italian, consult Messrs. Hall and Mazzeo.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Drill daily, 9, 11, or 12; lecture, T Th 10.

*103. *ELEMENTARY COURSE*. Either term as required. No credit. Open only to students who have completed Italian 102. M W F 2.

111-112. *ELEMENTARY COURSE*. Throughout the year. Credit three hours a term. Open to graduate students and upperclassmen who have qualified in Romance language or Latin. M W F 2.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term as required. Credit three hours. Prerequisite, a satisfactory qualifying examination or Italian 107. M W F 2.

Guided conversation, grammar drill, and oral and written composition. Emphasis is placed on increasing the student's oral and written command of Italian.

*204. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Spring term as required. Credit three hours. Prerequisite, Italian 203. M W F 2.

Continuation of the work of Italian 203, with especial attention to accurate and idiomatic expression in Italian. Oral and written drill.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Given as required. Credit two to four hours. Prerequisite, Italian 204. Hours to be arranged.

290. *SEMINAR IN ITALIAN LINGUISTICS*. Offered in accordance with student needs. Credit three hours a term. Hours to be arranged. Mr. Hall.

*301-302. *SURVEY OF ITALIAN LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, qualification in Italian. M W F 3. Mr. Hall.

A literary and historical study of the great monuments of Italian literature from the earliest times to the present.

[303. *DANTE*. Not offered in 1960-1961.]

[305-306. *STUDIES IN THE ITALIAN RENAISSANCE*. Not offered in 1960-1961.]

[313. *LEOPARDI, MANZONI, AND THE ROMANTIC PERIOD*. Not offered in 1960-1961.]

315-316. *LITERATURE OF THE LATE NINETEENTH AND TWENTIETH*

CENTURY. Throughout the year. Credit three hours a term. Prerequisite, a reading knowledge of Italian and consent of the instructor. May be entered in the second term. M W F 2. Mr. Hall.

010. *INFORMAL STUDIES IN ITALIAN LITERATURE*. May be undertaken by qualified juniors and seniors. Mr. Hall and Staff.

LINGUISTICS

Messrs. F. B. Agard, J. M. Cowan, J. M. Echols, G. H. Fairbanks, R. A. Hall, Jr., C. F. Hockett, W. G. Moulton.

201-202. *INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE*. Throughout the year. Credit three hours a term. M W F 9. Mr. Cowan and Staff.

A basic introductory course designed to acquaint the student with the methods of systematic observation of language phenomena (linguistics). Required for all majors in French, German, Spanish, or Russian with linguistic emphasis.

203-204. *LINGUISTIC ANALYSIS*. Throughout the year. Credit three hours a term. Prerequisite, Linguistics 201; either 203 or 204 can be taken first. M W F 10. Mr.

A training course in the techniques of observation and analysis of descriptive linguistics. Fall term: morphology and syntax. Spring term: phonetics and phonemics.

[207. *PRACTICAL PHONETICS*. Fall term. Credit two hours. Prerequisite, Linguistics 201. Hours to be arranged. Mr. Hockett. Not offered in 1960-1961.]

[208. *FIELD METHODS AND LINGUISTIC TYPOLOGY*. Spring term. Credit three hours. Prerequisite, Linguistics 203. Hours to be arranged. Mr. Hockett. Not offered in 1960-1961.]

211-212. *ACOUSTICAL PHONETICS*. Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Cowan.

A rapid survey of the techniques of experimental articulatory phonetics; the speech mechanism as a sound generator; sound recording techniques, and the methods of general acoustics; application of acoustical analysis to the study of speech sounds. Requires no mathematical training of the students beyond arithmetical computation; the necessary mathematical operations for acoustical analysis will be developed for the students by the instructor.

281-282. *THE COMPARATIVE STUDY OF THE ROMANCE LANGUAGES*. Throughout the year in alternate years. Credit three hours a term. Prerequisite, Linguistics 201-202, taken previously or concurrently. T Th 2-3:30. Mr. Hall.

The family of Romance languages; the application of the comparative method and the reconstruction of Proto-Romance speech. The relation between Proto-Romance and Old and Classical Latin The history of Romance languages as a whole from Latin times to the present and their interrelationships. A survey of the accomplishments and approaches of recent work in Romance linguistics. Lectures, discussion, and exercises.

[283. *ELEMENTARY SANSKRIT*. Fall term in alternate years. Credit three hours. Prerequisite, advanced standing. Hours to be arranged. Mr. Fairbanks. Not offered in 1960-1961.]

[284. *COMPARATIVE METHODOLOGY*. Spring term in alternate years. Credit three hours. Prerequisite, Linguistics 201-202 or equivalent. Hours to be arranged. Mr. Fairbanks. Not offered in 1960-1961.]

290. *SEMINAR*. Each term. Admission by permission of the instructor. Hours and credits to be arranged. Various members of the staff.

PORTUGUESE

Mr. F. B. Agard.

111-112. *ELEMENTARY COURSE*. Throughout the year. Credit three hours a term. Prerequisites, qualification in Spanish and consent of the instructor. T Th 2-3:15.

A basic course designed principally for students majoring in Spanish or interested especially in Portugal or Brazil. Phonology, grammar, listening comprehension, and reading.

RUSSIAN

Messrs. G. H. Fairbanks, R. L. Leed, Mrs. A. L. Jaryc, and Staff.

For a major in Russian linguistics, consult Mr. Fairbanks. The following must be completed: (1) Linguistics 201-202; (2) Russian 201, 202, 203, 204, 232, 241-242; (3) six hours of Russian Literature; (4) at least twelve hours in related subjects; (5) a comprehensive examination at the end of the senior year.

The Honors program in Russian linguistics offers the superior student an opportunity to do independent readings and to write a senior thesis, both under departmental guidance. A candidate should have a general academic average of at least 80 and an average of at least 85 in departmental and related courses. He may apply for admission to the program by consulting his adviser not later than the beginning of the second term of the junior year. Honors work in the junior year will consist of independent readings and written reports, and in the senior year of the preparation of a thesis.

COURSES FOR UNDERGRADUATES

*101. *ELEMENTARY COURSE*. Either term. Credit six hours. Fall term, drill daily, 9, 10, or 12; lecture, M W 2 or T Th 11. Spring term, drill daily, 8 or 11; lecture, T Th 2.

*102. *ELEMENTARY COURSE*. Either term. Credit six hours. Prerequisite, Russian 101 or its equivalent. Fall term, drill daily, 8 or 11; lecture, M W 10. Spring term, drill daily, 9, 10, or 12; lecture, M W 2 or T Th 11.

*103. *ELEMENTARY COURSE*. Either term. No credit. Open only to students who have completed Russian 102. Hours to be arranged.

*201. *INTERMEDIATE READING COURSE*. Fall term. Credit three hours. Prerequisite, a satisfactory qualifying examination or Russian 107. M W F 10.

*202. *INTERMEDIATE READING COURSE*. Spring term. Credit three hours. Prerequisite, Russian 201. M W F 11.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, qualification in Russian. M W F 12 and two hours to be arranged. Mrs. Jaryc.

*204. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Russian 203. M W F 12 and two hours to be arranged. Mrs. Jaryc.

221-222. *RUSSIAN MASTERPIECES IN LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, Russian 202. Fall term, M W F 10; spring term, M W F 11. Mrs. Jaryc.

223. *ADVANCED COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, Russian 204. Hours to be arranged. Mrs. Jaryc.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Russian 223. Hours to be arranged. Mrs. Jaryc.

225-226. *ADVANCED READINGS*. Throughout the year. Credit three hours a term. Prerequisite, Russian 202. Hours to be arranged. Mrs. Jaryc.

[232. *THE LINGUISTIC STRUCTURE OF RUSSIAN*. Spring term in alternate years. Credit three hours. Prerequisites, qualification in Russian and Linguistics 201. Open only to juniors, seniors, and graduate students. M W F 2. Mr. Leed. Not offered in 1960-1961.]

241-242. *HISTORY OF THE RUSSIAN LANGUAGE*. Throughout the year in alternate years. Credit three hours a term. Prerequisite, qualification in Russian. Open only to juniors, seniors, and graduate students. M W F 2. Mr. Leed.

The study of the divisions of the Russian language chronologically and geographically; the relationships of the Russian language, the Slavic group, the Indo-European group; the changes in the sounds and forms of the Russian language; vocabulary group; vocabulary borrowings from Eastern and Western languages.

251-252. *HONORS WORK IN RUSSIAN LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the junior year. Course 251 is normally prerequisite to Course 252; in exceptional cases it may be taken concurrently with Course 252 in the spring term. Hours to be arranged. Mr. Fairbanks.

Selected readings in general linguistics and in the structure and history of Russian, with oral and written reports.

253-254. *HONORS THESIS IN RUSSIAN LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the senior year. Mr. Fairbanks.

The preparation of a thesis in Russian Linguistics.

290. *SEMINAR IN SLAVIC LINGUISTICS*. Offered in accordance with student needs. Credit three hours a term. Hours to be arranged. Mr. Fairbanks.

315-316. *PUSHKIN*. Throughout the year. Credit three hours a term. Prerequisite, qualification in Russian. Hours to be arranged. Mr. ———.

[317-318. *THE MODERNIST MOVEMENT IN RUSSIAN LITERATURE*. Not offered in 1960-1961.]

325-326. *RUSSIAN LITERATURE IN TRANSLATION*. Throughout the year. Credit three hours a term. M W F 11. Mr. ———.

For description see LITERATURE, in which the student should register.

COURSES FOR GRADUATE STUDENTS

151. *GRADUATE READING COURSE*. Either term. Credit three hours. Open only to graduate students. Hours to be arranged.

152. *GRADUATE READING COURSE*. Either term. Credit three hours. Prerequisite, Russian 151. Open only to graduate students. Hours to be arranged.

[281. *OLD BULGARIAN*. Fall term in alternate years. Credit three hours. Prerequisites, qualification in Russian and Linguistics 201. Hours to be arranged. Mr. Fairbanks. Not offered in 1960-1961.]

[282. *OLD RUSSIAN*. Spring term in alternate years. Credit three hours. Prerequisites, qualification in Russian and Linguistics 201. Hours to be arranged. Mr. Fairbanks. Not offered in 1960-1961.]

283-284. *COMPARATIVE SLAVIC LINGUISTICS*. Throughout the year in alternate years. Credit three hours a term. Prerequisite, Russian 241. Hours to be arranged. Mr. Fairbanks.

The family of the Slavic languages; comparative method and reconstruction of Proto-Slavic; comparative development of phonology and morphology in the various Slavic languages.

SPANISH

Messrs. F. B. Agard, D. Brenes, Mrs. Camacho-Navarro, Mr. D. F. Sola, and Staff.

For a major in Spanish the following are to be completed: (1) Spanish 204 or evidence of equivalent attainment, 301-302 or 303-304; (2) either (a) fifteen further hours of Spanish courses numbered from 301 to 399 (also 010), or (b) Linguistics 201-202 and Spanish 241-242, 243-244; and (3) eighteen hours in related subjects.

Students desiring to major in Spanish should consult both Mr. Agard and Mr. Brenes.

Informal study (Spanish 010) may be undertaken by majors in Spanish who have sixty credit hours, on the terms specified in the introduction.

The Honors program in Spanish offers the superior student an opportunity to do independent readings and to write a senior thesis, both under departmental guidance. A candidate should have a general academic average of at least 80 and an average of at least 85 in departmental and related courses. He may apply for admission to the program by consulting his adviser not later than the beginning of the second term of his junior year. Honors work in the junior year will consist of independent readings and written reports, and in the senior year of the preparation of a thesis.

*101. *ELEMENTARY COURSE.* Either term. Credit six hours. Students who have previously studied Spanish should consult pages 11 and 16 before registering for this course. Fall term, drill daily at 8, 9, 10, 11, or 12; lecture, M W 2 or T Th 9 or 12. Spring term, drill daily at 8 or 12; lecture T Th 10.

*102. *ELEMENTARY COURSE.* Either term. Credit six hours. Prerequisite, Spanish 101 or its equivalent. Students who have previously studied Spanish should consult pages 11 and 16 before registering for this course. Fall term, drill daily, 8, 9, 11, or 12; lecture, W F 12 or T Th 10. Spring term, drill daily, 8, 9, 10, or 11; lecture, W F 12 or T Th 12.

*103. *ELEMENTARY COURSE.* Either term. No credit. Open only to students, who have completed Spanish 102. T Th S 9.

*201. *INTERMEDIATE READING COURSE.* Either term. Credit three hours. Prerequisite, qualification in Spanish or Spanish 107. T Th S 9. Mr. Brenes.

Reading of texts of established literary quality. The purpose is double; to increase reading facility and knowledge of vocabulary and idiom; and to develop methods and habits of critical appreciation of foreign literature. The class discussion is conducted mainly in Spanish.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION.* Either term. Credit three hours. Prerequisite, a satisfactory qualifying examination, or Spanish 107. M W F 11, T Th S 11.

Guided conversation, grammar review, and oral and written composition. Emphasis is on increasing student's oral and written command of Spanish.

*204. *INTERMEDIATE COMPOSITION AND CONVERSATION.* Either term. Credit three hours. Prerequisite, Spanish 203. M W F 3.

Continuation of the work in Spanish 203, with special attention to accurate and idiomatic expression in Spanish, both oral and written.

224. *ADVANCED COMPOSITION AND CONVERSATION.* Spring term. Credit three hours. Prerequisite, Spanish 204. T Th S 11.

Continuation of the work of Spanish 204, with discussion directed toward Latin-American culture and institutions.

241-242. *THE HISTORY OF THE SPANISH LANGUAGE.* Throughout the year in alternate years. Credit three hours a term. Prerequisites, qualification in Spanish

and Linguistics 201-202. Open only to juniors, seniors, and graduate students. M W F 2. Mr. Sola.

The development of Spanish from Latin and Proto-Romance to the medieval language. The rise of the standard language, the Renaissance and modern language; analysis of changes in sounds and forms. Lectures, discussion, reading, and analysis of texts.

[243. *SPANISH SYNTAX*. Fall term in alternate years. Prerequisite, qualification in Spanish. Open only to juniors, seniors, and graduate students. M W F 2. Not offered in 1960-1961.]

[244. *THE LINGUISTIC STRUCTURE OF SPANISH*. Spring term in alternate years. Credit three hours. Prerequisites, qualification in Spanish and Linguistics 201. Open only to juniors, seniors, and graduate students. M W F 2. Not offered in 1960-1961.]

251-252. *HONORS WORK IN SPANISH LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the junior year. Course 251 is normally prerequisite to Course 252; in exceptional cases it may be taken concurrently with Course 252 in the spring term. Hours to be arranged. Mr. Agard.

Selected readings in general linguistics and in the structure and history of Spanish, with oral and written reports.

253-254. *HONORS THESIS IN SPANISH LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the senior year. Mr. Agard.

The preparation of a thesis in Spanish Linguistics.

290. *SEMINAR IN IBERO-ROMANCE LINGUISTICS*. Offered in accordance with student needs. Credit three hours a term. Hours to be arranged. Mr. Agard.

*301-302. *SURVEY OF SPANISH LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, Spanish 201, or four years of entrance Spanish, or consent of the instructor. May be entered in the second term. M W F 11. Mr. Brenes.

Lectures in Spanish and classroom discussion on Spanish literature from the Middle Ages to the present.

[*303-304. *SURVEY OF SPANISH-AMERICAN LITERATURE*. Not offered in 1960-1961.]

311-312. *CERVANTES*. Throughout the year. Credit three hours a term. Prerequisite, Spanish 301, 302, 303, or 304, or consent of the instructor. May be entered in the second term. Hours to be arranged. Organization meeting September 21, 4 p.m. Mr. Brenes.

Fall term: *Don Quixote*. Spring term: *Novelas ejemplares* and the dramatic works.

[313-314. *LITERATURE OF THE GOLDEN AGE*. Not offered in 1960-1961.]

[315-316. *THE PICARESQUE NOVEL*. Not offered in 1960-1961.]

[319. *NINETEENTH AND TWENTIETH CENTURY SPANISH DRAMA*. Fall term. Credit three hours. Prerequisite, Spanish 301-302 or consent of the instructor. Hours to be arranged. Mr. ———.

A study of the romantic, realistic, and contemporary drama, 1800 to the present. Not offered in 1960-1961.]

387-388. *SEMINAR IN SPANISH LITERATURE*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. Brenes.

For graduates and qualified undergraduates. The study of a problem or restricted subject in Spanish literature.

010. *INFORMAL STUDY IN SPANISH LITERATURE*. Open to qualified juniors and seniors. Mr. Brenes and Mr. ———.

THAI (SIAMESE)

Mr. R. B. Jones, Jr., and Staff.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged.

201-202. *THAI READING*. Throughout the year. Credit three hours a term. Prerequisite for 201, qualification in Thai; for 202, Course 201 or consent of the instructor. Hours to be arranged. Mr. Jones.

203-204. *COMPOSITION AND CONVERSATION*. Throughout the year. Credit three hours a term. Prerequisite for 203, qualification in Thai; for 204, Course 203 or consent of the instructor. Hours to be arranged. Mr. Jones.

VIETNAMESE (ANNAMESSE)

Mr. R. B. Jones, Jr., and Staff.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged.

