

CORNELL UNIVERSITY ANNOUNCEMENTS

ARTS AND SCIENCES

1961-1962

COLLEGE OF ARTS AND SCIENCES

ACADEMIC CALENDAR

1961-1962

Sept. 16	S	Freshman Orientation
Sept. 18	M	Registration, new students
Sept. 19	T	Registration, old students
Sept. 20	W	Instruction begins, 1 p.m.
Nov. 8	W	Midterm grades due
Nov. 22	W	Thanksgiving recess: Instruction suspended, 12:50 p.m.
Nov. 27	M	Instruction resumed, 8 a.m.
Dec. 23	S	Christmas recess: Instruction suspended, 12:50 p.m.
Jan. 8	M	Instruction resumed, 8 a.m.
Jan. 20	S	First-term instruction ends
Jan. 22	M	Second-term registration, old students
Jan. 23	T	Examinations begin
Jan. 31	W	Examinations end
Feb. 1-2, Th-F		Midyear recess
Feb. 3	S	Registration, new students
Feb. 5	M	Second-term instruction begins
Mar. 24	S	Midterm grades due
Mar. 24	S	Spring recess: Instruction suspended, 12:50 p.m.
Apr. 2	M	Instruction resumed, 8 a.m.
May 26	S	Instruction ends
May 28	M	Examinations begin
June 5	T	Examinations end
June 11	M	Commencement Day

1962-1963

(Tentative)

Sept. 15	S
Sept. 17	M
Sept. 18	T
Sept. 19	W
Nov. 7	W
Nov. 21	W
Nov. 26	M
Dec. 22	S
Jan. 7	M
Jan. 19	S
Jan. 21	M
Jan. 22	T
Jan. 30	W
Jan. 31-Feb. 1,	Th-F
Feb. 2	S
Feb. 4	M
Mar. 23	S
Mar. 23	S
Apr. 1	M
May 25	S
May 27	M
June 4	T
June 10	M

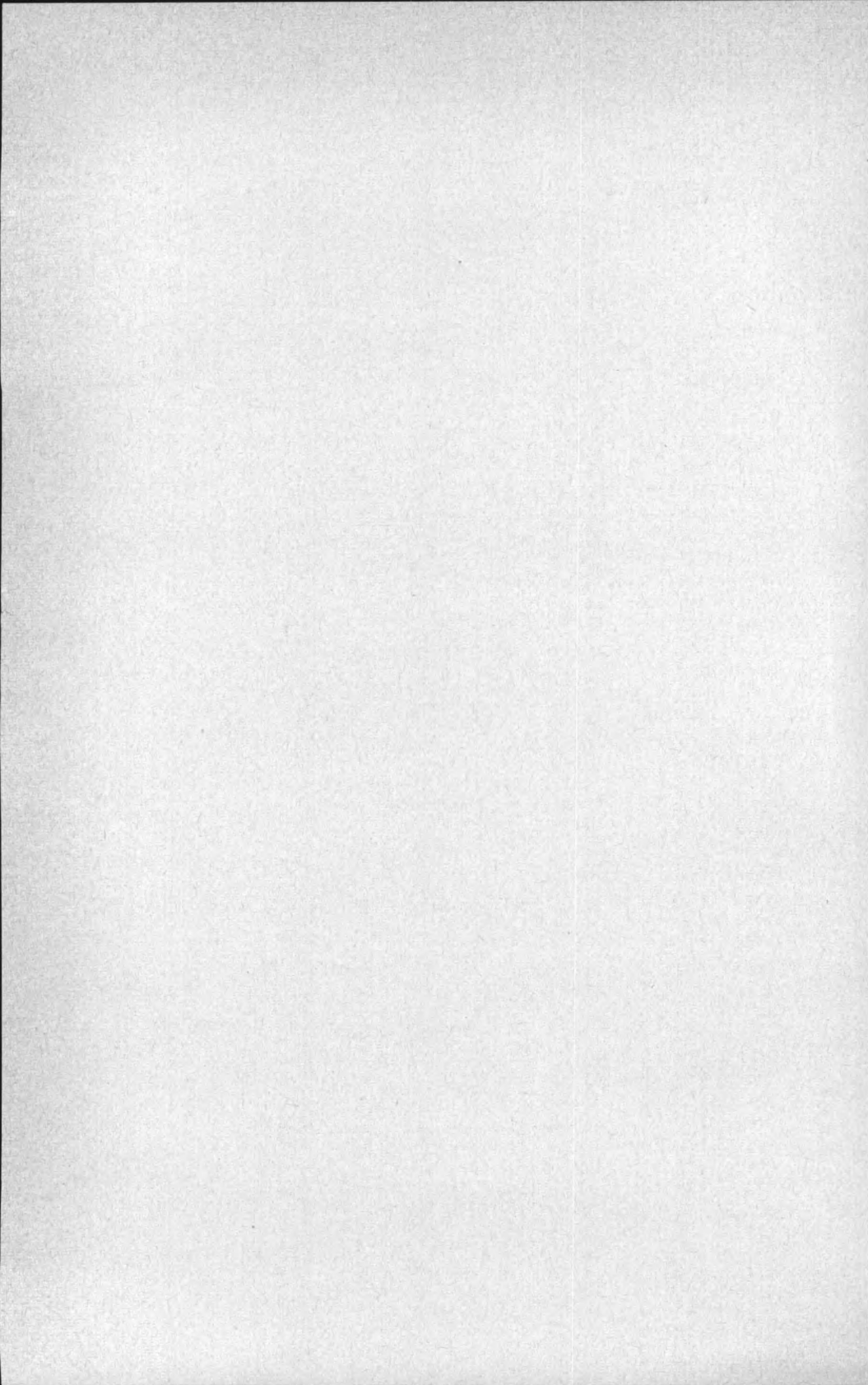
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Volume 52. Number 21. April 3, 1961