MUSIC

Mr. William W. Austin, *Chairman*; Messrs. James Armstrong, William Campbell, Daniel Eller, Keith Falkner, Donald Grout, John Hsu, Karel Husa, John Kirkpatrick, Sheldon Kurland, Robert Palmer, Henry Romersa, Thomas Sokol.

Students who are considering music as a possible major field should consult the Chairman of the Department at the beginning of their freshman year or as soon thereafter as possible. For a major in music, the requirements are: (1) (a) Music 101-102 (for 102, either 110 or 112 may be substituted); (b) Music 201-202, 203-204, 301-302, 303-304; (c) three hours in Music 401-402, and Music 211-212 or 213-214 (unless proficiency in conducting is demonstrated); (2) at least two years' membership and participation in one of the musical organizations (see Music 403-412).

Candidates for Honors in music will be designated by the Department at the beginning of the second term of their junior year. Honors candidates will take Music 351-352 in addition to the courses regularly required for a major. Each candidate will submit an Honors thesis or a composition not later than April 25 of his senior year and will be required to pass a general examination in the theory and history of music not later than May 25 of his senior year.

A large collection of recorded music and scores is housed in the Music Building at 320 Wait Avenue, where a number of phonograph listening rooms are available. These facilities may be used by any member of the student body at hours to be announced each term.

Choral and instrumental ensembles are trained and directed by members of the departmental staff each term, and all students who are interested are invited to join one or more of these groups. These ensembles include the Sage Chapel Choir, the University Chorus, the Cornell Concert Chorus, the Cornell University Glee Club, the Cornell Women's Glee Club, the Bands (Concert Band, Big Red Band, Repertoire Band, Brass Ensembles), the University Orchestra, the Ithaca Chamber Orchestra, and Chamber Music groups. For rehearsal hours and conditions for academic credit, see Music 403 through 412. Announcements of tryouts for all organizations will be made at the beginning of the fall term.

The various designations of Informal Study, besides serving the purpose of individual work for properly qualified students, may also embrace ensemble projects in vocal or instrumental music that involve serious study of a literature.

MUSIC THEORY

*103-104. *INTRODUCTION TO MUSIC THEORY*. Credit three hours a term. Throughout the year. M through F 9. Mr. Campbell and Assistants.

A study of the fundamental elements of music emphasizing quick and sure recognition of intervals, scales, triads, and keys; rhythmic, melodic, and harmonic dictation; sight singing, writing of melody and simple four-part texture, analysis and keyboard harmony. Ability to sing on pitch is required; ability to play an instrument is desirable.

The following three courses (Music 105-106, 201-202, 203-204) include drill in aural discrimination, sight singing, keyboard harmony, sight reading, melodic and harmonic dictation, and score reading. The purpose is to assist students to develop, in connection with and supplementary to their other courses—whether in theory, history, or applied music—the powers of aural perception and imagination needed for full comprehension of a work of music.

*105-106. *THEORY I: THE FUNDAMENTALS OF MUSIC*. Throughout the year. Credit three hours a term. A knowledge of the rudiments of music and some ability to play an instrument are required. First term prerequisite to second. M through F 9. Mr. Hsu.

Designed for music majors and other qualified students, to develop more rapidly the skills listed under Music 103-104 and to begin composition in instrumental style.

*201-202. *THEORY II: HARMONY*. Throughout the year. Credit three hours a term. Prerequisite, Music 105-106 or the equivalent. First term prerequisite to second. M W F 10 and T Th 3. Mr. ———.

A study of harmonic principles of the period of common practice (1700-1900).

203-204. *THEORY III: COUNTERPOINT*. Throughout the year. Credit two hours a term. Prerequisite, Music 201-202 or the equivalent. First term prerequisite to second. M W 12 and Th 2. Mr. ———.

The general principles of counterpoint as exemplified chiefly in the works of J. S. Bach; analysis and composition.

205. *SIXTEENTH-CENTURY COUNTERPOINT*. Fall term. Credit two hours. Prerequisite, Music 201-202. M W 12 and Th 2. Mr. Palmer.

A study of the melodic and contrapuntal techniques of Palestrina, Byrd, and their contemporaries, through analysis and writing in both sacred and secular forms of the period. The aim will be to develop that freedom of rhythm and harmony which is made possible by exactness of technique. One period will normally be devoted to analysis and performance.

206. *FUGUE*. Spring term. Credit two hours. Prerequisite, Music 203-204. M W 12 and Th 2. Mr. ———.

The fugal principle in its many manifestations. Analysis of the Well-Tempered Clavier and other fugal compositions by Bach, Mozart, Beethoven, and contemporary composers. Composition of formal fugues will be followed by writing in more recent fugal styles.

207-208. *ORCHESTRATION*. Throughout the year. Credit two hours a term. Prerequisite, Music 201-202. First term prerequisite to second. M W 2. Offered in alternate years. Mr. ———.

A study of the instruments of the orchestra and their use in representative works from 1700 to the present. Scoring for various instrumental groups, including large orchestra.

[209-210. *COMPOSITION*. Throughout the year. Credit two hours a term. Hours to be arranged. Mr. Husa. Not offered in 1960-1961.]

[211-212. *ORCHESTRAL CONDUCTING*. Throughout the year. Credit two hours a term. Prerequisite, Music 201-202. M W 2. Offered in alternate years with Music 213-214. Mr. Husa. Not offered in 1960-1961.]

213-214. *CHORAL CONDUCTING*. Throughout the year. Credit two hours a term. Prerequisite, Music 201-202. Offered in alternate years with Music 211-212. Th 3-4:30, and one half-hour of practical exercise, to be arranged. Mr. Sokol.

A study of the techniques of beat and rehearsal. Each member of the course will frequently conduct the class and auditors as a laboratory chorus and will occasionally conduct one of the choral organizations.

[277-278. *ANALYTIC TECHNIQUE*. Throughout the year. Credit three hours a term. Prerequisite, Music 203-204 or the equivalent (Music 203-204 may be taken concurrently). M W 9-11. Mr. Palmer. Not offered in 1960-1961.]

[021-022. *INFORMAL STUDY*. Credit hours to be arranged. Mr. Palmer. Not offered in 1960-1961.]

[023-024. *INFORMAL STUDY*. Credit hours to be arranged. Mr. Husa. Not offered in 1960-1961.]

351-352. *HONORS WORK IN MUSIC*. Credit three hours a term. Open only to Honors candidates in their senior year. Mr. Austin and members of the Department.

MUSIC HISTORY

*101-102. *THE ART OF MUSIC*. Throughout the year. Credit three hours a term. Open to all students; first term, or consent of the instructor, prerequisite to the second. Lectures T Th 11. Recitation sections: fall term, Th 2, 3, F 8, 10, 11, 12, 2, 3, S 9, 10, and 11; spring term, Th 2, F 8, 11, 12, 2, 3, S 11. Concerts on evenings of Oct. 11, Dec. 3, Jan. 7, and Feb. 28. Messrs. Austin and Eller, and Assistants.

Studies to foster the growth of rational enjoyment of the art of music. First term: the elements and instruments of music, and musical forms, as exemplified in music of various epochs and nations, and various degrees of complexity. Second term: the work of representative composers in relation to their social and artistic environment, with emphasis on Mozart's "Don Giovanni" and Stravinsky's "Rake's Progress".

[*110. *THE GREAT TRADITION IN MUSIC*. Spring term. Credit three hours. Prerequisite, Music 101. Enrollment limited; instructor's consent required. T Th S 11. Mr. Grout. Not offered in 1961.]

[*112. *PIANO MUSIC*. Spring term. Credit three hours. Prerequisite, Music 101. Enrollment limited; instructor's consent required. T Th S 11. Mr. Kirkpatrick. Not offered in 1961.]

301-302. *HISTORY OF MUSIC I*. Throughout the year. Credit three hours a term. Prerequisites, Music 101-102 and 201-202; the latter may be taken concurrently with Music 301-302. T 8-10 and Th 9-10. Messrs. Grout and Sokol.

The development of the art of music from the Middle Ages to the present, with a study of compositions representative of the principal styles.

303-304. *HISTORY OF MUSIC II*. Throughout the year. Credit three hours a term. Prerequisite, Music 302. M 2-4, W 2-3. Mr. Grout.

Intensive study of selected topics, including practical exercises in transcription from sources and the preparation of performing editions.

031-032. *INFORMAL STUDY*. Credit hours to be arranged. Mr. Austin.

033-034. *INFORMAL STUDY*. Credit hours to be arranged. Mr. Grout.

MUSICAL PERFORMANCE

*401-402. *INDIVIDUAL INSTRUCTION IN VOICE, ORGAN, PIANO, STRING, WOODWIND, AND BRASS INSTRUMENTS*. Throughout the year. For credit, see below. Consent of the instructor required.

Basic fee for one half-hour lesson weekly during one term (carrying no credit), \$60. Fees for a practice schedule of six hours weekly during one term: \$40 for the use of a pipe organ in Barnes Hall or Bailey Hall; \$10 for a practice room with piano; \$5 for a practice room without piano.

For credit: one hour lesson weekly (or two half-hours) and a double practice schedule carry three hours of credit for two terms, provided that the student has earned or is earning at least an equal amount of credit in courses in music history or music theory. (Students should register in Music 401-402 for one hour's credit the first term and two hours' credit the second term.) The basic fees involved are then multiplied by one and a half (lesson fee: \$90; practice fee \$60, \$15, and \$7.50). A student may register for this course in successive years.

MUSICAL ORGANIZATIONS AND ENSEMBLES

Throughout the year. Credit one hour a term. Consent of instructor required; admission by audition only. Registration is permitted in two of these courses simultaneously, and students may register in successive years, but no student may earn more than six hours of credit in these courses.

*403-404. *CHAMBER MUSIC ENSEMBLE*. Hours to be arranged. Messrs. Hsu and Kurland.

*405-406. *THE SAGE CHAPEL CHOIR*. T 7:15-8:45 p.m. and Th 7:15-8:45 p.m. Mr. Sokol.

[*407-408. *THE CORNELL CONCERT CHORUS*. M 7:30-9:30 p.m. Mr. Sokol. Not offered in 1960-1961.]

*409-410. *UNIVERSITY ORCHESTRA*. W 7:30-10 p.m., full orchestra; alternate T 7:30-9:30 p.m., sectional rehearsals. Mr. ———.

*411-412. *UNIVERSITY CONCERT BAND*. T Th 7:30-9:30 p.m. F 4:30-6 p.m. and additional rehearsal hours to be arranged. Mr. Campbell.

COURSES PRIMARILY FOR GRADUATES

275-276. *SEMINAR IN COMPOSITION*. Throughout the year. Credit two hours a term. Open to seniors by permission. T 10-12. Mr. Palmer.

Intended to make the student acquainted with compositional practices in contemporary styles and to develop the student's creative abilities.

375-376. *INTRODUCTION TO RESEARCH*. Throughout the year. Credit two hours a term. Prerequisites, a reading knowledge of French and German and an elementary knowledge of music theory and general music history. Open to seniors by permission. M 10-12. Mr. Austin.

The basic materials and techniques of musicological research.

377-378. *SEMINAR IN MUSICOLOGY*. Throughout the year. Credit two hours a term. T 2-4. Mr. Grout.

Primarily for graduates (and, by permission, seniors) who have (1) the requisite knowledge of one or more of the important foreign languages, (2) a fair knowledge of music theory, and (3) some skill in applied music and score reading.

[379-380. *SEMINAR IN CONTEMPORARY MUSIC*. Throughout the year. Credit two hours a term. Open to qualified juniors and seniors by permission. W 2-4. Mr. Palmer. Not offered in 1960-1961.]

PHILOSOPHY

Mr. Stuart M. Brown, Jr., *Chairman*; Messrs. Max Black, Keith S. Donnellan, Norman Malcolm, Thomas E. Patton, David Sachs, Frank N. Sibley, ———, ———, and ———.

For a major in philosophy, the standard requirement is as follows: (1) in philosophy twenty-four hours, which must include the following: Philosophy 301-302, two additional related courses numbered above 200, and at least three hours of courses numbered above 400; (2) in related subjects, eighteen hours, to be chosen with the approval of the adviser. Informal study is open to qualified majors.

Students with a major in philosophy, entering the Cornell Law School or the Medical College at the end of the junior year, are required to complete fifteen hours of philosophy, including Philosophy 301-302, and two additional related courses numbered above 200.

Students who wish to graduate with Honors in Philosophy should make application to the Chairman at the beginning of their junior year. For provisional acceptance as a candidate for Honors, a student will be required to have chosen a philosophy major, to have a cumulative average of 80 for all work in the College, and an average of 85 for courses in philosophy.

***101. PHILOSOPHICAL CLASSICS.** Either term. Credit three hours. Open to freshmen and sophomores only. M W F 9, 10, 12; T Th S 10. Registration is limited to 40 students a section. Messrs. Donnellan, Patton, Sachs, and ———.

*A study of several Socratic dialogues, Bertrand Russell's *The Problems of Philosophy*, and J. S. Mill's *Utilitarianism*.*

***102. PHILOSOPHICAL CLASSICS: SECOND COURSE.** Either term. Credit three hours. Prerequisite, Philosophy 101. M W F 10, 12. Registration is limited to 40 students a section. Messrs. Donnellan, Sibley, and ———.

*A study of Locke's *Essay on the Human Understanding*, Hume's *Dialogues concerning Natural Religion*, and Tolstoy's *What is Art?**

***103. ELEMENTARY LOGIC.** Either term. Credit three hours. Open to freshmen. M W F 10, 12. Registration is limited to 40 students a section. Messrs. Patton, Sibley, and ———.

An introduction to the problems that arise in the attempt to reason soundly. Problems of deductive and inductive logic are discussed, and special attention is given to the analysis of logical fallacies. Lectures, discussion, and exercises.

202. ELEMENTARY SEMANTICS. Spring term. Credit three hours. Open to sophomores and upperclassmen. Lectures, M W 2. Discussion sections, M W 3. Registration is limited to 60 students. Mr. Black.

A survey of the philosophy of language and symbolism, with detailed practice in interpretation. Topics include sign-using behavior, the nature of language, special types of discourse (scientific, poetic, mathematical), semantic fallacies.

210. PHILOSOPHICAL PROBLEMS. Either term. Credit three hours. Recommended for sophomores and juniors who are majors or prospective majors in philosophy. Others may be admitted but should obtain permission from the instructor. M W F 2. Registration is limited to 30 students. Fall term, Mr. Donnellan; spring term, Mr. Sibley.

An investigation of selected philosophical problems. Two lectures and one discus-

sion period. Study of contemporary as well as classical sources. Topic for fall: Freedom of the Will. Topic for spring: Knowledge of the External World.

221-222. *ETHICS*. Throughout the year. Credit three hours a term. First term prerequisite to the second. Open to sophomores and upperclassmen. Lectures M W 11; discussion sections to be assigned. Mr. Brown.

Fall term: the basic moral ideas of Western civilization as interpreted by its major philosophers and moralists—Greek ethical theory, Old and New Testament morality, Hobbes and the British Utilitarians, Butler and Kant. Spring term: an intensive study of selected problems in ethical theory; readings in John Stuart Mill, Sidgwick, Bradley, Moore, and Prichard.

COURSES FOR UPPERCLASSMEN AND GRADUATES

301-302. *HISTORY OF PHILOSOPHY*. Throughout the year. Credit three hours a term. Open to juniors and seniors, and others with the consent of the instructor. T Th S 9. Mr. Sachs.

Occidental philosophical thought from its Greek origins to the nineteenth century; the most important systems in their cultural context. Fall term: ancient and medieval period. Spring term: modern period through Kant.

[303. *NINETEENTH CENTURY PHILOSOPHY*. Spring term. Credit three hours. Not given in 1960-1961.]

304. *CONTEMPORARY PHILOSOPHY*. Spring term. Credit three hours. M W F 10. Mr. Donnellan.

Philosophy 303 and 304 are given in alternate years and, over each two-year period, offer a study of selected major figures in the history of modern philosophy since Kant. Topic for 1960-1961: logical atomism and logical positivism.

310. *PHILOSOPHY IN LITERATURE*. Fall term. Credit three hours. Open to seniors majoring in English, literature, or philosophy and to others with the consent of the instructor. T Th S 12. Mr. Sachs.

An examination of philosophical topics concerning the condition and conduct of human life, as they appear in a selection of literary works, from Sophocles' *Oedipus Rex* to Kafka's *Metamorphosis*.

313. *AMERICAN PHILOSOPHY*. Fall term. Credit three hours. Open to juniors and seniors. M W F 9. Mr. Brown.

American political philosophy: Puritanism, Inalienable Rights, the *Federalist Papers*, Calhoun.

322. *PHILOSOPHY OF RELIGION*. Spring term. Credit three hours. Open to juniors and seniors, and to sophomores by consent of the instructor. M W F 12. Mr. ———.

326. *POLITICAL AND SOCIAL PHILOSOPHY*. Spring term. Credit three hours. Prerequisite, Philosophy 221-222, or 301-302, or consent of the instructor. T Th S 10. Mr. ———.

A study of the philosophical and ethical doctrines involved in such political and social conceptions as the common good, natural law and natural rights, justice and equity, tolerance and liberty. Two different traditions will be studied.

327-328. *INTRODUCTION TO PHILOSOPHY OF SCIENCE*. Throughout the year. Credit three hours per term. Open to juniors and seniors. The second term may be taken without the first, by consent of the instructor. Lectures, M W 12. Discussion, F 12. Mr. Black.

Fall term: critical analysis of scientific methods with special reference to the natural sciences: detailed study of such topics as causality, theory making, concept formation, and measurements. Spring term: discussion of selected topics from the philosophy of the social sciences: types of explanation, predictability, use of models, intervening variables and constructs, emergence and reduction.

[333. *PHILOSOPHY OF PSYCHOLOGY*. Spring term. Credit three hours. Not given in 1960-1961.]

412-413. *DEDUCTIVE LOGIC*. Throughout the year. Credit three hours. Prerequisite, consent of the instructor. Intended for philosophy majors, graduate students, and others having suitable background in elementary logic or mathematics. M W F 12. Messrs. Donnellan and Patton.

Fall term: introduction to current methods of formal logic and their philosophical implications—propositional calculus, algebra of classes, calculus of functions, theory of descriptions, theory of relations. Spring term: selected topics from the philosophy of logic—the nature of inference, the logical paradoxes, the theory of types, Gödel's theorem.

[414. *INDUCTIVE LOGIC*. Spring term. Credit three hours. Not given in 1960-1961.]

423. *THEORY OF KNOWLEDGE*. Fall term. Credit three hours. Open to philosophy majors, graduate students, and others with the consent of the instructor. M W F 11. Mr. Sibley.

Topic for 1960-1961: Locke and Hume.

[425. *ETHICAL THEORY*. Spring term. Credit three hours. Not given in 1960-1961.]

SEMINARS

575. *PLATO*. Spring term. Credit three hours. F 3-5. Mr. Sachs.

580. *MODERN PHILOSOPHERS*. Fall term. Credit three hours. Th 3-5. Mr. ———.

Topic for 1960-1961: to be announced.

586. *ETHICS AND VALUE THEORY*. Spring term. Credit three hours. Th 3-5. Mr. Brown.

Topic for 1960-1961: to be announced.

587. *AESTHETICS*. Fall term. Credit three hours. W 3-5. Mr. Sibley.

Topic for 1960-1961: to be announced.

588. *METAPHYSICS*. Spring term. Credit three hours. W 3-5. Mr. ———.

Topic for 1960-1961: to be announced.

594. *PHILOSOPHICAL ANALYSIS*. Spring term. Credit three hours. T 3-5. Mr. ———.

Topic for 1960-1961: to be announced.

595. *SEMANTICS AND LOGIC*. Fall term. Credit three hours. T 2-4. Mr. Black.

Topic for 1960-1961: to be announced.

600. *HONORS SEMINAR*. Spring term. Credit three hours. M 3-5. Mr. Patton.

Topic for 1960-1961: to be announced.

039. *INFORMAL STUDY*. Members of the Department.

PHYSICS

Mr. L. G. Parratt, *Chairman*; Messrs. L. L. Barnes, H. A. Bethe, H. G. Booker, R. Bowers, R. C. Bradley, R. Brout, J. M. Cassels, G. Cocconi, D. R. Corson, R. M. Cotts,

T. R. Cuykendall, J. W. DeWire, G. Dresselhaus, D. A. Edwards, C. W. Gartlein, T. Gold, K. I. Greisen, P. L. Hartman, D. F. Holcomb, M. Kac, T. Kinoshita, J. A. Krumhansl, D. M. Lee, R. M. Littauer, B. D. McDaniel, P. Morrison, H. F. Newhall, J. Orear, T. J. Peterson, H. S. Sack, E. E. Salpeter, B. M. Siegel, R. H. Silsbee, A. Silverman, R. L. Sproull, P. C. Stein, D. H. Tombouliau, R. R. Wilson, and W. M. Woodward.

For a major in physics, the following courses must be completed: (1) in physics, twenty-eight hours of courses numbered above 122 and below 290 (excluding courses 121, 122, 200, and 214), which must include at least three hours of Physics 210 or its equivalent; (2) in related subjects, six hours of mathematics beyond the three-term introductory calculus sequence, and twelve hours in one of the following groups: (a) chemistry, (b) astronomy, (c) biological science (six hours of this must not be an introductory course), (d) philosophy (History 165 and 166 may be substituted for six hours of philosophy), (e) geology (six hours must not be an introductory course).

Qualified students may register for informal study. Undergraduates should register for Course 020; graduate students should register for Course 350 or 990.

A student may be granted Honors in physics if he (a) has an average grade of 85 or better in all physics courses taken, (b) has done work of Honors caliber in Course 210, (c) has taken courses 291 and 292, and (d) has, in addition to the physics major requirements, four hours (or more) credit in one of the following: (1) special project work including a satisfactory written summary and an examination, (2) graduate physics courses (courses numbered above 300), each with a grade of 80 or better, (3) interdepartmental work with the prior approval of the Physics Majors Committee and with the recommendation of the instructor(s) upon completion of the work.

Any student interested in the Honors program should consult with his major adviser before registering for the work of his senior year.

***103-104. GENERAL PHYSICS.** Throughout the year. Credit three hours a term. Prerequisite, three years of college preparatory mathematics or consent of the instructor. Physics 103 or consent of the instructor is prerequisite to 104. Except for Physics 200, more advanced courses require Physics 107-108 or special permission for admission; hence students majoring in mathematics or a physical science should not elect Physics 103-104. Demonstration lectures, M F 9 or 11. One laboratory period and one quiz section as arranged. Preliminary examinations will be held on two evenings each term. Dates will be announced. Messrs. Orear and Wilson, and Staff.

The vast progress in man's understanding of the physical world, including the latest, present-day problems. Basic principles and their relation to all of physical science will be emphasized. Topics of study will include mechanics, heat, electricity, light, relativity, quantum theory, structure of matter, nuclear physics, and elementary particles.

***107-108. INTRODUCTORY PHYSICS.** Throughout the year. Credit four hours per term. Prerequisite, calculus or concurrent registration therein. Physics 107 (or 103 and consent of the instructor) is prerequisite to 108. Primarily for students majoring in mathematics or a physical science. Demonstration lecture W 11, three recitations and one laboratory period as arranged. Messrs. Cotts and Dresselhaus, and Staff.

Emphasis is on the development of the important facts in the several fields of physics and the analytical techniques of problem and laboratory work.

[110. **PHYSICS WITH A HUMANISTIC EMPHASIS.** Spring term. Credit three hours. Prerequisite, consent of the instructor. Limited to 30 upperclassmen. M F 10. Mr. Wilson.

A selection of topics in physics will be treated nonmathematically but rather deeply. Designed to familiarize mature Arts students with the method and content

of a physical science. An attempt will be made to relate the study of physics to its humanistic origins and consequences and to emphasize its aesthetic elements. The fields of discussion include atomic and nuclear physics, Newtonian and quantum mechanics, and perhaps relativity and cosmogony. Not offered in 1960-1961.]

Courses 121 through 128 are designed primarily for the two-year physics program required of students in the College of Engineering. The first year of the program consists of courses 121 and 122. One of the two-term sequences designated as 123-124, 125-126, or 127-128 constitutes the second year's work. The initial assignment to a given sequence will be made with the consent of the Department on the basis of the student's previous performance in introductory physics and mathematics courses.

One demonstration lecture and two recitations per week; also one laboratory period on alternate weeks. Consult instructor in charge for recitation and laboratory hours.

***121. INTRODUCTORY ANALYTICAL PHYSICS.** Fall term. Credit three hours. Co-requisite, registration in Mathematics 161. Entrance physics is desirable but not required. Lecture, T 9, 11 or 2. Two recitations a week and one laboratory period every other week, as assigned. Primarily for students in the College of Engineering. Preliminary examinations will be held at 7:30 p.m. on Oct. 25, Nov. 29, and Jan. 10. Messrs. Newhall and Stein, and Staff.

Introductory mechanics: kinematics of particles, dynamics, statics, energetics and conservation laws, special motions. The laboratory work consists of measurements illustrative of the above topics.

***122. INTRODUCTORY ANALYTICAL PHYSICS.** Spring term. Credit three hours. Prerequisite, Physics 121; co-requisite, registration in Mathematics 162, 182, or 192. Lecture, T 9, 11, or 2. Two recitations a week and one laboratory period every other week, as assigned. Primarily for students in the College of Engineering. Preliminary examinations will be held at 7:30 p.m. on March 7, April 11, and May 9. Messrs. Newhall and Stein, and Staff.

Kinetic theory of gases; mechanics of gases; introductory thermodynamics. Electrostatic phenomena and introduction to electric circuits. The laboratory work consists of measurements in mechanics and in geometrical optics.

123. INTRODUCTORY ANALYTICAL PHYSICS. Fall term. Credit three hours. Prerequisites, Physics 121, 122, and co-registration in Mathematics 163, 183, or 193. Lecture, Th 9 or 11. Messrs. Tomboulion and Peterson, and Staff.

An introductory survey of the laws of electric and magnetic fields. Review of the electrostatic field, magnetic fields of steady currents, induced emfs, dielectrics, and magnetic properties of matter. The laboratory work will include experiments in electrical measurements.

124. INTRODUCTORY ANALYTICAL PHYSICS. Spring term. Credit three hours. Prerequisite, Physics 123, or equivalent. Lecture, Th 9 or 11. Messrs. Tomboulion and Peterson, and Staff.

An introductory study of wave motion with emphasis on the properties of electromagnetic waves. Interference, diffraction, dispersion, scattering, and polarization of waves. Selected topics from the fields of atomic, solid state, and nuclear physics dealing with wave-particle experiments, optical and X-ray spectra, radioactivity, and nuclear processes. The laboratory work will include experiments in physical electronics and wave optics.

125. INTRODUCTORY ANALYTICAL PHYSICS. Fall term. Credit three hours. Prerequisites the same as those for Course 123. Lecture, T 9 or 11. Mr. Bradley and Staff.

The main topics will be the same as those listed in Physics 123, but their treatment will be more analytical and somewhat more intensive.

126. *INTRODUCTORY ANALYTICAL PHYSICS*. Spring term. Credit three hours. Prerequisite, Physics 125 or consent of the instructor. Lecture, T 9 or 11. Mr. Bradley and Staff.

The range of topics is similar to those listed under Course 124, but coverage is more intensive.

127. *INTRODUCTORY ANALYTICAL PHYSICS*. Fall term. Credit three hours. Prerequisites the same as those for Course 123. Lecture, T 9 or 11. Messrs. Tomboulion and Edwards, and Staff.

The subject matter of electricity and magnetism listed in Physics 123 will be covered at a level sufficiently advanced to stimulate students of superior competence and interest.

128. *INTRODUCTORY ANALYTICAL PHYSICS*. Spring term. Credit three hours. Prerequisite, Physics 127 or consent of the instructor. Lecture, T 9 or 11. Messrs. Tomboulion and Edwards, and Staff.

Topics similar to those of Physics 124. The treatment will be designed to meet the needs of students who intend to pursue more advanced courses in physics.

200. *PHYSICS FOR STUDENTS OF BIOLOGY*. Either term. Credit three hours. Prerequisites, six semester hours of college work in each of the following: physics, chemistry, and biological science. Students having grades below 70 in either Physics 103 or 104 may not register for the course except by special permission of the instructor. Lectures, T Th 12. Laboratory, T or F 2-4. Mr. Barnes.

Lectures and laboratory experiments dealing with selected topics in the properties of matter, electricity and magnetism, electromagnetic radiation, and nuclear physics that are related to the study of biology.

207. *ADVANCED GENERAL PHYSICS*. Fall term. Credit three hours. Prerequisites, Physics 107 and 108 and Mathematics 162 or 182, or consent of instructor. M W F 9. Mr. Parratt.

Primarily for students intending to major in a science or in mathematics.

Probability and error theory; oscillation systems (mechanical, electrical, acoustical, etc.); wave motions.

208. *ADVANCED GENERAL PHYSICS*. Spring term. Credit three hours. Prerequisites, Physics 207 and Mathematics 163 or 183, or consent of instructor. M W F 9. Mr. Parratt.

Primarily for students intending to major in a science or in mathematics. Completes the general introduction to physics begun in Courses 107-108.

Particle dynamics in a plane, central forces, planetary motion; limitations of Newtonian mechanics; introduction to relativistic mechanics; basic experiments of quantum physics and introduction to quantum mechanical ideas.

209. *ADVANCED GENERAL LABORATORY*. Either term. Credit three hours. Prerequisites are the same as for Course 207. M W 1:40-4:30. Mr. Greisen.

Selected experiments from several subjects to suit the student's need, e.g., mechanics, probability, electricity, magnetism, optics, spectroscopy, and modern physics.

210. *ADVANCED LABORATORY*. Either term. Credit three hours a term. Prerequisites, Physics 208 and 209, or the equivalent; limited to seniors except by special permission. Laboratory, M T or W Th 1:40-4:30. Messrs. McDaniel, Bowers, Cuykendall, Holcomb, Lee, Siegel, Silsbee, Silverman, Sproull, and Woodward.

About seventy different experiments are available among the subjects of mechanics, acoustics, optics, spectroscopy, electrical circuits, electronics and ionics, heat, X-rays, crystal structure, solid state, cosmic rays, and nuclear physics. During the term the student is expected to perform four to eight experiments, selected to meet his individual needs. Stress is laid on independent work on the part of the student. Required for physics majors.

214. *ATOMIC, NUCLEAR, AND SOLID STATE PHYSICS*. Spring term. Credit three hours. Three lectures. Prerequisites, Physics 124 and Mathematics 607 (E. E. curriculum), or the equivalents. Primarily for students in electrical engineering. Mr. Sproull.

Elements of nuclear and atomic structure, fundamentals of quantum theory; electronic processes with special reference to the electrical properties of metals, semiconductors, and insulators; elements of nuclear processes.

216. *PHYSICAL OPTICS*. Spring term. Credit three hours. Prerequisite, Physics 124 or 207, or their equivalent. Lectures, T Th S 9. Mr. Holcomb.

Huygens' and Fermat's principles with applications to geometrical optics, wave properties, velocity of light, interference phenomena, Fraunhofer and Fresnel diffraction with application to image formation, polarization of light, double refraction, optical activity, and other topics as time permits.

225. *ELECTRICITY AND MAGNETISM*. Fall term. Credit three hours. Prerequisite, Physics 124, or 208 and 209, or their equivalent (209 may be taken concurrently). Lectures, T Th S 9 or 11. There will be two preliminary examinations to be held in the evening. Mr. Woodward.

Electrostatic and electromagnetic fields, polarization of dielectric and magnetic media, Maxwell's equations, plane electromagnetic waves.

226. *ELECTRICITY AND MAGNETISM*. Spring term. Credit three hours. Prerequisite, Physics 225. Lectures, T Th S 12. Mr. Brout.

Primarily a continuation of Physics 225 with emphasis on the application of Maxwell's equations. Circuit concepts, transmission lines, radiation, and wave propagation.

241. *KINETIC THEORY AND THERMODYNAMICS*. Fall term. Credit three hours. Prerequisite, Physics 208, 209, and Mathematics 183 or consent of instructor. M W F 9. Mr. Lee.

Kinetic theory of an ideal gas, equations of state of ideal and real gases; velocity distributions; Maxwell-Boltzmann statistics; basic concepts of thermodynamic systems; first and second laws, thermodynamic functions, application to physical systems.

242. *ANALYTICAL MECHANICS*. Spring term. Credit three hours. Prerequisites, Physics 208 and 209 and Mathematics 201, 612, or their equivalents. M W F 11 and an optional period to be arranged. Mr. Morrison.

Analytical mechanics of material particles, systems of particles and rigid bodies; planetary motion, stability of orbits; collisions; Euler's equations, gyroscopic motion; Lagrange's equations; relativistic mechanics.

243-244. *ATOMIC, MOLECULAR, AND NUCLEAR PHYSICS*. Throughout the year. Credit three hours a term. Prerequisite, Physics 225 or consent of instructor. M W F 10. Fall term, Mr. Silverman. Spring term, Mr. Greisen.

The fundamental particles of physics, statistical physics, the concepts of quantum mechanics, atomic structure and spectra, the periodic table, molecular structure and the chemical bond, properties of nuclei, nuclear reactions, interaction of radiation with nuclei, behavior of high-energy particles, and cosmic rays.

254. *ELECTRONIC PROPERTIES OF SOLIDS AND LIQUIDS*. Spring term. Credit three hours. Prerequisite, Physics 243. M W F 9. Mr. Sack.

A semiquantitative introduction to the concepts of modern solid state physics, covering lattice structure, lattice defects, lattice vibrations, cohesive energy, elastic and inelastic properties, electron theory of metals and semiconductors, dielectric and magnetic properties.

291-292. *HONORS SEMINAR*. Credit one hour a term. Prerequisite, consent of the student's major adviser (or of the instructor, if the student is not majoring in physics). For undergraduates, ordinarily seniors, who qualify for advanced study and research

in physics. Hour to be arranged. Fall term, Mr. Dresselhaus. Spring term, Mr. Holcomb.

Practice in organization, oral presentation, and discussion of selected topics in physics.

020. *INFORMAL STUDY IN PHYSICS*. Either term. Credit one to three hours a term. Hours to be arranged. Reading or laboratory work in any branch of physics under the direction of a member of the staff. Permission of the staff member under whose direction the work is to be done must be obtained before registration.

350. *INFORMAL GRADUATE LABORATORY*. Either term. Credit one to three hours a term. M T or W Th 1:40-4:30. Associated with the Physics 380 laboratory. Primarily for graduate students who do not have the prerequisites for Physics 380. Mr. McDaniel and Staff.