Published twenty times a year, in each month except February and November, by Cornell University at Edmund Ezra Day Hall, 18 East Avenue, Ithaca, New York. Second-class postage paid at Ithaca, New York.



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 BERNHARD WUNDERLICH, Ph.D., Assistant Professor of Chemistry
 MARTIE WING YOUNG, M.A., Instructor in Fine Arts
 ROBERT RAMON ZIMMERMANN, Ph.D., Assistant Professor of Psychology
 MALVIN RALPH ZIRKER, JR., M.A., Instructor in English

[This listing of the faculty of the College of Arts and Sciences does not necessarily include all appointments or resignations for 1961-1962.]

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. 16). 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 December or 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, Day Hall, Ithaca. Application forms may be obtained from the Director of Admissions, Day Hall, and all communications concerning admissions should be addressed there.

ADVANCED PLACEMENT

Freshmen may receive advanced placement in English or foreign language by demonstrating competence of a high order on the appropriate achievement test or advanced placement examination of the College Entrance Examination Board. Both advanced placement and credit toward the degree of Bachelor of Arts may be earned in certain other subjects by attaining high marks on departmentally administered examinations at entrance or at the end of the first term of residence (botany, chemistry, European history, mathematics, music, and zoology), or on the College Board Advanced Placement examination (American history, biology, chemistry, Latin, and physics). Advanced standing credit may be used to satisfy corresponding requirements of the Common Studies Program. More detailed information about the possibilities and procedures of advanced placement is contained in *Advanced Placement for Freshmen*, available from the Director of Admissions, Day Hall, or from the Secretary of the College of Arts and Sciences, Goldwin Smith Hall.

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 1961-1962, registration for the fall term will be held in the period April 26 to May 6, 1961, and registration for the spring term will be held in the period November 13 to November 22, 1961.

* Recent changes in the health requirements since publication of *General Information* (July, 1960) are (1) a student who has been absent from the University for more than a year and wishes to re-enter should write the Gannett Medical Clinic concerning the possible need for once more fulfilling the smallpox immunization and the chest X-ray requirements at his own expense; and (2) the student must bear the cost of tetanus toxoid booster doses if they are obtained at the Gannett Medical Clinic.

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" (see below).

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, 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
Biology 1-2
Botany 1-2
Burmese 101, 102

Chemistry 101-102, 105-106, 113-114,
201
Chinese 101, 102, 103, 201, 202
Economics 103-104

English 111-112, 113-114, 211	Music 101-102, 103-104, 105-106, 110, 112, 201-202, 401-402, 403-404, 405-406, 407-408, 409-410, 411-412
Fine Arts 101-102, 104	Philosophy 101, 102, 110
French 101, 102, 191, 201, 203, 204, 301-302	Physics 101-102, 201-202, 207-208
Geology 101-102, 105, 108, 111, 115	Psychology 101, 102, 106, 107, 112
German 101, 102, 191, 201-202, 203, 204, 301-302, 303-304	Russian 101, 102, 191, 201, 202, 203, 204
Government 101, 104	Sociology and Anthropology 101, 102, 111, 112, 116
Greek 101, 103, 201, 203	Spanish 101, 102, 191, 201, 203, 204, 301-302, 303-304
Hebrew 101-102	Speech and Drama 105-106, 131, 421
Hindi 101, 102	Thai 101, 102
History 103-104, 105-106, 107-108	Vietnamese 101, 102
Indonesian 101, 102	Zoology 101-102
Italian 101, 102, 191, 203, 204, 301-302	
Latin 105-106, 107-108, 109, 111, 112	
Japanese 101, 102	
Mathematics 121-122, 133, 161, 162, 182, 191, 192	

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 or 113-114. The courses 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 112. 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 1 or

April 4 of the 1961-1962 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 only by repeating the examination after an approved program of preparation.

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 202, 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, or 101-114
 Philosophy 101-102, or 221, 325

2. NATURAL SCIENCE:

Astronomy 101-102
 Biology 1-2
 Botany 1-2
 Chemistry 101-102 (or the equivalent)
 Geology 101-102
 Physics 103-104, 201-202 (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 one of the subjects selected under B from Groups 1-3; or by completing a second introductory course from Groups 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
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. Summer Session attendance may not be used to reduce the minimum residence requirement of the College (see "Requirements for Graduation," (p. 17).