380. *ADVANCED LABORATORY*. Either term. Credit three hours a term. Prerequisite, Physics 210 or the equivalent. Laboratory, M T or W Th 1:40-4:30. Messrs. McDaniel, Bowers, Cuykendall, Holcomb, Lee, Siegel, Silsbee, Silverman, Sproull, and Woodward.

About seventy different experiments are available among the subjects of mechanics, acoustics, optics, spectroscopy, electrical circuits, electronics and ionics, heat, X-rays, crystal structure, solid state, cosmic rays, and nuclear physics. During the term the student is expected to perform four to eight experiments, selected to meet his individual needs. Stress is laid on independent work on the part of the student. Two terms are ordinarily required for first-year graduate physics students.

390. *RESEARCH*. Either term. Credit three hours a term. Prerequisite, two terms of Physics 380 or the equivalent. Hours to be arranged. Practice in the techniques, methods, and interpretation of research. May be taken under the direction of any member of the staff or in association with the Physics 380 laboratory. Permission of the staff member under whose direction the work is to be done must be obtained before registration.

475. *CLASSICAL MECHANICS*. Fall term. Credit four hours. Prerequisite, Physics 242 or its equivalent. T Th S 11 and S 12. Mr. Krumhansl.

Lagrange's equations, with applications to particle accelerators; linear vector spaces and small vibrations; Hamilton's equations; variational principles; transformation theory, and Hamilton-Jacobi methods; periodic systems, perturbation methods, introduction to wave motion and scattering.

476. *ELECTRODYNAMICS*. Spring term. Credit four hours. Prerequisite, Physics 225 or its equivalent. T Th S 11 and S 12. Mr. Dresselhaus.

Introductory potential theory; Maxwell's equations and their meaning; quasi-static problems; energy and momentum of the field; waves in space and in guides; radiation and scattering; special relativity.

477. *STATISTICAL MECHANICS AND KINETIC THEORY*. Fall term. Credit three hours. Prerequisite, Physics 475 and (or in parallel) Physics 485. T Th S 9. Mr. Morrison.

Statistical mechanics, general principles and applications to the properties of gases, liquids, crystals, and transport phenomena.

485. *INTRODUCTORY QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisites, Physics 475 and 476. M W F 9. Mr. Brout.

The wave function and its interpretation. The Schrödinger equation; oscillator, hydrogen atom. Approximate methods of solution. Operators and matrices. Electron spin, the exclusion principle.

486. *APPLICATIONS OF QUANTUM MECHANICS*. Spring term. Credit three hours. Prerequisite, Physics 485. M W F 9. Mr. Bethe.

Discussion of various useful applications of quantum mechanics such as collision theory, theory of spectra of atoms and molecules, theory of solids, emission of radiation, theory of measurement in quantum mechanics.

491. *ADVANCED QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisite, Physics 486. T Th S 10. Mr. Kinoshita.

Relativistic wave equations, field theory, renormalization, problem of strong interactions, divergences of field theory.

588. *X-RAY DIFFRACTION AND THE SOLID STATE*. Spring term. Credit three hours. Prerequisites, Physics 243 and 244, or the equivalent. Offered only if registration exceeds seven students. M W F 11. Mr. Parratt.

X-ray spectra, scattering, absorption, diffraction; the relation of these processes to modern concepts of atomic and solid structure.

675. *SOLID STATE PHYSICS*. Fall term. Credit three hours. Prerequisite, Physics 485 (or in parallel) or the equivalent. M W F 11. Mr. Silsbee.

An introduction to solid state physics including studies of crystal structure; mechanical, thermal, and electric properties; magnetism; band structure; and selected topics.

676. *ADVANCED SOLID STATE PHYSICS*. Spring term. Credit three hours. Prerequisites, Physics 485 and 675, or consent of instructor. T Th S 9. Mr. Krumhansl.

Selected topics in the quantum theory of solids.

775. *INTRODUCTORY NUCLEAR PHYSICS*. Fall term. Credit three hours. Prerequisites, Physics 475, 476, and (or in parallel) 485. Mr. Cassels.

Properties of nuclei, detection of particles, alpha decay, fission and thermonuclear reactions, gamma decay, beta decay, two nucleon systems, nuclear models, nuclear reactions.

[776. *HIGH-ENERGY NUCLEAR PHYSICS*. Spring term. Credit two hours. Prerequisites, Physics 485 and 775, or consent of the instructor. W F 11. Mr. Cassels.

The physics of nucleons and mesons and the new strange particles from an experimental point of view. High energy phenomena, as opposed to classical nuclear physics, will be discussed. Not offered in 1960-1961.]

[782. *THEORY OF NUCLEI*. Spring term. Credit three hours. Prerequisites, Physics 485 and 775, or their equivalents. M W F 9. Mr. Bethe.

Selected topics from the theory of nuclei, including nuclear forces, nuclear structure, and nuclear reactions. Not offered in 1960-1961.]

784. *COSMIC RAYS*. Spring term. Credit three hours. Prerequisites, Physics 243 and 244, or the equivalents. Offered in alternate years (including 1960-1961) only if registration exceeds seven students. Hours to be arranged. Mr. Cocconi.

786. *THEORY OF HIGH-ENERGY PHENOMENA*. Spring term. Credit three hours. Prerequisites, Physics 486 and 491, or the equivalents. T Th S 11. Mr. Kinoshita.

900. *SEMINAR IN ADVANCED PHYSICS*. Either term. Credit one to three hours a term. Upon sufficient demand and student interest, seminars will be arranged from time to time in topics not currently covered in regular courses, such as advanced solid-state theory, applied group theory, general relativity theory, electronics, low-temperature physics, X-rays, etc.

990. *INFORMAL STUDY IN PHYSICS*. Either term. Credit one to three hours a term. Hours to be arranged. Special study in some branch of physics, either theoretical or experimental, under the direction of a member of the staff. Permission of the staff member under whose direction the work is to be done must be obtained before registration.

PSYCHOLOGY

Mr. T. A. Ryan, *Chairman*; Messrs. F. S. Freeman, J. J. Gibson, A. C. Goldstein, Mrs. B. J. Hampton, Messrs. J. E. Hochberg, W. W. Lambert, H. S. Liddell, R. B. MacLeod, L. Meltzer, F. Rosenblatt, Mrs. P. C. Smith, Mr. R. R. Zimmermann.

In choosing his program for the major in psychology the student should secure a knowledge of the basic psychological processes (for example, learning, perception, motivation), and also an introduction to two or more of the fields of special problems and application (social psychology, individual differences and psychological tests, industrial psychology, psychobiology). In addition, students who plan to pursue graduate study should gain additional knowledge of research methodology through specialized courses in statistics and techniques of research. A broad background in both the natural and the social sciences is also strongly recommended.

Specific requirements in psychology are: (1) Psychology 101, 102, and 112; (2) 24 hours of courses numbered over 200; (3) the 24 hours must include Psychology 490 and at least two of the following courses: 207, 216, and 221. These latter courses should be taken in the sophomore year if possible. Requirements in related fields: (1) Zoology 201 or equivalent, (2) nine hours of a related field approved by the adviser (recommended fields are education, mathematics, physics, philosophy, sociology and anthropology, statistics, and zoology). ILR 210 or other courses in statistics are strongly recommended for all majors.

It is expected that students planning to major in psychology will begin with the 101-102 sequence and take Psychology 112 during the sophomore year. Students who decide to major in the field after taking 101-112 or 101-107 in the freshman year should take Psychology 102 as soon as possible, since it is prerequisite to many of the advanced courses.

Child Development and Family Relationships 115 may be counted toward the major in psychology. This course, entitled *THE NATURE OF MAN: THE DEVELOPMENT OF HUMAN BEHAVIOR*, is one of three interdepartmental courses dealing with the general topic of the "Nature of Man" from the perspectives of the behavioral and biological sciences. The other courses in this group are Zoology 201 and Sociology-Anthropology 204.

To be accepted for a major in psychology, a student must have a cumulative average of 70 in all courses and of 75 in psychology courses.

Candidates for the degree of Bachelor of Arts with Honors in psychology are required to take an honors seminar (Psychology 491) and a six-hour thesis course (Psychology 499) as part of their departmental requirements.

Honors candidates must have a general grade average of 80 and a departmental average of 85 for entrance into the program, except under special conditions. These averages will be based on the candidate's work for the first three years.

Honors candidates will prepare and defend a thesis and will take a general comprehensive examination at the end of the senior year. A list of other required courses for Honors candidates can be obtained in the Department office.

In cooperation with the Department of Sociology and Anthropology, a concentration in social psychology is available. Under the program a student obtains his major in either department, meeting its normal departmental requirements. The student takes several basic and intermediate courses in both fields, four courses in social psychology and personality, and related courses in other fields. A folder describing the requirements and electives may be obtained from either department. Any student interested in the concentration should consult Mr. Lambert or Mr. Meltzer as early as possible in his college career.

Informal study is offered to a limited number of upperclass majors only. Consent of the instructor is required. The purpose of such study is to permit a student to carry out specialized research or study projects not covered by existing courses.

ELEMENTARY COURSES

*101. *INTRODUCTION TO PSYCHOLOGY*. Either term. Credit three hours. Open to freshmen. Two lectures plus a one-hour demonstration-discussion section. Fall term: lectures, M W 10, sections Th 9, 10, 12, F 8, 10, 11, or 12; lectures, T Th 9, sections S 9, 11, 12, M 9, 11, 2 or 3; lectures, W F 11, sections M 8, 10, T 8, 9, 11, 12 or 2. Spring term: lectures, W F 10, sections S 10, 11, M 8, 9, 12, T 10 or 12; lectures, W F 12, sections M 2, 3, T 8, 9, 11, 2 or 3.

An introduction to the scientific study of behavior and experience, covering such topics as perception, motivation, emotion, learning, thinking, personality, and individual differences. Prerequisite to further work in the Department.

*102. *CONTEMPORARY PROBLEMS OF PSYCHOLOGY*. Either term. Credit three hours. Prerequisite, Psychology 101, or consent of the instructor. Fall term: lectures, M W 9; laboratory, F 10-12, 2-4. Spring term: lectures, M W 11; laboratory, Th 8-10, F 8-10 or 2-4. Mr. Hochberg.

An analysis of current research problems selected for their relevance to general theoretical issues and as illustrative of modern research methods in psychology. Specific topics will be chosen from the fields of perception, learning, motivation, personality theory, and the like. The course provides an introduction to laboratory methods which is prerequisite to many of the advanced courses in psychology.

103. *EDUCATIONAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisite, an introductory course in psychology. M W F 10. Mr. Zimmermann.

The major facts and principles of psychology bearing on educational practice and theory.

*106. *PSYCHOLOGY IN BUSINESS AND INDUSTRY*. Spring term. Credit three hours. Prerequisite, Psychology 101 or consent of instructor. M W F 11. Mrs. Smith.

Applications of psychological methods in worker selection and training, conditions of efficient production, motivation in industrial performance, accident control, psychological aspects of marketing.

*107. *INTRODUCTION TO PERSONALITY AND SOCIAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisite, Psychology 101 or consent of the instructor. M W 12; recitation, Th 8, 10, F 12 or 2. Messrs. Lambert and Meltzer.

Description and analysis of major consistencies in interpersonal behavior. A survey of psychological approaches, with emphasis upon the use of principles concerning the basic processes introduced in Psychology 101.

*112. *MODERN PSYCHOLOGY IN HISTORICAL PERSPECTIVE*. Either term. Credit three hours. Prerequisite, Psychology 101. Fall term: M W F 12. Spring term: M W F 9. Mr. MacLeod.

A systematic survey of present-day problems, methods, and points of view, considered in the perspective of their historical development. Recommended for students who propose to do advanced work in psychology.

INTERMEDIATE COURSES

207. *BASIC PROCESSES: PERCEPTION*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102. Lectures, M W 12. Laboratory, Th 2-4. Mr. Gibson.

An account of the ways in which the normal human adult registers and apprehends his environment. The experimental study of psychophysical correlation, of space, motion, objects, and events, and the relations of perceiving to everyday behaving and thinking.

216. *BASIC PROCESSES: LEARNING*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102. Lectures, W F 9. Laboratory, T 2-4. Mr. Zimmerman.

The fundamental conditions and principles of learning, both animal and human. A review of selected experimental literature, with special emphasis upon recent developments in the field.

221. *BASIC PROCESSES: MOTIVATION*. Spring term. Credit three hours. Prerequisites, Psychology 101 and 102. T Th 11. Laboratory, Th 2-4. Mr. Ryan.

A study of the initiation, direction, and regulation of behavior. The classic problems of instinct, emotion, conflict, and will are examined in the light of evidence from current experimental, clinical, and social research.

223. *PHYSIOLOGICAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisites, Psychology 101, Zoology 201 or equivalent, and three further hours of psychology. M W F 10. Mr. Goldstein.

A survey of the physiological mechanisms known to be important in sensory-motor, motivational, and adaptive behavior.

[224. *PSYCHOBIOLOGY*. Spring term. Credit three hours. Prerequisites, Psychology 101, Zoology 201 or equivalent, and upperclass standing. T Th S 10. Mr. Liddell. Not given in 1960-1961.

The principal biological mechanisms of behavior with special reference to man. Neurophysiology, endocrinology, and conditioning in relation to the problem of human behavior.]

301. *SOCIAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, 3 hours of psychology and 3 hours of sociology and anthropology, or consent of the instructor. M W F 10. Mr. Lambert.

Analysis of the history, concepts, methods and theories used to describe and conceptualize some recurrent processes in social behavior. The processes of socialization, attitude change, and communication will be given special emphasis. Field observation methods, content analysis, attitude measurement and scaling, measures of meaning, and cross-cultural method will be discussed and exemplified. The work of some modern essayists in the field will be critically discussed.

This course constitutes one half of a full-year sequence in social psychology. The other half, which is listed as Sociology and Anthropology 702, may be counted toward the major in psychology. These courses may be taken separately.

303. *THEORIES OF PERSONALITY*. Fall term. Credit three hours. Prerequisites, junior standing and completion of Common Studies requirement in social sciences. M W F 12. Mr. Lambert.

A critical survey of the concept of personality in literature, the social sciences, and psychology. A number of the modern specialists will be discussed at some length, and recent empirical and experimental work that has grown out of their thought will be analyzed. The empirical relation of personality notions to some philosophical beliefs and literary production will be considered. The emphasis will be mainly upon "normal" personality.

331. *METHODS OF INDUSTRIAL SELECTION AND PLACEMENT*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102. M W F 11. Mrs. Smith.

Techniques of constructing and evaluating selection and placement measures, including development of criteria of performance, analysis of reliability, methods of item analysis, validation of tests, interviews, and personal history data. Class members will construct and validate a specific test during the term.

332. *WORK, FATIGUE, AND EFFICIENCY*. Spring term. Credit three hours. Prerequisite, Psychology 101. M W F 9. Mrs. Smith.

A survey of the external and internal factors which affect the efficiency, speed, and accuracy of human work. Consideration will be given to sedentary or "mental" work as well as to physical work, in relation to fatigue, monotony, rest, sleep, and the effects of noise, light, temperature, incentives, and social factors.

336. *PSYCHOLOGICAL PROBLEMS OF ADVERTISING AND MARKET RESEARCH*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102, or consent of the instructor. T 2-4, plus one hour to be arranged. Mr. Hochberg.

Methods of measuring the effects of advertising on consumer opinion and behavior. Psychological marketing survey methods and typical results. General problems of consumer motivation.

351. *PSYCHOLOGICAL TESTS: I*. Fall term. Credit three hours. Prerequisites, 6 hours in psychology, including 102 or a course in elementary statistics. Primarily for seniors and graduate students. Juniors must have consent of instructor. T Th S 11. Mr. Freeman.

Basic psychological principles in the construction and use of individual and group tests of intelligence and of specific aptitudes; theories of the nature of mental abilities; fields of application; intensive study of selected scales.

352. *PSYCHOLOGICAL TESTS: II*. Spring term. Credit three hours. Prerequisite, Psychology 351 or its equivalent and consent of instructor. Primarily for seniors and graduate students. T Th S 11. Mr. Freeman.

Basic psychological principles in the construction of personality rating scales, personality inventories, projective techniques, and situational tests; and the use of personality tests in various fields. Several selected instruments are studied intensively.

[401. *EMOTION*. Fall term. Credit three hours. Prerequisite, 9 hours in psychology or consent of the instructor. M W F 10. Mr. MacLeod.

An analysis of the contemporary theories of emotion in light of current psychological and physiological research. Not given in 1960-1961.]

405. *MAIN CONCEPTS OF ABNORMAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisite, nine hours of psychology or consent of the instructor. T Th S 10. Mr. Liddell.

Examination of basic concepts from biology, psychology, and sociology currently employed in the analysis and interpretation of abnormal behavior.

410. *INDIVIDUAL DIFFERENCES*. Fall term. Credit three hours. Prerequisite, Psychology 351 or its equivalent. Course 351 may be taken concurrently. Th 2-4 and a third hour to be arranged. Mr. Freeman.

The nature and causes of variations in human abilities. Their educational and social implications. Especial study of the mentally retarded and the mentally superior groups.

411. *PROCEDURES IN CLINICAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisites, Psychology 351 and consent of the instructor. Primarily for seniors and graduate students. M 2-4, and conferences to be arranged. Mr. Freeman.

Procedures and instruments used with clinical cases involving problems of learning and of behavioral adjustment and personality disorders.

413. *PRACTICUM AND SEMINAR IN PSYCHOLOGICAL TESTING*. Either term. Credit three hours. Prerequisite, Psychology 351 or 352. All students must have the consent of the instructor. Hours to be arranged. Mr. Freeman and Mrs. Hampton.

Practice in administering and interpreting individual tests of intelligence or of personality. Each student concentrates on one test throughout a term.

422. *COMPARATIVE PSYCHOLOGY*. Fall term. Credit three hours. Prerequisite, six hours of psychology beyond the 100 level. Some knowledge of physiology or physiological psychology is desirable. Lectures, T Th 11-12:30. Mr. Goldstein.

Selected examples of animal behavior will be studied and the major theories will be discussed.

426. *EXPERIMENTAL PSYCHOPATHOLOGY*. Fall term. Credit three hours.

Prerequisites, psychology or biology major and upperclass standing. W 2-5, plus an additional period to be arranged. Mr. Liddell.

The application of experimental methods to the behavior disorders; analysis of contemporary theories of behavior pathology; laboratory work in experimental neuroses.

432. *PSYCHOLOGY OF LANGUAGE AND THINKING*. Spring term. Credit three hours. Prerequisites, Psychology 101 and three additional hours in psychology, preferably 112. M W F 11. Mr. MacLeod.

An approach to the psychological study of thinking through the analysis of the processes of communication. Material will be drawn from studies of linguistic development, from the pathology of language, from comparative linguistics, and from experimental studies of language and thinking. For students of philosophy, language, and literature as well as for students of psychology.

475. *STATISTICAL METHODS IN PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, Psychology 101, 102, and consent of the instructor. M W F 2. Mr. Ryan.

An analysis of the methods for treating various kinds of psychological data. Tests of significance, correlational analysis, and analysis of variance, in their application to psychological research.

476. *RESEARCH METHODS IN PSYCHOLOGY—EXPERIMENTAL*. Spring term. Credit three hours. Prerequisite, Psychology 475 or consent of the instructor. W 2-4. Laboratory hours to be arranged. Mr. Hochberg.

An advanced course in experimental psychology, stressing the methods of planning and executing experiments. The group will plan and conduct experiments on selected problems. Recommended for students who plan to do graduate work in psychology and for major students in related sciences.

477. *RESEARCH METHODS IN PSYCHOLOGY—INDUSTRIAL*. Fall term. Credit three hours. Prerequisite, consent of the instructor. F 2 and laboratory hours to be arranged. Mrs. Smith.

An introduction to research techniques in industrial psychology. Projects in local factories and business institutions and in the laboratory are conducted as exercises in such areas as test construction, analyses of reliability and validity of test and interview methods, studies of morale, learning, methods, fatigue, and job analysis programs.

480. *PROSEMINAR IN SOCIAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, two courses in social or experimental psychology and a course in statistics, or consent of the instructor. For graduate students majoring or minoring in social psychology and for seniors in the social psychology concentration; others by permission only. T 12-2, S 9-11. Mr. Meltzer.

This course constitutes one half of a full-year advanced sequence in social psychology. The other half is listed as Sociology and Anthropology 775. These courses may be taken separately.

490. *SENIOR SEMINAR*. Spring term. Credit three hours. Prerequisite, senior standing. Required of all students majoring in psychology. T 2-4. Mr. Gibson.

The purpose is to examine the main problems and methods of psychology as a whole in order to organize and integrate the specific knowledge gained in other courses in the field. Class discussions for this purpose will serve as a framework for the student's individual review and reading. The final examination in the course will be a comprehensive examination on the field of psychology. Performance on this examination will be one of the criteria for judging eligibility for a degree with Honors in psychology.

050. *INFORMAL STUDY*. Either term. Credit one, two, or three hours. The Staff.

SEMINARS FOR HONORS CANDIDATES

491. *HONORS SEMINAR*. Fall term, senior year. Credit three hours. Time to be arranged. Mr. MacLeod.

499. *HONORS THESIS*. Spring term, senior year. Credit six hours. Time to be arranged.

This will represent an investigation, under the supervision of a member of the staff, of a problem in any of the major fields of psychological research. Candidates will for the most part work independently but may, from time to time, be called together for progress reports.

GRADUATE SEMINARS

Primarily for graduate students, but with the consent of the instructor may be taken by qualified undergraduates. Approximately five seminars will be offered each term, the selection to be determined by the needs of the students. During the preregistration period, the list of seminars for the following term will be posted, specifying instructors, topics to be covered, and hours of meeting.

501. *GENERAL SEMINAR FOR BEGINNING GRADUATE STUDENTS*. Either term. Credit three hours.

511. *PERCEPTION*. Either term. Credit three hours.

513. *LEARNING*. Either term. Credit three hours.

515. *MOTIVATION*. Either term. Credit three hours.

517. *THINKING*. Either term. Credit three hours.

521. *PSYCHOBIOLOGY*. Either term. Credit three hours.

523. *PSYCHOPHYSIOLOGY*. Either term. Credit three hours.

531. *HISTORY OF PSYCHOLOGY*. Either term. Credit three hours.

541. *STATISTICAL METHODS*. Either term. Credit three hours.

544. *PSYCHOLOGICAL TESTS*. Either term. Credit three hours.

545. *METHODS OF SOCIAL ANALYSIS*. Either term. Credit three hours.

547. *METHODS OF CHILD STUDY*. Either term. Credit three hours.

562. *HUMAN DEVELOPMENT AND BEHAVIOR*. Fall term. Credit three hours.

571. *SOCIAL PSYCHOLOGY*. Either term. Credit three hours.

573. *PERSONALITY, NORMAL AND ABNORMAL*. Either term. Credit three hours.

581. *INDUSTRIAL PSYCHOLOGY*. Either term. Credit three hours.

591. *EDUCATIONAL PSYCHOLOGY*. Either term. Credit three hours.

600. *THE TEACHING OF PSYCHOLOGY*. Either term. Credit three hours.

SOCIOLOGY AND ANTHROPOLOGY

Mr. Robin M. Williams, Jr., *Chairman*; Messrs. Edgar F. Borgatta, William Delany, Mrs. Rose K. Goldsen, Messrs. Charles F. Hockett, Allan R. Holmberg, Charles C. Hughes, Norman Kaplan, William W. Lambert, Alexander H. Leighton, Leo Meltzer, Morris E. Opler, John M. Roberts, Lauriston Sharp, G. William Skinner, Robert J. Smith, Gordon F. Streib, J. Mayone Stycos, Wayne E. Thompson.

For a major in sociology and anthropology the following courses must be completed: (1) *Sociology and Anthropology 101-102, or 111-112, or 101-111*; (2) *Sociology*

and Anthropology 632; (3) twenty-one additional hours in the Department; and (4) eighteen hours in related subjects to be chosen with the approval of the adviser. Statistics (Industrial and Labor Relations 210) may be counted as a departmental course for a major. Students are urged to include Sociology and Anthropology 201, 302 or 275-276 among the courses to be completed in the Department.

Students interested in training for careers in the field of social work should consult Mr. Taietz, Rural Sociology.

Students seeking admission to the Department's Honors program should file application, on a form obtainable in the departmental office, not later than November 1 of their junior year. Honors candidates must have a general average of at least 80 and an average in departmental courses of at least 85.

In cooperation with the Department of Psychology, a concentration in social psychology is available. Under the program a student obtains his major in either department, meeting its normal departmental requirements. The student takes several basic and intermediate courses in both fields, four courses in social psychology or personality, and related courses in other fields. A folder describing the requirements and electives may be obtained from either department. Any student interested in the concentration should consult Mr. Lambert or Mr. Meltzer as early as possible in his college career.

Informal study is offered to a limited number of upperclass majors only. Consent of the instructor is required. The purpose of such study is to permit a student to secure specialized instruction not covered by existing courses.

Seminars are primarily for graduate students but may be taken by qualified undergraduates with consent of the instructor, except as otherwise noted in the course listings.

In accordance with the policy of the College, branches or divisions within the Department are indicated by the first digit of the course number, except for the 100 series, reserved for introductory courses. Courses in anthropology are numbered in the 200's. Subject-matter divisions within sociology and social psychology are indicated by numbers from 300 through 700.

I. INTRODUCTORY COURSES

*101. *MAN AND SOCIETY—I*. Either term. Credit three hours. Open to all students, although primarily intended for freshmen. Fall term, lectures, T Th (S) 10, M W (F) 11. Spring term, lectures, T Th (S) 10. Discussion sections to be arranged. Messrs. Delany and Thompson, and Staff.

A general introduction to the principles and methods of sociology. An analysis of the basic structure of human society with particular attention to that of the contemporary United States. Emphasis is placed on major institutions: the family, social classes, ethnic groups, associations, social aspects of economic and political organization. Attention is also given to the role of primary groups and social factors in personality formation.

*102. *MAN AND SOCIETY—II*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or consent of the instructor. T Th (S) 10. Mr. Delany.

A continuation of Sociology and Anthropology 101. Applies sociological concepts and modes of analysis to selected problems of "modernization" in Mexico, Egypt, Russia, China, England, and the United States. Attempts to locate patterns of relationship between the economic development of each country and changes in its population and ecology, community and administrative organization, stratification, communication systems, public opinion and institutional values, customs, and laws.

*111. *MAN AND CULTURE*. Either term. Credit three hours. Open to freshmen and sophomores only; other students should see Sociology and Anthropology 203,

an equivalent introductory course for upperclassmen and graduate students. Fall term, lectures, M W 8 or T Th 11. Spring term, lectures, T Th 12. Discussion sections to be arranged. Messrs. Sharp and Roberts, and Staff.

An introduction to cultural anthropology, the comparative study of the ways in which men of various periods and places—endowed with foresight and imagination—have created a predictable and livable human experience. The cultural organization of behavior (including perceptions, feelings, ideas, and values) in systems of communication, technology, social relations, and ritual; the relation of these systems to normal and abnormal personal behavior and to continuity, change, and cultural transfer in history. The systematic analysis of human behavior beyond the range of the great Western or North Atlantic cultural traditions is designed to give the student some perspective for the study of any complex civilization in which he may be interested, including his own.

*112. *THE DEVELOPMENT OF MAN AND CULTURE*. Spring term. Credit three hours. Open to all students without prerequisite. Lectures, T Th 11. Discussion sections to be arranged. Mr. Smith and Staff.

An introduction to physical anthropology, prehistoric archaeology, ethnography. Topics include human origins, evolution, early types and modern races of man; the prehistoric development of culture and the distribution of cultures in the Old and New Worlds.

*116. *ANTHROPOLOGY AND MODERN LIFE*. Spring term. Credit three hours. Prerequisite for underclassmen, Sociology and Anthropology 111; open to upperclassmen without prerequisite. Lectures, T Th 2, with discussion sections to be arranged. Mr. Holmberg and Staff.

The uses of anthropology in the modern world. Designed not only for students of the humanities and of different societies but also for natural scientists concerned with the cultural problems involved in technological change, community development, native administration, and modernization in various regions of the world. The analysis of case studies provides a basis for evaluating factors in changing situations in international, national, community, or smaller systems such as the factory, hospital, or other local institutions. Consideration is given to the organization of agencies of change, to the reactions of participants, and to the validity of general principles of human behavior and of ethics in planning or predicting cultural change.

INTRODUCTION TO PERSONALITY AND SOCIAL PSYCHOLOGY. (See Psychology 107.)

II. ANTHROPOLOGY

201. *METHODS OF RESEARCH: CULTURAL ANTHROPOLOGY*. Fall term. Credit three hours. Open to upperclassmen and graduate students. T Th 10 and a two-hour laboratory period to be arranged. Mr. Holmberg and Staff.

An introductory overview of the main methodological issues entailed in the planning and execution of empirical research in cultural anthropology, or in the critical evaluation of research reported in the literature. The emphasis is on research design and strategy rather than research techniques or tactics. This course constitutes the first half of a full-year sequence in research methods. The second half is listed as Sociology and Anthropology 302.

203. *CULTURAL ANTHROPOLOGY*. Either term. Credit three hours. Open to upperclassmen and graduate students who have not had Sociology and Anthropology 111. M W F 12. Fall term, Mr. Opler. Spring term, Mr. Sharp.

A study and comparison of the types of learned, shared, and transmitted behavior patterns and ideas by means of which men of various periods and places have dealt

with their environment, worked out their social relations with their fellowmen, and defined their place in the cosmos. An inquiry into human nature and its expression in man's institutional and intellectual creations.

[*PHYSICAL ANTHROPOLOGY AND EVOLUTION* (Zoology 222). Not offered in 1960-1961.]

204. *THE NATURE OF MAN: CULTURE AND PERSONALITY*. Spring term. Credit three hours. Prerequisite, one of the following: Zoology 201 (or equivalent), a course in psychology (preferably Child Development and Family Relationships 115), sociology and anthropology, or child development and family relationships, or consent of the instructors. M W F 10. Messrs. Lambert and Opler.

The study of the individual in his society, emphasizing the relationship between social structure, cultural context, and human behavior. Attention is given largely to the study of personality, "normal" and "abnormal," in non-Western societies.

This is one of three interdepartmental courses dealing with the nature of man from the perspectives of the biological and behavioral sciences. The other courses in the series are Zoology 201 and Child Development and Family Relationships 115. These courses may be taken singly or in any order.

206. *CULTURAL STABILITY AND CHANGE*. Spring term. Credit three hours. M W F 2. Mr. Holmberg.

A study of various theories of cultural change and their relevance to the planning and execution of programs of technical and economic aid; an analysis of factors involved in maintaining stability or stimulating change in nonindustrialized cultures.

[208. *MAN AND CIVILIZATION*. Spring term. Credit three hours. M W F 9. Mr. Smith. Offered in 1961-1962 and alternate years.]

209. *LANGUAGE AND CULTURE*. Fall term. Credit three hours. M W F 12. Mr. ———.

A survey of the functions of language and culture in establishing man's unique place in nature.

211. *COMPARATIVE SOCIAL ORGANIZATION*. Fall term. Credit three hours. T Th 2-3:30. Mr. Sharp.

The varied organization of human relations in selected non-Western societies; case studies of territorial, sex, age, kinship, clique, club, class, and caste bases of interaction and association; the ordering of social roles into systems of conduct; the relation of conduct to technology and world view.

212. *COMPARATIVE POLITICAL AND LEGAL ORGANIZATION*. Spring term. Credit three hours. M W F 11. Mr. Roberts.

A survey of the fields of primitive government and law. A series of specific societies selected in terms of a broad comparative interest in history, function, complexity, and dynamic process will be given careful consideration. The relevance of studies in primitive government and law to anthropological theory and method will also be discussed.

213. *COMPARATIVE ECONOMIC BEHAVIOR*. Fall term. Credit three hours. M W F 11. Mr. Holmberg.

A comparative survey of the social organization of production, exchange, and consumption of goods in tribal and peasant societies. Attention is also focussed on problems of economic development in non-Western societies.

215. *COMPARATIVE RELIGIOUS SYSTEMS*. Fall term. Credit three hours. M W F 10. Mr. Opler.

A comparative study of religious systems and thought among primitive and non-Western peoples, dealing with such concepts as animism, magic, ritual, totemism,

shamanism, etc., and with theories of the origin, development, and function of religion.

[216. *FOLKLORE AND CULTURE*. Spring term. Credit three hours. T Th 2-3:30. Mr. Opler. To be offered in 1961-1962 and alternate years.]

217. *ART AND CULTURE*. Fall term. Credit three hours. M W F 2. Mr. Smith.

A comparative study of the arts of primitive peoples, concentrating on the functions of the applied and graphic arts as well as drama, dance, and music in culture. Emphasis is on contemporary native cultures. Discussion of the influence on the traditional arts of contact with civilized peoples.

ARCHAEOLOGY (Fine Arts 801-802.)

[*PRIMITIVE ART* (Fine Arts 204.)]

INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE (Linguistics 201-202).

LINGUISTIC ANALYSIS (Linguistics 203-204).

231. *NATIVE CULTURES OF AFRICA*. Fall term. Credit three hours. T Th S 11. Mr. Roberts.

A survey of representative cultures in Africa. In addition to being a general ethnographic survey, the course deals with those anthropological problems and topical areas to which the African materials are most pertinent and valuable. Particular attention will be given to the topics of social organization, law, government, and acculturation.

233. *NATIVE CULTURES OF NORTH AMERICA*. Fall term. Credit three hours. M W F 11. Mr. Smith.

A survey of representative American Indian cultures and the Eskimo, dealing with the economic, political, and social organization, the religion, and the arts of the more important groups; American Indian origins, prehistoric movements into the New World, subsequent cultural developments, and current problems of Indian administration in the United States.

234. *NATIVE CULTURES OF SOUTH AMERICA*. Spring term. Credit three hours. M W F 11. Mr. Holmberg.

A descriptive and analytical survey of contemporary native cultures of Middle and South America. Attention will be focussed on selected groups of all major culture areas, as well as on the theoretical implications of the Middle and South American research data.

235. *NATIVE CULTURES OF THE AMERICAN SOUTHWEST*. Fall term. Credit three hours. T Th 2-3:30. Messrs. Opler and Roberts.