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 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. 15.) 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 reg-

istered 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. A student in good standing who leaves his degree in abeyance should not expect a request for reinstatement to be considered after five years.

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. Underclass courses in military science, air science, and physical education may not be counted in the one hundred and twenty hours. Advanced courses in the Army or Air ROTC programs may be counted (to the extent of twelve hours) in the thirty hours allowed outside the College. In the Naval ROTC program courses through the junior year may be counted in the thirty hours allowed outside 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.13.

4. Completion of the work in physical education as prescribed by the University faculty.

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 rep-

resented 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 upper-class 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 REQUIREMENT IN PHYSICAL EDUCATION

All physically qualified students who are candidates for a baccalaureate degree are required to take physical education for three hours each week during the first four terms of residence. Material describing the course offerings will be made available to entering students by the Department of Physical Education.

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, 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 Dean of Students. An application form for the Residential Halls for undergraduate women will be sent with the notice of acceptance from the Office of Admissions, 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 ELISABETH REAMER CARSON SCHOLARSHIP ENDOWMENT was established by James H. Carson and Elisabeth Reamer Carson in 1958. Elisabeth Reamer Carson graduated in 1927. The scholarship is open to any student in the College. Annual award may vary from \$400 to \$1250. 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 1961-1962. 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, 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 art, 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 1961-1962.]

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 qual-

ified seniors with consent of instructor. W 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.

ASTRONOMY

Mr. T. GOLD, *Chairman*; Messrs. J. P. COX, E. E. SALPETER, 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 sidereal 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 1961-1962.]

128. *NAVIGATION (CELESTIAL) AND NAUTICAL ASTRONOMY II.* Spring term. Credit three hours. M W F 11. Mr. SHAW.

Celestial navigation. Theory of position determination on sea and in air. Air and nautical almanacs. Practice with marine, standard bubble, and automatic sextants. Chart work. Electronic navigation including radar, loran, and specialized techniques.

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 1961-1962.]

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.

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 and Mr. SALTETER.

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

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 extra-galactic nebulae, evolution of stars and galaxies.

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.

MAGNETOHYDRODYNAMICAL PROCESSES IN THE SOLAR SYSTEM (Electrical Engineering, 4581). Credit two hours. Fall term. Open to graduate students with the consent of the instructor. Solar physics, cosmic ray variations, theories of aurorae, magnetic storms, radiation belts. Mr. GOLD.

OBSERVATIONAL ASTRONOMY

[461. **ASTRONOMICAL SPECTROSCOPY.** Fall term. Credit three hours. Prerequisite, consent of the instructor. Mr. SHAW. Not offered in 1961-1962.]

[464. **ASTROMETRY.** Spring term. Credit three hours. Prerequisite, consent of the instructor. Mr. SHAW. Not offered in 1961-1962.]

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

Basic theory and practice in the determination of latitude, longitude, time, and the azimuth of a line. Practice with the surveyor's transit and various forms of precision theodolites.

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.

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. **INTRODUCTORY 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; S 8-10:30; or S 9-11:30. Mr. BANKS and Assistants.

The course is designed to give general students an understanding of the growth and

evolution of plants and their role in nature. It provides the basic knowledge necessary for those who intend to specialize in some aspect of plant science.

Botany 1 is devoted to a study of growth in the flowering plants, with emphasis placed on structure, function, and reproduction.

Botany 2 is concerned with the phyla of plants, with representative life cycles and with a consideration of the importance of various groups in the study of biological principles. The study of the evolution of the groups of plants is based on genetical and environmental mechanisms that control it. The classification and ecology of plants is introduced in several laboratory periods spent in the field.

The scientific process, the growth of botanical knowledge, botanical principles and, particularly, the necessity of changing interpretations as new information is acquired are introduced throughout the course.

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. Not given in 1961-1962.]

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.

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

[127. **MORPHOLOGY OF VASCULAR PLANTS.** Spring term. Credit four hours a term. Not given in 1961-1962.]

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.

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. HAROLD A. SCHERAGA, *Chairman*; MESSRS. ANDREAS C. ALBRECHT, SIMON H. BAUER, ALFRED T. BLUMQUIST, THOMAS C. BRUCE, W. DONALD COOKE, DONALD G. FARNUM, DAVID HENRY GESKE, MELVIN J. GOLDSTEIN, JAMES L. HOARD, JOHN R. JOHNSON, ALBERT W. LAUBENGAYER, FRANKLIN A. LONG, JERROLD MEINWALD, WILLIAM T. MILLER, MELVIN L. NICHOLS, ROBERT A. PLANE, RICHARD F. PORTER, L. TODD REYNOLDS, 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, 162, and 163, or the equivalent, or 193; Physics 107 and 108; Russian 101, or preferably German 101, unless two units of either language have been offered for entrance.