A survey of the prehistoric and historic (Pueblo, Navaho, Apache, Pima, Popago, etc.) native peoples of the Southwest intended to give an appreciation of the common elements of the area, the cultural differentiations and their causes, and the relations of the Southwest to adjoining culture areas. Attention is given to problems of culture change, acculturation, and the modern setting as well as to the aboriginal cultures.

[236. *CLASSIC CIVILIZATIONS OF MIDDLE AND SOUTH AMERICA*. Spring term. Credit three hours. M W F 11. Mr. Holmberg. To be offered in 1961-1962 and alternate years.]

238. *NATIVE CULTURES OF THE CIRCUMPOLAR AREA*. Spring term. Credit three hours. M W 2-3:30. Mr. Hughes.

A survey of native cultures of the North in the New and Old Worlds, dealing with problems of ethnohistory, social structure and cultural organization, aspects of ethnopsychiatry, and change in the modern world.

240. *NATIVE CULTURES OF INDIA AND SOUTH ASIA*. Spring term. Credit three hours. T Th 2-3:30. Mr. Opler.

A survey of the social, economic, political, and religious institutions of India, Pakistan, Ceylon, Afghanistan, and other countries of South Asia. Both the traditional cultures and the changes which are taking place are considered.

242. *NATIVE CULTURES OF SOUTHEAST ASIA*. Spring term. Credit three hours. M W F 2. Mr. Sharp.

The development and distribution of major culture types in mainland and island Southeast Asia. Discussion of selected groups and of the fate of traditional cultural characteristics following the expansion of Chinese, Indian, Moslem, and Western civilizations in the area.

[243. *NATIVE CULTURES OF CHINA'S INLAND FRONTIERS*. Fall term. Credit three hours. Mr. Skinner. Not offered in 1960-1961.]

245. *NATIVE CULTURES OF THE PACIFIC*. Fall term. Credit three hours. W 3-5. Mr. Sharp.

The extension of Southeast Asian peoples and cultures into Oceania; the development and distribution of major culture types in Australia, Melanesia, Micronesia, and Polynesia; trans-Pacific relations with pre-Columbian America; cultural stability and change under modern conditions.

246. *NATIVE CULTURES OF JAPAN, KOREA, AND NORTHEAST ASIA*. Spring term. Credit three hours. M W F 2. Mr. Smith.

A survey of the traditional cultures or civilizations of Japan, Korea, and the Soviet Far East. A discussion of Japanese national culture including the arts, religion, economy, social organization, and rural-urban contrasts; analysis of Korean peasant communities; discussion of representative tribal people of Inner Asia and Siberia.

[247. *THE CIVILIZATION OF JAPAN*. Fall term. Credit three hours. M W F 2. Mr. Smith. To be offered in 1961-1962 and alternate years.]

251. *CHINESE CULTURE AND SOCIETY—I*. Fall term. Credit three hours. Open to upperclassmen and graduate students. T Th S 10. Mr. Skinner.

An analytical survey of the social structure and non-material culture of pre-Communist rural China. Attention is given to human ecology, family and kinship, enculturation-socialization, religion, value systems and, at the village and market-town levels, economic institutions, social stratification, and power structure.

252. *CHINESE CULTURE AND SOCIETY—II*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 251 or consent of the instructor. T Th S 10. Mr. Skinner.

A systematic analysis of urban social structure, urbanism, and national institutions in traditional and transitional China. Attention is focussed on the "great tradition," social mobility and the national stratification system, and the inter-relations of institutions at levels of the *hsien* city and above. Includes treatment of sociocultural change associated with urbanization, industrialization, and modernization.

[253. *SOCIAL ORGANIZATION IN COMMUNIST CHINA*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 251-252 or consent of instructor. Mr. Skinner. Offered in 1961-1962 and alternate years.]

[254. *COMPARATIVE SOCIAL ORGANIZATION OF COMPLEX SOCIETIES OF EAST ASIA*. Spring term. Credit three hours. Mr. Skinner. Not offered in 1960-1961.]

The following seminars are open only to graduate students or qualified seniors.

275. *SEMINAR: PERSISTENT PROBLEMS IN ANTHROPOLOGY*. Fall term. Credit two hours. T 4-6. Messrs. Roberts, Sharp, and Smith.

276. *SEMINAR: ANTHROPOLOGICAL THEORY*. Spring term. Credit two hours. T 4-6. Mr. Opler.

[277. *SEMINAR: THE CONTENT OF CULTURES*. Fall term. Credit two hours. M 4-6. Mr. Roberts. Offered in 1961-1962 and alternate years.]

278. *SEMINAR: COMMUNICATIONS SYSTEMS*. Spring term. Credit two hours. F 4-6. Mr. Roberts.

279. *SEMINAR: ANTHROPOLOGY AND MEDICINE*. Fall term. Credit two hours. W 4-6. Mr. Hughes.

The study of relationships between social science and medicine. Problems of the role of sickness and its treatment in "primitive" societies; modern medical programs as instances of technological change; social science investigations of medical institutions as aspects of the social system; relationships between sociocultural factors and disease, especially psychiatric disorder.

280. *SEMINAR: COMPARATIVE SYSTEMS OF IDEAS*. Spring term. Credit three hours. Open to graduate students and qualified seniors. W 4-6. Mr. Sharp.

281. *SEMINAR: MIDDLE AND SOUTH AMERICA*. Fall term. Credit to be arranged. W 4-6. Mr. Holmberg.

[283. *SEMINAR: INDIA AND SOUTH ASIA*. Fall term. Credit to be arranged. F 4-6. Mr. Opler. Offered in 1961-1962 and alternate years.]

[285. *SEMINAR: SOUTHEAST ASIAN ANTHROPOLOGY*. Fall term. Credit three hours. W 4-6. Mr. Sharp. Offered in 1961-1962 and alternate years.]

[286. *SEMINAR: THE CHINESE OF SOUTHEAST ASIA*. Spring term. Credit three hours. W 4-6. Mr. Skinner. Not offered in 1960-1961.]

[288. *SEMINAR: COMPARATIVE MODERNIZATION OF CHINA AND JAPAN*. Spring term. Credit two hours. Messrs. Skinner and Smith. Not offered in 1960-1961.]

[289. *SEMINAR: COMPARATIVE CROSS-CULTURAL RESEARCH*. Fall term. Credit two hours. Mr. Skinner. Not offered in 1960-1961.]

291-292. *SEMINAR: FIELD RESEARCH*. Throughout the year. Credit to be arranged. Field Staff.

Research seminars may be conducted in the field in the United States, Canada, Peru, India, Southeast Asia, or Japan for limited numbers of adequately prepared students.

040. *INFORMAL STUDY*. Messrs. Sharp and Skinner.

050. *INFORMAL STUDY*. Messrs. Leighton and Smith.

060. *INFORMAL STUDY*. Messrs. Opler and Roberts.

070. *INFORMAL STUDY*. Messrs. Holmberg and Hughes.

III. SOCIOLOGY

A. METHODS IN SOCIOLOGICAL RESEARCH

302. *METHODS OF RESEARCH: SOCIOLOGY*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 201 or consent of the instructor. T Th 10 and a two-hour laboratory period to be arranged. Mr. Stycos.

A continuation of Sociology and Anthropology 201, with emphasis upon the planning and execution of research in sociology and social psychology. Special attention is given to the design of field surveys, including critical evaluation of recent pub-

lished studies. Methods of observation, interviewing, and field experimentation will be discussed.

[375-376. *SEMINAR IN INTERVIEWING METHODS*. Throughout the year. Credit two hours a term. Open to upperclass majors and graduate students with the consent of the instructor. First term prerequisite to second. T 4-6. Mr. ——. Not offered in 1960-1961.]

377-378. *ANALYSIS OF SURVEY DATA*. Throughout the year. Credit three hours a term. Open to upperclass majors and graduate students with consent of the instructor. Th 4-6. Mrs. Goldsen.

In the first semester, instruction and practice are given in all steps of survey analysis, using materials from current studies conducted in the Department. Treatment of editing, classifying, and coding data. Review and application of simple statistical techniques. Scales, scores, and other composite indexes are developed and used in analysis. Continuous emphasis is given to adequacy of research design and logic of analytical inference. All exercises are written by the students as research reports. The second semester emphasizes the equivalent problems which arise in analyzing qualitative research materials: unstructured interviews, content analysis of documents, life history materials, and the like.

390. *METHODS OF RESEARCH: SYSTEMATIC ANALYSIS*. Spring term. Credit three or four hours. Prerequisites, Sociology 201, 302, and Industrial and Labor Relations 210, or 510, or 311 (preferred), or Psychology 475, or consent of the instructor. W F 2-3:30. Mr. Borgatta.

The operations in defining variables in social science generally reveal their ad hoc nature rather than their scientific validity. Attention is given to the problems of parsimonious and general variables in ordered classes or systems, and the distinction between systematically observed natural phenomena and experimental design in building a parametric science. After a review of statistical notions, techniques covered will include cluster analysis, factor analysis, latent structure analysis, and scale construction. Modern data-handling technology will be implicated.

010. *INFORMAL STUDY*. Messrs. Borgatta and Stycos, Mrs. Goldsen.

B. SOCIAL INSTITUTIONS AND SOCIAL STRUCTURE

401. *STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—I*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or consent of the instructor. T Th S 9. Mr. Williams.

Systematic analysis of the major institutions of kinship, stratification, economic activity, political structure, education, and religion. Special attention is given to values and their interrelations in the modern social order. A survey of the more important types of groups and associations making up a pluralistic nation is included.

402. *STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—II*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 401 or consent of the instructor. T Th S 9. Mr. Williams.

Primary attention is directed to the study of interrelations of institutions, including analysis of the regulation of economic and political systems. Group cooperation and conflict are surveyed. Analysis of important processes of change in institutions, values, and social organization.

403. *THE FAMILY*. Fall term. Credit three hours. M W F 9. Prerequisite, Sociology and Anthropology 101 or consent of the instructor. Mr. Streib.

The family in various cultures but particularly in American society, from the standpoint of its organization and relation to other social institutions. Emphasis is placed upon the family's major social functions—reproduction, maintenance, socialization, and the conferring of status—and upon the cyclical features of the family—courtship, marriage, parenthood, and dissolution.

404. *RELIGION IN WESTERN SOCIETY*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or consent of the instructor. M W 2-3:30. Mr. Streib.

The interrelationship of culture, society, and religion. Religion and social stratification; religion and economic and political institutions; social change and religion. The major emphasis will be upon American society and American religious institutions.

430. *AMERICAN COMMUNITIES*. Spring term. Credit three hours. Open to upperclassmen and graduate students or by consent of the instructor. T Th S 11. Mr. Thompson.

A study of communities as social organizations, emphasizing the patterns of power and influence which are an expression of the underlying social structure; the functional basis of the social structure of the community; the interrelationship among institutions within the community. Attention will be directed especially to the empirical study of urban communities in America.

[441. *SOCIAL STRATIFICATION*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or consent of the instructor. M W F 9. Mr. Delany. Not offered in 1960-1961.]

446. *BUREAUCRACY IN MODERN SOCIETY*. Spring term. Credit three hours. Open to upperclassmen. T Th S 11. Mr. Delany.

The growth and nature of bureaucratic organizations in modern Western societies, especially the United States. Structure and operation of organizations having diverse functions in modern society such as business corporations, trade unions, the military, hospitals, and government agencies. Implications of bureaucratic organizations for the members of the organization, their families, the communities in which they live and, particularly, for conflicts of values within the democratic, individualistic, and humane traditions of American society.

480. *SEMINAR IN SOCIOLOGY OF SCIENCE*. Spring term. Credit three hours. Hours to be arranged. Mr. Kaplan.

484. *SEMINAR IN ORGANIZATIONAL BEHAVIOR*. Spring term. Credit three hours. Open to qualified graduate students only. T 2-3 and Th 2-4. Mr. Delany.

A review of theories, research, and problems in the study of complex organizations with the aim of organizing and clarifying current systematic knowledge in the field.

490. *SEMINAR IN CARIBBEAN SOCIAL INSTITUTIONS*. Spring term. Credit three hours. Hours to be arranged. Mr. Stycos.

020. *INFORMAL STUDY*. Messrs. Williams and Thompson.

C. SOCIAL PROCESSES AND SOCIAL CHANGE

501. *PUBLIC OPINION*. Fall term. Credit three hours. M W F 11. Mrs. Goldsen.

Factors determining the character of public opinion on the basis of relevant social, psychological, and political science knowledge. The nature, development, and control of public opinion in terms of opinion formation and change and the relation of public opinion to social and political action. Special emphasis is given to the techniques of propaganda, the functioning of pressure groups, and the role of the communication media of radio, press, and motion pictures in determining public opinion.

[502. *MASS COMMUNICATION MEDIA*. Spring term. Credit three hours. T Th S 11. Mr. Stycos. Not offered in 1960-1961.]

505. *COLLECTIVE BEHAVIOR AND SOCIAL MOVEMENTS*. Fall term. Credit three hours. Open to upperclassmen. M W F 10. Mr. Delany.

A critical examination of theories of collective behavior and social movements in the light of evidence from research. Main focus is upon the social psychological and sociological factors in various political movements including analysis of both their internal organization and change and their external relationships with the wider society and its institutions.

506. *INTERGROUP RELATIONS: PREJUDICE, DISCRIMINATION, AND CONFLICT*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or consent of the instructor. T Th S 11. Mr. Williams.

An evaluation of relations among ethnic, racial, and religious groups in terms of the social psychology of intergroup hostility and conflict and the position and role of these groups in the larger community. Prejudice and discrimination will be analyzed for their social, psychological, political, and economic causes and effects. Social and political movements based on intolerance and efforts to resolve intergroup conflict will be examined, with special attention to current developments resulting from the desegregation of public schools.

507. *STUDIES IN SOCIOLOGY*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101. Mr. Borgatta.

A limited number of problems in sociology that have received consistent theoretical and research attention are explored. The main channel of scientific development is outlined for each topic, and the current status and prospects from the point of view of systematic theory and research are assessed. Examples of topics are: social and psychological factors in fertility; the prediction of successful marriage; coalitions and power in the three-person groups; and social class determinants of mental disorders.

541. *POLITICAL SOCIOLOGY*. Fall term. Credit three hours. Open to upperclassmen and graduate students or by consent of the instructor. T Th S 11. Mr. Thompson.

Political institutions as sociological phenomena, with emphasis on the empirical study of political behavior; politics as a functional social activity; the nature of power and its exercise in the political process; the group basis of political behavior.

550. *POPULATION PROBLEMS*. Spring term. Credit three hours. T Th S 11. Mr. Stycos.

The practical and scientific significance of population growth and composition. Fertility, migration, and mortality in relation to social and cultural factors and in relation to questions of population policy. National and international data will receive approximately equal emphasis.

575. *SEMINAR IN GROUP RELATIONS*. Fall term. Credit three hours. F 2-4. Mr. Williams.

586. *SEMINAR IN SOCIAL GERONTOLOGY*. Spring term. Credit three hours. Open to upperclass majors with consent of the instructor. T 2-4. Messrs. Streib and Thompson.

030. *INFORMAL STUDY*. Messrs. Streib and Delany.

D. SOCIOLOGICAL THEORY

632. *SOCIAL THEORY*. Spring term. Credit three hours. Open to seniors and graduate students. Prerequisite, Sociology and Anthropology 101-102 or equivalent. Required of all students majoring in Sociology and Anthropology. M 2-4. Mr. Kaplan.

Survey of selected theories and concepts in contemporary sociology reviewed in historical perspective, in relation to the contributions of other social sciences, and in terms of present-day developments in theory and research. Among the topics

are values, social control, human groups, and anomie. Throughout, emphasis will be placed on trends in contemporary social theory.

643. *THEORY OF CULTURE AND SOCIAL ORGANIZATION*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 632 or equivalent. T Th S 11. Mr. Williams.

Analysis of recent conceptual development in theories of cultural and social systems. Special attention will be given to the work of Talcott Parsons and associates, with comparative study of alternative conceptual schemes.

676. *SEMINAR IN THE DEVELOPMENT OF SOCIAL THOUGHT*. Spring term. Credit three hours. Prerequisite, consent of the instructor. T 2-4. Mr. Kaplan.

The study of the work of selected sociologists of the nineteenth and twentieth centuries, including Weber, Durkheim, Simmel, Cooley, W. I. Thomas, Mannheim, and others. The emphasis will be on significant antecedents of contemporary social theory.

[677. *SEMINAR IN FUNCTIONAL ANALYSIS OF SOCIAL STRUCTURES*. Fall term. Credit three hours. Open to upperclassmen and graduate students. Mr. Kaplan. Not offered in 1960-1961.]

[678. *SPECIAL PROBLEMS IN SOCIOLOGICAL THEORY*. Spring term. Credit three hours. Prerequisites, Sociology and Anthropology 632 and 676, or consent of the instructor. Mr. Williams. Not offered in 1960-1961.]

080. *INFORMAL STUDY*. Mr. Kaplan.

IV. SOCIAL PSYCHOLOGY

702. *SOCIAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisites, three hours of psychology and three hours of sociology and anthropology, or consent of the instructor. M W F 9. Mr. Meltzer.