A "major in chemistry" permits considerable flexibility in the detailed planning of course programs, since it is presumed that the student will devote about half of the total course hours to subjects other than the physical sciences. Nevertheless, it is essential that the sequence of courses outlined below be started as early as possible. The courses in chemistry are arranged as a progression, with some courses (including mathematics and physics) prerequisite to those which

are more advanced. During the first year the student should register for mathematics and general chemistry. In the second year he should complete calculus, take introductory physics, organic chemistry, and analytical chemistry. Those students who start with Chemistry 105-106 normally postpone organic chemistry to the junior year, since they must take Chemistry 201 during the fall term of the sophomore year. Physical chemistry is taken in the third year. During the upper-class years the student must take Advanced Inorganic Chemistry 555 and one course from the group of Chemistry 245, 320, and 431. Advanced courses in physics (e.g. 207, 208 and 225) and mathematics (e.g. 608 and 609-610) are recommended as electives for students who intend to continue for an advanced degree in chemistry.

Acceptance of the student for the major by the department is normally deferred until the second term of the sophomore year. A student is not encouraged to undertake a major unless his performance in chemistry, physics, and mathematics courses affords evidence of his capacity to do satisfactory work at a more advanced level. At least two-thirds of the courses in chemistry must be submitted with a grade of 75 or higher.

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 may receive advanced credit for Chemistry 105-106 by demonstrating competence in the high school advanced standing examination of the College Entrance Examination Board, or in the advanced standing examination given at Cornell on the Tuesday before classes start in the fall. Application for this latter examination should be made to the Department of Chemistry no later than registration day.

*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, PLANE, 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.Ch.E. 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.

***201. QUALITATIVE INORGANIC ANALYSIS AND IONIC EQUILIBRIUM.** Either term. Credit four hours. Prerequisite, Chemistry 106. Lectures, M W 12. Laboratory, T Th 1:40-4:30 (either term) and T Th 8-11 (fall term only). Mr. ALBRECHT.

Application of the theory of chemical equilibrium to the properties and reactions of the ions of selected elements and the separation and detection of these ions in solution.

555. INORGANIC CHEMISTRY. Spring term. Credit three hours. Prerequisite, Chemistry 404 or 408 or consent of instructor. Lectures, M W F 9. 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 PLANE.

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, PLANE, 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

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. COOKE, GESKE, 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. GESKE and Assistant.

A discussion of the broad aspects of modern analytical chemistry including electrometric 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 GESKE.

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. GESKE.

A study of the application of modern analytical methods to chemical problems. Topics discussed include polarography and other electrochemical methods, nonaqueous titrations, chromatography, ion exchange, nuclear methods, and mass spectrometry. Given in alternate years. Not offered in 1961-1962.]

ORGANIC CHEMISTRY

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

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 S 11. Messrs. BRUCE and 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. Messrs. FARNUM, WILCOX, 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 degree of B.Ch.E. and A.B. with a major in chemistry. Lectures, M W F 9. Messrs. BLUMQUIST and JOHNSON.

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.

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). Mr. WILCOX 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 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. BLUMQUIST, 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. **ORGANIC CHEMISTRY.** Throughout the year. Credit three hours a term. Prerequisite, Chemistry 308 and 320 or consent of the instructor. Chemistry 365 is prerequisite to Chemistry 366. Primarily for seniors and graduate students. Enrollment limited for undergraduates to those having a record of 80 or better in prerequisite courses. Lectures, M W F 12. Mr. MEINWALD.

Fall term: Structure and reactivity; reaction mechanisms; conformational analysis; reactions of various types of functional groups. Spring term: reactions and syntheses of the principal classes of organic compounds; molecular rearrangements; stereochemistry.

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

Elucidation and applications of organic reaction mechanisms; quantitative aspects of organic chemistry.

[376. **PHYSICAL ORGANIC CHEMISTRY.** Spring term. Credit two hours. Prerequisite, Chemistry 375 or consent of the instructor. Primarily for graduate students. Lectures, T Th 12. Mr. WILCOX.

Quantitative aspects of organic chemistry,

with emphasis on linear free energy relationships. Not offered in 1961-1962.]

380. **SELECTED TOPICS IN ORGANIC CHEMISTRY.** Spring term. Credit two hours. Prerequisite, Chemistry 365-366 or consent of the instructor. Primarily for graduate students. Instructor and topic to be announced. Lectures, M W 11. Discussion, F 11.

Lectures on specialized subjects, and on recent developments in experimental and theoretical organic chemistry.

385. **MECHANISMS OF BIO-ORGANIC PROCESSES.** Fall term. Credit two hours. Prerequisite, Chemistry 365-366 or consent of the instructor. Primarily for graduate students in chemistry and biochemistry. Lectures, M W 12. Mr. BRUCE.

The mechanisms of organic catalysis and their relation to biochemical processes. 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 and synthesis as applied to selected terpenes, steroids, alkaloids, or antibiotics. Given in alternate years.

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. WUNDERLICH 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. LONG.

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. INTRODUCTORY PHYSICAL LABORATORY. Fall term. Credit 2 hours. Prerequisite or parallel course, Chemistry 403 or 407. Enrollment may be limited. Required of candidates for the degrees B.Ch.E. and A.B. with a major in chemistry. M T W or Th 1:40-4:30; lecture, Th 12; examinations, Th 7:30 p.m. Mr. WUNDERLICH and Assistants.

Aspects of physical chemical laboratory technique (error analysis, pressure-vacuum measurement and production, temperature and heat measurement, electrical instruments and their use) treated by selected quantitative experiments covering gas laws, phase diagrams, vapor pressure, calorimetry and equilibrium.

412. PHYSICAL CHEMISTRY LABORATORY. Spring term. Credit 2 hours. Prerequisite, Chemistry 411. Enrollment will be limited. Required of candidates for the degrees B.Ch.E. and A.B. with a major in chemistry. M T or W Th 1:40-4:30 or F 1:40-4:30 and S 9:00-12. Mr. WUNDERLICH and Assistants.

Quantitative experiments in classical and modern 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.

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; thermo-

dynamic, hydrodynamic, optical, and electrical properties; protein and enzyme reactions.

455. KINETICS OF CHEMICAL REACTIONS. Spring term. Credit three hours. Prerequisite, Chemistry 431 and 472 or consent of the instructor. Lectures, M W F 9. Mr. BAUER.

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

472. THERMODYNAMICS. Spring term. Credit four hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, T Th S 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 physico-chemical 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. ALBRECHT.

Ensembles and partition functions. Thermodynamic properties of ideal gases and of crystals. Third law of thermodynamics, equilibrium constants, vapor pressures. Imperfect gases and virial coefficients. Radial distribution function. Lattice statistics and phase transitions. Bose-Einstein and Fermi-Dirac ideal gases. Maxwell theory of viscosity and heat-conductivity. Given in alternate years.

[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. Not offered in 1961-1962.]

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.

[491. INTRODUCTION TO QUANTUM MECHANICS. Fall term. Credit three hours. Prerequisite, consent of the instructor. Pri-

marily for graduate students. Lectures, M W F 10. Messrs. ALBRECHT and WIDOM.

Elementary presentation of the fundamentals of quantum mechanics. Given in alternate years. Not offered in 1961-1962.]

[492. **QUANTUM MECHANICS OF VAL-ENCE**. Spring term. Credit three hours. Pre-requisite, Chemistry 491 or its equivalent. Primarily for graduate students. Lectures, M W F 9. Messrs. ALBRECHT and WIDOM.

Given in alternate years. Not offered in 1961-1962.]

HONORS PROGRAM

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

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

603-604. **HONORS RESEARCH**. Through-

[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. Not offered in 1961-1962.]

out 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.

GRADUATE SEMINARS

705. **INTRODUCTORY GRADUATE SEMINAR IN ANALYTICAL, INORGANIC AND PHYSICAL CHEMISTRY**. Throughout the year. No credit. Required of all first-year graduate students majoring in analytical, inorganic, or physical chemistry. Hour to be arranged.

Weekly seminars on contemporary topics prepared and presented by first-year graduate students. Attention given to details of selecting, preparing, and presenting a given topic. Group preparation and participation emphasized.

715. **GRADUATE SEMINAR IN ORGANIC CHEMISTRY**. Throughout the year. Open to

qualified seniors and all graduate students. Required of graduate students majoring in organic chemistry. T 4:30. Mr. GOLDSTEIN.

Presentation of research papers based on current journal publications and reports of research in progress by graduate students and staff.

725. **GENERAL CHEMISTRY SEMINAR**. Throughout the year. No credit. Th 4:40.

A series of talks representative of all the fields of current research interest in chemistry, given by advanced graduate students, research associates, faculty members, and distinguished visitors.

NONRESIDENT LECTURES

735. **BAKER LECTURES**. T Th 11. Fall term. September 25 through December 2, 1961: *Radiation Chemistry*, Mr. F. S. DANTON, University of Leeds, England. December 10,

1961, through January 20, 1962: *Physical Chemistry*, Mr. M. EIGEN, Max Planck Institute für Physikalische Chemie, Göttingen, Germany.

THE CLASSICS

Mr. FRIEDRICH SOLMSEN, *Chairman*; Messrs. HARRY CAPLAN, JAMES HUTTON, GORDON M. KIRKWOOD, 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. KIRKWOOD; spring term, Mr. CAPLAN. Introduction to Attic Greek.

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

*201. **ATTIC AUTHORS: PLATO, APOL-
OGY; EURIPIDES, MEDEA.** Either term. Prerequisite, Greek 103. T Th S 9. Fall term, Mr. —; spring term, Mr. —.

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

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. HUTTON; spring term, Mr. SOLMSEN.

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: HESIOD.** Throughout the year. Credit three hours a term. For graduate students. Th 2-4. Mr. SOLMSEN.

[**GREEK DIALECTS.** Credit two hours. For graduate students. Not offered in 1961-1962.]

050. **INFORMAL STUDY.** For qualified majors.

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

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. SOLMSEN. (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. KIRKWOOD. Spring term, Mr. —.