Analysis of the history, concepts, methods, and theories used to describe and conceptualize some recurrent processes in social behavior. The processes of interpersonal influence, conformity to norms and roles, leadership, hostility, and attraction will be given special emphasis. Experimental methods, controlled observation of groups in laboratory settings, and sociometric methods will be critically discussed and exemplified. The work of some modern essayists in the field will be critically discussed.

This course constitutes one half of a full-year sequence in social psychology. The other half, which is listed as Psychology 301, may be counted toward the major in sociology and anthropology. These courses may be taken separately.

THEORIES OF PERSONALITY (Psychology 303).

[722. *THE SOCIAL PSYCHOLOGY OF GROUPS*. Fall term. Credit three hours. Prerequisites, three hours of psychology and three hours of sociology and anthropology, or consent of the instructor. T Th 10 and one additional hour to be arranged. Mr. Meltzer. Offered in 1961-1962 and alternate years.]

724. *EXPERIMENTAL GROUP DYNAMICS*. Fall term. Credit three hours. Prerequisites, a course in statistics, and a course in social or experimental psychology, or consent of the instructor. Primarily for seniors and graduate students. T Th 10. Laboratory, M 3-5. Mr. Meltzer.

An introduction to the advanced literature of the field, and supervised research experience. Students will read and discuss technical reports of experimental studies of social interaction, as well as pertinent theoretical articles. In laboratory, students will replicate classic studies and then will complete an independent project.

775. *PROSEMINAR IN SOCIAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisites, two courses in social psychology and a course in statistics, or consent

of the instructor. For graduate students majoring or minoring in social psychology, and for seniors in the social psychology concentration; others by permission only. Hours to be arranged. Messrs. Lambert and Meltzer.

Intensive analysis of major problems, methods, theories, and empirical findings. The aim is to prepare students for productive thinking and research in social psychology. Attention is given to current developments at Cornell University, with guest lectures by faculty from various departments.

This course constitutes one half of a full-year advanced sequence in social psychology. The other half is listed as Psychology 480. These courses may be taken separately.

776. *SEMINAR IN SOCIAL PSYCHOLOGY*. Spring term. Credit and hours to be arranged. Mr. Lambert.

090. *INFORMAL STUDY*. Messrs. Lambert and Meltzer.

V. HONORS PROGRAM

950. *HONORS SEMINAR*. Spring term. Credit three hours. Prerequisite, acceptance as candidate for Honors. Hours to be arranged. Mr. Lambert and Staff.

951. *HONORS SEMINAR*. Fall term. Credit three hours. Prerequisite, acceptance as candidate for Honors. Hours to be arranged. Mr. Lambert and Staff.

952. *HONORS SEMINAR*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 951. Hours to be arranged. Mr. Lambert and Staff.

SPEECH AND DRAMA

Mr. C. C. Arnold, *Chairman*; Messrs. H. D. Albright, Harry Caplan, Joseph Golden, J. N. Hamblin, G. A. McCalmon, E. C. Nuttall, W. H. Stainton, H. A. Wichelns, J. F. Wilson.

Students may elect a general major, or a major with emphasis on (1) public speaking and rhetoric, (2) speech pathology and phonetics, (3) dramatic art. The following courses must be completed: (1) in the Department, thirty hours; (2) in related subjects, six hours (not taken to meet the common studies requirements of the College) in each of the following groups: (a) Classics, English, literature, modern foreign literatures; (b) economics, government, history, sociology; (c) philosophy, psychology. Of the total of forty-eight hours in the major and related subjects, twenty-seven must be in other than introductory courses. Courses within the Department must include 105, 106, and 333.

Students registered jointly in Arts and Sciences and in Law must complete the following courses: (1) in the Department, twenty-one hours; (2) in related subjects, twelve hours.

Juniors and seniors majoring in the Department may, with the consent of the adviser, take informal study (in Public Speaking, 020; in Speech Pathology and Phonetics, 030; in Dramatic Art, 040).

Students planning to teach speech and drama should secure from the Department office, as early as possible, the schedule of courses approved for provisional certification in speech. For those preparing to teach English, the Department recommends Courses 201, 333, 401, 411, and 421.

*105-106. *INTRODUCTION TO SPEECH AND THEATRE ART*. Throughout the year. Credit three hours a term; first term prerequisite to the second. Primarily for freshmen and sophomores. T Th S 10. First term, Messrs. Nuttall and Arnold. Second term, Mr. Albright.

An introduction to oral communication as a humane study, exploring the limi-

tations and potentialities of speech, particularly in public address and the drama. The first term includes an examination of language, voice, and action as instruments for the effective communication of thought and feeling, with special reference to rhetorical composition. The second term enlarges the scope of the basic material, developing speech and action as essential elements in dramatic communication and introducing such additional considerations as scenic design and space relationships within the playhouse.

Lectures, readings, discussions, and demonstrations. Not a practice course; no experience or previous instruction in speech making or dramatic production required.

[121. *AN INTRODUCTION TO THE THEATRE ARTS*. Not offered in 1960-1961.]

*131. *SPEECH AND VOICE TRAINING*. Either term. Credit two hours. Open to freshmen. Consult the instructor before registering. Fall term, W F 12. Spring term, T Th 10. Mr. Nuttall.

Systematic consideration and application of the principles of conventional articulation and voice production. Especially recommended for students having minor articulatory and vocal deviations from the norms of spoken English.

PUBLIC SPEAKING

201. *PUBLIC SPEAKING*. Either term. Credit three hours. Not open to freshmen. M W F 8, 9, 10, 11, or 12; T Th S 8, 9, 10, 11. Messrs. Wichelns, Arnold, Wilson, and Assistants.

Designed to help the student communicate his ideas and convictions effectively in oral discourse. Study of basic principles of expository and persuasive speaking, with emphasis on finding, evaluating, and organizing materials, and on simplicity and directness in style and delivery. Practice in preparing and delivering speeches of various types on current issues and in chairmanship; study of examples; conferences.

The services of the Speech Clinic are available to those students who need remedial exercises. Students whose native language is not English must obtain special clearance from the Department before registering.

202. *PERSUASIVE SPEAKING*. Either term. Credit three hours. Prerequisite, Speech and Drama 201 or consent of the instructor. Fall term, M W F 9. Spring term, M W F 12 or T Th S 10. Messrs. Wilson and ———.

The speech to convince. Special attention will be given to elementary psychological principles affecting methods of persuasion. Practice in composition and delivery of persuasive speeches for various occasions; lectures, readings, conferences.

205. *DISCUSSION*. Spring term. Credit three hours. Not open to freshmen. M W F 9. Mr. Wilson.

Designed to help the student participate effectively in informal, problem-solving conferences. Practice in round-table, committee, and panel deliberation with study of the applicable principles of investigation, analysis, and oral communication.

213. *ARGUMENT*. Either term. Credit three hours. Prerequisite, Speech and Drama 201 or consent of the instructor. Fall term, M W F 12. Spring term, T Th 11-12:15. Messrs. Wichelns and ———.

Study of the principles of evidence and reasoning as applied in the discussion of public questions; investigation and analysis of issues, methods of proof and of refutation. Practice in construction and delivery of argumentative speeches; study of examples; conferences.

214. *ADVANCED ARGUMENT*. Spring term. Credit three hours. Prerequisite, Speech and Drama 213. M W F 12. Mr. Wichelns.

Advanced study of principles, types, and standards of reasoning on public questions. Practice in forensic and parliamentary debate and in cross-examination.

[221. *FORMS OF PUBLIC ADDRESS*. Not offered in 1960-1961.]

241. *PUBLIC OPINION AND THE METHOD OF ARGUMENT*. Fall term. Credit three hours. Not open to freshmen. M F 2-3:30. Mr. Arnold.

Critical study of the methods of persuasion exemplified in the discussion of contemporary issues. Lectures, readings, and reports on the theory of persuasion, the available grounds for argument and appeal in modern society, and patterns of argument exemplified in the 1960 political campaigns. Some practice in speech writing.

[255. *RHETORIC AND PUBLIC ADDRESS*. Not offered in 1960-1961.]

[281-282. *BRITISH ORATORS*. Not offered in 1960-1961.]

[283-284. *AMERICAN PUBLIC ADDRESS*. Not offered in 1960-1961.]

287-288. *THEORIES OF PUBLIC ADDRESS*. Throughout the year. Credit three hours a term. Primarily for graduates; open to upperclassmen by consent of the instructor. Th 2-4:30. Mr. Wichelns.

An examination of ancient and modern theories on the nature and social function of advocacy and persuasion, the types of public address, and the speaker's problems of preparation, organization, style, and delivery.

290. *THESES AND SPECIAL PROBLEMS IN PUBLIC ADDRESS*. Either term. Credit three hours. Hours to be arranged. Messrs. Arnold, Wichelns, and Wilson.

Open to graduate candidates working on theses and to other graduates prepared for independent study of special topics in rhetoric and public speaking.

The Department calls attention to three prizes in Public Speaking, competition for which will be open in the spring term: The Woodford Prize, for seniors; the Class of 1894 Memorial Prize in Debate, for juniors and seniors; and the Class of 1886 Memorial Prize in Public Speaking, for sophomores and juniors.

SPEECH PATHOLOGY AND PHONETICS

333. *ENGLISH PHONETICS*. Fall term. Credit three hours. Not open to freshmen. T Th 11-12:15. Mr. Nuttall.

Study of English pronunciation, based chiefly on contemporary American usage, with some attention to regional variations. Practice in phonetic analysis and transcription.

[336. *REGIONAL PHONETICS*. Not offered in 1960-1961.]

[337. *HISTORICAL PHONETICS*. Not offered in 1960-1961.]

INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE (Linguistics 201-202).

ACOUSTICAL PHONETICS (Linguistics 211-212).

341. *FUNDAMENTALS OF SPEECH AND HEARING*. Fall term. Credit three hours. M W F 9. Mr. ———.

Physical and physiological bases of oral communication, considered with special attention to the structure and functioning of the speech and hearing mechanisms.

345. *DEVELOPMENT OF SPEECH BEHAVIOR*. Spring term. Credit three hours. T Th 11-12:30. Mr. Nuttall.

Study of theories of speech development from its beginnings in expressive utterance and gesture to the establishment of mature speech habits. Attention will be given to causative factors in the development of both normal and abnormal speech behaviors.

351. *FUNCTIONAL SPEECH DISORDERS*. Fall term. Credit three hours. Prerequisite, Speech and Drama 345 or consent of the instructor. M W F 11. Mr. Nuttall.

Consideration of abnormal speech behaviors with special attention given to disorders of articulation and the voice, and to stuttering. Causes of the disorders will be explored.

352. *ORGANIC SPEECH DISORDERS*. Spring term. Credit three hours. Prerequisite, Speech and Drama 341 or consent of the instructor. T Th S 9. Mr. ———.

Study of abnormal speech behaviors with special attention given to speech problems associated with cleft palate, cerebral palsy, and aphasia. Causes of the disorders will be explored.

353–354. *SPEECH THERAPY: ADVANCED*. Throughout the year. Credit three hours a term. Prerequisite, Speech and Drama 352. Hours to be arranged. Messrs. Nuttall and ———.

Study of the procedures and instruments used in the diagnosis and treatment of speech disorders; observation and practice in the Speech Clinic.

[361. *DISORDERS OF SPEECH RECEPTION*. Not offered in 1960–1961.]

390. *THESES AND SPECIAL PROBLEMS IN SPEECH PATHOLOGY AND PHONETICS*. Either term. Credit three hours. Hours to be arranged. Mr. Nuttall.

Open to graduate candidates working on theses and to other graduates prepared for independent study of special topics in speech pathology and phonetics.

SPEECH CLINIC. No credit. For students working under the direction of the Department and others by special permission. Mr. Nuttall, Mr. ———, and Assistants.

DRAMATIC ART

401. *DRAMATIC PRODUCTION: DIRECTING*. Fall term. Credit three hours. Not open to freshmen. T Th 10. Laboratory, M 2–4. Mr. McCalmon.

The theory and practice of stage direction; fundamentals of theatrical mounting; survey of practical phases of production. Lectures, readings, reports, and laboratory exercises.

405. *DRAMATIC PRODUCTION: ADVANCED DIRECTING*. Spring term. Credit three hours. Open to upperclassmen by consent of the instructor. Hours to be arranged. Mr. Albright.

Projects in directing, correlated with public presentation. Readings, reports, and laboratory exercises in various phases of production, with special attention to directorial controls in the several production modes.

411. *ORAL INTERPRETATION OF LITERATURE*. Fall term. Credit three hours. Not open to freshmen. M W F 9. Mr. Golden.

An introductory course intended to help the student communicate accurately and expressively in reading aloud. Study of principles and criteria of good reading; analysis and delivery of selected materials from prose and poetry; conferences; drill.

412. *ADVANCED ORAL INTERPRETATION OF LITERATURE*. Spring term. Credit three hours. Hours to be arranged. Admission by consent of the instructor only. Mr. Golden.

Advanced study of principles and practice in the oral reading of prose and poetry of varying difficulty and range.

421. *DRAMATIC INTERPRETATION*. Fall term. Credit three hours. Not open to freshmen. W F 11. Laboratory, M 2–4. Mr. Albright.

An introductory course in acting; analysis and performance of varied types of dramatic prose and poetry; study of speech and action as adapted to the stage, with

special attention to problems of characterization; reports, individual exercises, and group rehearsal.

425. *ADVANCED DRAMATIC INTERPRETATION*. Spring term. Credit three hours. For graduates and, by consent of the instructor, upperclassmen majoring in the Department. W 2-4:30. Mr. Albright.

Varied projects in acting and group rehearsal, correlated with public presentations; individual drills, pantomimes, and reading exercises.

431. *DRAMATIC PRODUCTION: STAGECRAFT*. Fall term. Credit three hours. Not open to freshmen. T Th 12. Laboratory, T 2-4:30. Mr. Hamblin.

The history and practice of stage production: limitations of production; theatre structure and equipment; scene construction and painting; elements of lighting. Lectures, demonstrations, reports.

433-434. *THEATRE PRACTICE*. Throughout the year; may be entered either term. Credit two hours a term. Open, by consent of the instructor, to upperclassmen who have taken or who are taking Speech and Drama 401 or 421. Two terms normally required for departmental major with emphasis on dramatic art. Hours to be arranged. Messrs. Hamblin and Albright, and the Staff of the University Theatre.

Projects in the productions of the University Theatre.

437. *DRAMATIC PRODUCTION: STAGE LIGHTING AND DESIGN*. Spring term. Credit three hours. Prerequisite, Speech and Drama 431 or consent of the instructor. T Th 12. Laboratory, T 2-4:30. Mr. Hamblin.

Light and color applied to theatrical production: design procedures; the sketch; the model; design of properties, lighting, and costumes. A consideration of the history, theory, and practice of lighting and design in the pictorial elements of dramatic production. Lectures, demonstrations, and special projects.

439-440. *THEATRE PRACTICE*. Throughout the year; may be entered either term. For graduate majors in dramatic art: one term for M.A. candidates, two terms for Ph.D. candidates. Hours and credits as arranged. Messrs. Hamblin and Albright, and Staff.

451. *HISTORY OF THE THEATRE*. Fall term. Credit three hours. Open to upperclassmen. M W F 10. Mr. Stainton.

The development of the theatre, with special attention to the period theatres and theatrical styles which influence modern stage presentation.

455. *AMERICAN DRAMA AND THEATRE*. Spring term. Credit three hours. Open to upperclassmen. M W F 10. Mr. Golden.

A study of the American theatre and of representative American plays from the Colonial period to the present, with emphasis on the drama as an experience of the national life and culture.

461-462. *PLAYWRITING*. Throughout the year. Credit three hours a term. F 2-4:30. Fall term, Mr. McCalmon. Spring term, Mr. Golden.

A consideration of the art and craft of writing for the theatre, with practice through the composition and testing of one-act plays.

463-464. *PLAYWRITING*. Throughout the year. Credit three hours a term. Primarily for graduates. F 2-4:30. Fall term, Mr. McCalmon. Spring term, Mr. Golden.

475. *THEORIES OF DRAMATIC PRODUCTION*. Fall term. Credit three hours. Primarily for graduates; open to seniors by consent of the instructor. W 2-4:30. Mr. Albright.

The chief theories of dramatic production in relation to aesthetic principles.

481. *THE MOTION PICTURE: A SURVEY*. Fall term. Credit three hours. T Th 11. Laboratory, T 2-4:30. Mr. Stainton.

An introduction to the history and art of the film: its characteristic problems, devices, and development. Representative motion pictures, from "The Great Train Robbery" and Griffith's "The Birth of a Nation" or "Intolerance" to contemporary films of significance, will be studied. Students are urged to attend the film programs of the University Theatre.

[482. *THE MOTION PICTURE: FILMS OF FACT*. Not offered in 1960-1961.]

[485. *MODERN THEORIES OF STAGE PRESENTATION*. Not offered in 1960-1961.]

490. *THESES AND SPECIAL PROBLEMS IN DRAMA AND THE THEATRE*. Either term. Credit three hours. Hours to be arranged. Messrs. Stainon, Albright, McCalmon, and Golden.

Open to graduate candidates working on theses, and to other graduates prepared for independent study of special topics in drama and the theatre.

The Department calls the attention of students interested in Dramatic Art to the following courses: those listed under the fine arts; English 340, 369, 420, 470, 662; Literature 301-302; History of Costume (in the College of Home Economics). Additional opportunities for training, under the supervision of members of the Department, are available in the several divisions of the Cornell University Theatre.