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, SALLUST, LUCRETIVUS.** Throughout the year. Credit three hours a term. Prerequisite, Latin 205-206. Not offered in 1961-1962.]

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. M W F 10. Fall term, Mr. —, Spring term, Mr. SOLMSEN.

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. —.

[347. **HISTORY OF THE LATIN LANGUAGE.** Fall term. Credit two hours. For upperclassmen and graduate students. Not offered in 1961-1962.]

[350. **COMPARATIVE GRAMMAR OF GREEK AND LATIN.** Credit two hours. For upperclassmen and graduate students. Not offered in 1961-1962.]

[369. **MEDIEVAL LATIN LITERATURE.** Spring term. Credit three hours. Prerequisite, three years of high school Latin or the equivalent. Not offered in 1961-1962.]

381-382. **SEMINAR: VIRGIL.** Throughout the year. Credit three hours a term. For graduate students. W 2-4. Mr. HUTTON.

[390. **ITALIC DIALECTS.** Credit two hours. For graduate students. Not offered in 1961-1962.]

060. **INFORMAL STUDY.** For qualified majors.

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

HONORS COURSES

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

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.

CLASSICAL CIVILIZATION

[408. **CLASSICAL RHETORIC AND ORATORY.** Spring term. Credit three hours. Primarily for graduate students. Not offered in 1961-1962.]

[410. **LATIN AND GREEK ELEMENTS OF THE ENGLISH LANGUAGE.** Credit two hours. Not offered in 1961-1962.]

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.

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.)

CLASSIC MYTHS. (See Literature 218.)

ANCIENT HISTORY. (See History 121-122.)

[GREEK HISTORY. (See History 211.) Not offered in 1961-1962.]

[THE HELLENISTIC AGE. (See History 212.) Not offered in 1961-1962.]

THE ROMAN REPUBLIC. (See History 213.)

THE ROMAN EMPIRE. (See History 214.)

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, G. H. HILDEBRAND, J. G. B. HUTCHINS, M. S. KENDRICK, T. C. LIU, H. B. MALMGREN, R. E. MONTGOMERY, CHANDLER MORSE, P. M. O'LEARY, E. J. RICE, G. J. STALLER.

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, twenty-four hours of economics courses, in addition to Economics 103-104, must be completed; these must include Economics 811 and Economics 825. Principles of Accounting (Business and Public Administration 110S, 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, fifteen 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 may be exempted from final examinations in their other courses in economics.

I. INTRODUCTORY

*103. MODERN ECONOMIC SOCIETY.

Either term. Credit three hours. Fall term, M W F 8, 9, 11, 12; T Th S 8, 9, 10, 11. Spring term, M W F 8, 9, 10, 11; T Th S 8, 9, 11. Messrs. DOWD, STALLER, 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, 11; T Th S 8, 9, 10. Spring term, M W F 8, 9, 11, 12; T Th S 8, 9, 10, 11. Messrs. MORSE, STALLER, and Assistants. Honors sections: fall

term, M W 2-3:15; spring term, M W 2-3:15, T Th 2-3:15.

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.

201-202. ELEMENTARY ECONOMICS.

Throughout the year. Credit three hours a term. T Th S 10. Mr. MALMGREN.

A special introductory course for non-majors who have had calculus, with special emphasis on economic theories of efficiency, stability and growth, and their relation to domestic and international economic policies of governments.

II. ECONOMIC HISTORY

206. AMERICAN ECONOMIC HISTORY.

Spring term. Credit three hours. Open to upperclassmen, or with consent of the instructor. M W F 8. Mr. DOWD.

An examination and analysis of significant processes and relationships in the economic development of the United States in the nineteenth and twentieth centuries.

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. Not offered in 1961-1962.]

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.** Either term. Credit three hours. Prerequisite, Economics 104. Fall term, M W F 2, Mr. GOLAY. Spring term, T Th S 10, Mr. O'LEARY.

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. Primarily for nonmajors.

TAXATION (Agricultural Economics 138). Fall term. Credit three hours. Open to upper-classmen 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.** Fall term. Credit three hours. Prerequisite, Economics 104. M W F 11. 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.** Spring term. Credit three hours. Prerequisite, Economics 104. M W F 9. Mr. MALMGREN.

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. Not offered in 1961-1962.]

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.

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 pre-capitalist origins to 1914.

[604. **MODERN INTERNATIONAL ECONOMIC PROBLEMS.** Spring term. Credit three hours. Prerequisite, Economics 603 or

[**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 inter-carrier 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. Not offered in 1961-1962.]

[**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. Not offered in 1961-1962.]

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

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. Not offered in 1961-1962.]

[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 1961-1962.]

606. INTERNATIONAL CAPITAL MOVEMENTS. Spring term. Credit three hours. Prerequisite, Economics 603 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.

611. COMPARATIVE ECONOMIC SYSTEMS: JAPAN, INDIA, AND CHINA. Spring 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.

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. Fall 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

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.

612. COMPARATIVE ECONOMIC SYSTEMS: SOVIET UNION AND EASTERN EUROPE. Fall term. Credit three hours. Prerequisite, ILR 341, or consent of the instructor. T Th S 10. Mr. STALLER.

A continuation of ILR 341. More advanced discussion of such selected topics as planning procedures and institutions, growth of national income and industrial production, standard of living, foreign trade. Comparisons with West European countries and the United States.

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

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.

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 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 mediating 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. Required of all students majoring in economics. Prerequisite, Economics 104. Fall

term, M W F 10, Mr. STALLER. Spring term, M W F 2, Mr. STALLER; T Th S 11, Mr. HILDEBRAND.

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.

B. DETERMINANTS OF INCOME

822. MONETARY THEORY AND PUBLIC POLICY. Spring term. Credit three hours. Prerequisite, Economics 825. 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. Fall term. Credit three hours. Prerequisite, Economics 825 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. Fall term, T Th S 9. Mr. HILDEBRAND. Spring

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. F 2-4. 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.

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

Application of elementary mathematical techniques to economic analysis.

term, T Th S 9. Mr. HILDEBRAND; M W F 10. 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 825 or consent of the instructor. M W F 2. Mr. COPELAND.

A study of the relations of labor over-demand 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.

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. M 4-6. Mr. ADAMS and staff.

Readings in books which have been significant in the development of economics.

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. 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. Golay.

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.

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

ENGLISH

Mr. W. R. Keast, *Chairman*; Messrs. M. H. Abrams, R. M. Adams, J. P. Bishop, Mrs. J. Blackall, Mr. E. Borklund, Mrs. M. Boynton, Messrs. A. Caputi, G. F. Cronkhite, R. A. Donovan, R. M. Durling, C. R. Edwards, R. H. Elias, J. Feil, S. Ferris, A. Fletcher, E. G. Fogel, W. H. French, R. Greenberg, B. Hathaway, E. Haun, G. H. Healey, Mrs. J. Herz, Mrs. A. Kaminsky, Messrs. D. Kleine, J. McConkey, F. E. Mineka, A. M. Mizener, J. Nabholtz, D. Novarr, J. Palmer, S. M. Parrish, D. Ray, F. Read, W. M. Sale, Jr., W. Slatoff, H. Smith, T. W. Stoehr, Mrs. H. Vendler, Messrs. 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, 3; T Th S 8, 9, 10, 11, 12. Mr. ELIAS, Mr. SMITH, 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 fresh-

men. 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, Mr. GREENBERG, 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. FLETCHER. 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 freshman 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. Second term not open to students who have taken or are currently registered in English 225 or 226. 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 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.

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. DONOVAN.

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.

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. Mr. SMITH.

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. HEALEY.

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

Credit three hours. Not open to students who have taken English 229 or 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. M W F 10. Mr. SALE. (Will be offered in 1962-1963.)]

338. THE MODERN ENGLISH 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 1962-1963.)

A critical study of English fiction, beginning with George Eliot and concluding with selected contemporary novels.

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 be offered in 1962-1963.)]

382. **THE ENGLISH LANGUAGE.** Spring term. Credit three hours. T Th S 11. 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 be offered in 1962-1963.)]

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 —.

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 representative eighteenth-century writers, including Dryden, Pope, Swift, Fielding, Johnson, and Gibbon.

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 JACOBAN 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. **TENNYSON, ARNOLD, AND DICKENS.** Spring term. Prerequisite, English 318 or 321. Credit three hours. T Th S 10. Mr. GREENBERG.

Studies in three major Victorian authors.

424. **VICTORIAN PROSE WRITERS.** Spring term. Credit three hours. Prerequisite, English 318 or 321. T Th S 9. Mr. BISHOP.

A study of the principal Victorian writers of critical and intellectual prose, including Carlyle, Ruskin, Mill, and Darwin.

439. **AMERICAN NOVELISTS.** Either term. Credit three hours. Prerequisite, English 336 and the consent of the instructor. M W F 12. Fall term, Mr. SALE. Spring term, Mr. SLATOFF.

For 1961-1962, in the fall term the emphasis will be placed on the fiction of William Faulkner; in the spring term on the fiction of Ernest Hemingway.

[441. **RESTORATION AND EIGHTEENTH-CENTURY DRAMA.** Fall term. Credit three hours. Prerequisite, English 340. M W F 2. Mr. MIZENER. (Will be offered in 1962-1963.)]

449. **RECENT AMERICAN POETRY.** Fall term. Credit three hours. Prerequisite, English 333 or consent of the instructor. M W F 12. Mr. FRENCH. (Will not be offered in 1962-1963.)

American poets from Robinson to the present; theories of poetry. Reports and papers.

[465. **CHAUCE'S EARLY WORKS.** Fall term. Credit three hours. M W F 12. Mr. FRENCH. (Will be offered in 1962-1963.)]

466. **CHAUCE'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. Open to seniors, and to juniors with the consent of the instructor. Fall term, M W F 11, Mr. SMITH. 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 be offered in 1962-1963.)]