Three prizes are offered under the auspices of the Department: the Heermans Prize for One-act Plays on an American Theme (open to undergraduates), the Cornell Dramatic Club Prize for One-act Plays (open to graduates and undergraduates with no restriction as to theme), the Cornell Dramatic Club First President's Prize for significant contributions to the theatre program.

The Drummond Awards were established, in honor of the late Professor A. M. Drummond, to acknowledge, each year, outstanding achievements by undergraduate members of the Cornell Dramatic Club and other undergraduate participants in the University Theatre program.

HONORS PROGRAM

501-502. *INDEPENDENT STUDY, HONORS*. Throughout the year. Credit three hours a term. Prerequisite, acceptance as a candidate for Honors. Hours to be arranged. Members of the Department.

503. *HONORS RESEARCH*. Either term. Credit three hours. Prerequisite, senior standing as a candidate for Honors. Hours to be arranged. Members of the Department.

[504. *HONORS SEMINAR*. Offered in alternate years. Not offered in 1960-1961.]

ZOOLOGY

Mr. W. A. Wimsatt, *Chairman*; Messrs. H. B. Adelmann, J. M. Anderson, L. C. Cole, P. W. Gilbert, S. L. Leonard, H. A. Schneiderman, M. Singer, J. R. Vallentyne.

For a major in zoology there must be completed: (1) Zoology 101-102, or 103-104, and twenty-four other hours selected from the following: Zoology 211-212, 224, 301, 302, 304, 401-402, 404, 451, 452, 454, 476 (two hours only), 491, 496, 498, 515-516, Conservation 8, Entomology 151 or 152, and Plant Breeding (Genetics) 101; and (2) fifteen hours in related fields, selected from courses in bacteriology, biochemistry, botany, chemistry, conservation, entomology, geology, mathematics, physics, human physiology, or plant breeding.

Introductory Zoology (Zoology 101-102), or General Zoology (Zoology 103-104), or the equivalent, is prerequisite to all courses in the Department and should be taken

in the freshman year if possible. For students planning to major in zoology a year of calculus is recommended.

Honors candidates must take at least nine hours of advanced and intensive Honors work (Zoology 050) under the supervision of an Honors adviser; of these nine hours not more than three may be counted toward the completion of the normal course requirements for a major in zoology. During their final term Honors candidates will be required either to submit a creditable thesis or to pass a comprehensive examination. Prerequisites for admission to candidacy for Honors are a cumulative average grade of 80 in all studies and permission of the Honors adviser. Application for admission to Honors work should be made to Mr. Schneiderman, preferably early in the junior year, and if possible three hours of Honors work should be scheduled for the second term of the junior year.

Provision is also made for a limited number of students who are not Honors candidates to undertake informal study (Zoology 040), which, however, may not be counted towards the completion of course requirements for a major in zoology.

***101-102. INTRODUCTORY ZOOLOGY.** Throughout the year. Credit three hours a term. If taken after Biology 1, credit two hours a term. Intended for students in Arts and Sciences. Zoology 101 prerequisite to Zoology 102. Lectures, T Th 9 or 12, Stimson G-25. Laboratory, M T W Th or F 2-4:20, or W 8-10:20, or F 10-12:20, or S 9-11:20, Stimson 102, 104, and 116. Regularly scheduled examinations will be held in the evening, twice each term. Mr. Cole and Assistants.

An introduction to the fields of zoological study, designed both to provide a background for more specialized courses in zoology and to acquaint students in other fields with the fundamental facts about animal life. The principal divisions of the animal kingdom are surveyed with respect to similarities and differences in structure, function, behavior, and evolutionary history. The importance of other animals to man is emphasized. Both in the laboratory work and in lectures the student is introduced to representative types of animals and to the techniques by which man has acquired biological knowledge.

***103-104. GENERAL ZOOLOGY.** Throughout the year. Credit three hours a term. If taken after Biology 1, credit two hours a term. Intended for students in agriculture and home economics. Zoology 103 normally prerequisite to Zoology 104. Lectures, T Th 8. Laboratory, M T W Th or F 2-4:20; M T 10-12:20; or S 8-10:20, 9-11:20, 10:30-1. Mr. Leonard and Assistants.

A survey of the various branches of the zoological sciences to serve as a background for advanced work in the study of animals. The principles of zoology will be illustrated by the study of representative animals with emphasis on those of economic importance to agriculture and to man. Emphasis will be placed on the biology of the vertebrates including the structural, functional, developmental, and genetic aspects.

201. THE NATURE OF MAN: STRUCTURE AND DEVELOPMENT. Fall term. Credit three hours. Not open to freshmen. Prerequisite, a laboratory science, preferably zoology or biology. Lectures, T Th 10; recitations, T 8, 9, 11, W 8, 9, 10, 11, Th 8, 9, 11 or F 8, 9, 10, 11. Mr. Singer and Assistants.

The aim is to give the student an understanding of the structure, function, and development of the human body.

Zoology 201 is one of three interdepartmental courses dealing with the general topic of the nature of man from the perspectives of the biological and behavioral sciences. The other courses in the group are Child Development 115 and Sociology-Anthropology 204. The courses may be taken singly or in any order.

211-212. COMPARATIVE ANATOMY OF VERTEBRATES. Throughout the year. Credit three hours a term. Prerequisite, Zoology 101-102, or 103-104, or the equivalent. In these prerequisite courses a student must have earned a grade of at least 75.

Zoology 211 prerequisite to Zoology 212. Lecture, M 8 or 9. Laboratory, M F or T Th 2-4:30; W F or T Th 8-10:30; or W 2-4:30 and S 8-10:30. Mr. Gilbert and Assistants.

A thorough study and dissection of representative vertebrate types, including fish, amphibian, reptile, bird, and mammal, together with demonstrations on species other than the types dissected. Intended to give students an evolutionary background for the study and appreciation of the structure of higher vertebrates, including man.

[222. *PHYSICAL ANTHROPOLOGY AND HUMAN EVOLUTION*. Spring term. Credit three hours. Lectures, M W F 12. Not offered in 1960-1961.]

224. *COMPARATIVE NEUROLOGY*. Spring term. Credit three hours. Permission of the instructor required. Lectures, T Th 12. Laboratory, M or W 2-4:30. Mr. Singer and Assistant.

A comparative study of the vertebrate nervous system with emphasis upon the primate. Studies include dissections of the brain and the identification of nuclei and tracts in sections of the brain and spinal cord. Functional aspects of anatomical relations are stressed.

299. *HUMAN ANATOMY*. Hours and credit to be arranged. Open to a limited number of graduate students only. Permission of instructor required for registration. Mr. Singer.

Detailed dissection of the human body with some emphasis upon function.

301. *HISTOLOGY: THE BIOLOGY AND DEVELOPMENT OF THE TISSUES*. Fall term. Credit four hours. Prerequisites, Zoology 101-102, or 103-104, and 211-212. Lectures, T Th 11. Laboratory, T Th 8-10:30 or 2-4:30. Mr. Wimsatt and Assistants.

A survey of the structure, functions, and development of the tissues. The treatment is general, designed to provide students of biology with a basis for the understanding of normal and abnormal structure of the vertebrates. Each student will make for his own use a series of typical microscopic preparations.

302. *SPECIAL HISTOLOGY: THE BIOLOGY OF THE ORGANS*. Spring term. Credit four hours. Prerequisite, Zoology 301. Enrollment limited to 25 students. Lectures, W F 9. Laboratory, W F 2-4:30. Mr. Wimsatt and Assistants.

A continuation of Zoology 301. Zoology 301 and 302 together give the fundamental facts of the microscopic structure and function of the body. Opportunity to gain knowledge of technique in the fixing, embedding, and sectioning of selected organs is also offered.

304. *VERTEBRATE EMBRYOLOGY*. Spring term. Credit five hours. Prerequisites, Zoology 101-102, or 103-104, and 211-212. Zoology 301 is also normally a prerequisite, and permission to omit it will be granted only in exceptional cases. Lectures, T Th 11, S 10. Laboratory, T Th 8-10:30 or 2-4:30. Mr. Adelmann and Assistants.

An introduction to general vertebrate embryology designed to provide a basis for the appreciation of biological problems. The material is treated comparatively with particular emphasis on the development of the amphibian, the bird, and the mammal. A few invertebrate forms are used where desirable for illustration.

[401-402. *ECOLOGY AND PHYSIOLOGY OF THE INVERTEBRATES*. Throughout the year. Credit three hours a term. Prerequisite, one year of general biology or introductory zoology. Organic chemistry and some college mathematics are desirable. Lectures, M W 11. Laboratory, W 2-4:30. Mr. Cole. Not offered in 1960-1961.]

404. *GENERAL ANIMAL ECOLOGY*. Spring term. Credit three hours. Prerequisites, Zoology 101-102 or 103-104, or their equivalent, and consent of the instructor. Lectures, W F 10. A total of eight laboratory and field periods, S 8-1. Mr. Valleryne.

An introduction to the local and world-wide distribution of animals with reference to conditions of existence; effects of environmental factors on animals; adaptations to special habitats; modification of environment by animals; principles of population growth, composition, and density control. The adaptations of local animals to particular habitats will be studied in the field and laboratory.

451. *COMPARATIVE PHYSIOLOGY*. Fall term. Credit four hours. Prerequisites, one year of biology or zoology and college courses in chemistry. Organic chemistry is also desirable. Lectures, M W F 9. Laboratory, M T W Th F 1:40-4:50, or S 8-11:10. Mr. Schneiderman and Assistants.

The principal physiological functions of both vertebrates and invertebrates, including muscle contraction, nerve action, respiration, metabolism, digestion, circulation, excretion, endocrine action, and physiological regulation.

451A. *COMPARATIVE PHYSIOLOGY LECTURES*. Fall term. Credit three hours. Prerequisites, one year of biology or zoology, and college courses in chemistry. Open only to students who are *not* majoring in zoology. Lectures, M W F 9. Mr. Schneiderman.

The lecture part of Zoology 451.

452. *GENERAL AND CELLULAR PHYSIOLOGY*. Spring term. Credit four hours. Prerequisites, animal or plant physiology, organic chemistry, physics, and consent of the instructor. Biochemistry and histology, genetics or cytology are also desirable. Enrollment is limited. Lectures, M W 12. Seminar and laboratory, T W or T Th 1:40-5. Mr. Schneiderman.

An introduction to basic problems and methods of cellular physiology including physicochemical properties of protoplasm, function of cell organelles, role of nucleic acids, virus reproduction, permeability and active transport, growth, respiration, metabolism, and effects of ionizing radiation. The laboratory is designed to familiarize the student with basic techniques currently employed in physiological investigations, notably manometric and spectrophotometric methods, radioactive tracer technique, isolation of intracellular components, identification of enzyme systems, use of ultraviolet and x-irradiation, tissue culture, microsurgery, immunological methods.

454. *GENERAL AND CELLULAR PHYSIOLOGY LECTURES*. Spring term. Credit three hours. Prerequisite, Organic Chemistry. Zoology 451 or Zoology 301 or Plant Physiology is also desirable. This course consists of the lecture part of Zoology 452. Lecture, M W 12. Mr. Schneiderman.

476. *EXPERIMENTAL ENDOCRINOLOGY*. Spring term. Credit two or three hours. Prerequisites, a year of zoology, organic chemistry, physiology, and consent of the instructor. Primarily for graduate students; open to undergraduates for two credits. Lectures, M F 11. Laboratory, M 2-4:30. Mr. Leonard.

Lectures on anatomy, physiology of the vertebrate endocrine glands, glandular interrelationships; chemical and physiological properties of hormones, assay methods. Laboratory, small-animal surgery and microtechnique for the endocrines, illustrative experiments on the effects of hormones.

491. *EVOLUTIONARY ZOOLOGY*. Fall term. Credit three hours. Prerequisites, Zoology 101-102, or 103-104, and one year of college chemistry. M W F 10. Mr. Valleryne.

An integrating course for students interested in the principles and mechanisms of the evolutionary process. Covering the origin of living matter, Darwin on "The Origin of Species," the gene concept, and the genetic basis of natural selection.

[496. *BIOGEOCHEMISTRY*. Spring term. Credit two hours. Prerequisites, one year of college work in a biological science, organic chemistry, and one course in geology. Ecology and biochemistry are desirable. T Th 9. Mr. Valleryne. Not offered in 1960-1961.]

[498. *LABORATORY IN BIOGEOCHEMISTRY*. Spring term. Credit one hour. Open to a limited number of students who are taking Zoology 496 concurrently. M 2-4:30. Mr. Vallentyne. Not offered in 1960-1961.]

515-516. *INVERTEBRATE ZOOLOGY*. Throughout the year. Credit three hours a term. Prerequisites, Zoology 101-102 or 103-104, or equivalent, and consent of the instructor. Zoology 515 prerequisite to Zoology 516. Two laboratory periods a week, W and F 2-5; lecture once a week during laboratory period. Mr. Anderson.

Lectures on selected topics in the development, structure, function, and interrelations of invertebrate animals; laboratory work on related subjects, utilizing living specimens wherever possible. Particular attention is devoted to significant animal groups of uncertain taxonomic position.

040. *INFORMAL STUDY*. Ordinarily limited to seniors only. Credit and hours to be arranged. Problems may be undertaken in any phase of zoology, but the consent of the instructor concerned is a prerequisite.

050. *HONORS WORK IN ZOOLOGY*. Either term. Credit and hours to be arranged. Prerequisite, admission to candidacy for Honors in zoology. Individual advanced work under the guidance of an Honors adviser, designed to increase the knowledge and experience of the candidate with the subject matter and the methods of research in some important phase of zoology.

SEMINAR IN ZOOLOGY. Fall and spring terms. For graduate students and Honors students in zoology, but open to all who are interested. W 4:30. Stimson G-1.

Reports and discussion of current research in zoology.

INTERDEPARTMENTAL COURSE

300. *BRAIN MECHANISMS AND MODELS*. Throughout the year. Credit three hours a term. Prerequisites, elementary calculus, graduate or advanced undergraduate standing, and consent of the instructors. Hours to be arranged. Messrs. Hochberg, Kac, MacLeod, Rosenblatt, Singer, and ———; co-ordinator R. B. MacLeod, Department of Psychology.

This is an interdisciplinary course designed as an orientation in the theory of brain functioning and brainlike systems. It will stress the biological, mathematical, and psychological assumptions and methodology of brain-model analysis, the relationship of such models to the brain as a biophysical and psychological system, and the use of computers and electronic analogs in the study of cognitive processes.

ADDITIONAL COURSES IN BIOLOGICAL SCIENCE

These courses may be counted in the ninety Arts hours required for the A.B. degree.

**GENERAL BIOLOGY* (Biology 1-2, College of Agriculture). Throughout the year. Credit three hours a term. The course may be entered only in the fall term, unless special permission to register is obtained from the instructor. Not open to students who have had both Zoology 101-102 and Botany 1-2. If Biology 1-2 is taken after Zoology 101-102 or Botany 1-2, credit two hours a term. Lectures: M W 8 or 11. Laboratory: M T W Th or F 2-4:30, or T F 10-12:30, or S 9-11:30. Mr. Keeton and Assistants.

The course is designed to acquaint students majoring within or outside the animal and plant sciences with the established principles of biology, and with the body of research that led to the formulation of these principles. Specifically, the course deals with the organization, integration, and maintenance of living organisms, and with their reproduction, heredity, behavior and interactions. Emphasis is placed on an understanding of each topic in the light of modern evolutionary theory.

ELEMENTARY TAXONOMY AND NATURAL HISTORY OF VERTEBRATES (Conservation 7-8, College of Agriculture). Throughout the year. Credit three hours a term. Prerequisites, Zoology 101-102, or 103-104, or Biology 1. Lecture, M 8. Laboratory, M W or T Th 2-4:30. Messrs. Hamilton and Raney.

Lectures on fishes, amphibia, reptiles, birds, and mammals, dealing with the principles of classification and nomenclature, characteristics, relationships, and economics of these groups. Laboratory practice in the identification of North American species. Field studies of the local fauna during the fall and spring.

GENERAL ORNITHOLOGY (Conservation 9, College of Agriculture). Spring term. Credit three hours. Open to all students. Lecture, M W 11. Field work and laboratory, W or Th 2-4:30. Mr. Sibley and Assistants.

Introduction to the biology of birds; their structure, classification, adaptations for flight, migration, distribution, behavior, ecology, and evolution. Field and laboratory work on identification of local species. Field studies include one all-day field trips.

INTRODUCTORY ENTOMOLOGY (Entomology 10, College of Agriculture). Either term. Credit three hours. Open to all students. Lectures: fall term, W F 11; spring term, T Th 9. Laboratories: fall term, W Th F 2-4:30; spring term, M T W Th F 2-4:30. Mr. Watkins and Assistants.

A survey of the structure, biology, and classification of insects; types of insect control; and the major groups of insecticides, their formulation and application. Laboratory exercises on the anatomy and biology of insects, with practice in the identification of representative forms including many of the commoner species of economic importance.

COURSES IN OTHER DIVISIONS

Courses of interest to students in the College of Arts and Sciences are offered by the Departments of Military Science and Tactics, Air Science, Naval Science, Physical Education, and Clinical and Preventive Medicine and are described in the *Announcement of the Independent Divisions and Departments*. Courses in other colleges and schools are described in their respective Announcements.

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