477. **TRANSCENDENTALISM IN AMERICAN LITERATURE.** Fall term. Credit three hours. Prerequisite, English 333 or 318. T Th S 10. Mr. BISHOP.

The major works of Emerson, Thoreau, Whitman, and Melville, considered in relation to their cultural and intellectual context and to selected writings of contemporaries.

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. Reading list for 1962 available in the English Office.

481. **HENRY JAMES AND MARK TWAIN.** Fall term. Credit three hours. Prerequisite, English 333, 336, or 338. M W F 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 1961-1962 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.

PRINCIPLES OF LITERARY CRITICISM. (See Literature 401-402.)

THEORY AND PRACTICE OF TRANSLATION. (See Literature 405.)

THE TEACHING OF ENGLISH. (Education 130E) Fall term. Credit four hours. T 4-6. Taught jointly by the Department of English and the School of Education.

Emphasis on the teaching of reading, writing, and language.

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 1961-1962 Honors Seminars will be offered according to the following schedule:

491. **THE NATURE OF TRAGEDY.** Fall term. Credit three hours. T 2-4. Mr. WHICHER.

493. **SHAKESPEARE'S LAST PLAYS.** Fall term. Credit three hours. W 2-4. Mr. MIZENER.

494. **THE CRITICISM OF POETRY.** Spring term. Credit three hours. T 2-4. Mr. ABRAMS.

495. **THE LITERARY PREDECESSORS OF YEATS AND JOYCE.** Fall term. Credit three hours. Th 2-4. Mr. ADAMS.

496. **HONORS ESSAY SEMINAR.** Spring term. Credit three hours. Hour to be announced. 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 courses 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 four hours. Mr. PARRISH. Recommended for all candidates for the Master's degree.

503-504. **MIDDLE ENGLISH LITERATURE.** Both terms. Credit four hours a term. Mr. FRENCH.

506. **MEDIEVAL AND EARLY RENAISSANCE LITERATURE.** Spring term. Credit four hours. Mr. DURLING.

510. **SHAKESPEARE.** Fall term. Credit four hours. Mr. FOGEL.

514. **STUDIES IN THE HISTORY OF CRITICISM.** Spring term. Credit four hours. Mr. HATHAWAY.

535. **VICTORIAN WRITERS.** Fall term. Credit four hours. Mr. MINEKA.

536. **NINETEENTH-CENTURY POETRY.** Spring term. Credit four hours. Mr. DONOVAN.

543. **STUDIES IN ENGLISH POETRY.** Fall term. Credit four hours. Mr. ABRAMS.

555. **STUDIES IN AMERICAN POETRY.** Fall term. Credit four hours. Mr. WHICHER.

557. **STUDIES IN AMERICAN FICTION.** Fall term. Credit four hours. Mr. ELIAS.

561. **DRAMATIC LITERATURE.** Fall term. Credit four hours. Mr. CAPUTI.

595-596. **CREATIVE WRITING.** Both terms. Credit four hours a term. Mr. HATHAWAY.

597. **MASTER'S ESSAY.** Credit four hours. Members of the Department. Hours to be arranged.

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.

601. **BIBLIOGRAPHY AND METHOD.** Fall term. Credit four hours. Mr. KEAST. Recommended for all candidates for the doctorate.

607. **STUDIES IN RENAISSANCE LITERATURE.** Fall term. Credit four hours. Mr. EDWARDS.

612. **SEVENTEENTH-CENTURY LITERATURE.** Spring term. Credit four hours. Mr. NOVARR.

620. **EIGHTEENTH-CENTURY LITERATURE.** Spring term. Credit four hours. Mr. KEAST.

632. **THE ROMANTIC PERIOD.** Spring term. Credit four hours. Mr. ABRAMS.

633. **WORDSWORTH.** Fall term. Credit four hours. Mr. PARRISH.

636. **VICTORIAN LITERATURE.** Spring term. Credit four hours. Mr. MINEKA.

646. **STUDIES IN ENGLISH AND AMERICAN NOVELISTS.** Fall term. Credit four hours. Mr. SALE.

656. **STUDIES IN AMERICAN LITERATURE.** Spring term. Credit four hours. Mr. SLATOFF.

658. **THOREAU.** Spring term. Credit four hours. Mr. WHICHER.

662. **DRAMATIC LITERATURE.** Spring term. Credit four hours. Mr. CAPUTI.

666. **TWENTIETH-CENTURY LITERATURE.** Spring term. Credit four hours. Mr. MIZENER.

FAR EASTERN STUDIES

Mr. JOHN M. ECHOLS, *Chairman*; MESSRS. KNIGHT BIGGERSTAFF, GORDON H. FAIRBANKS, FRANK H. GOLAY, R. B. JONES, JR., GEORGE MCT. KAHIN, JOHN W. LEWIS, TA-CHUNG LIU, Miss HARRIET C. MILLS, MESSRS. 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

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

COMPARATIVE ECONOMIC SYSTEMS: JAPAN, INDIA AND CHINA. Fall term. M W F 10. Mr. GOLAY. (See Economics 611.)

PUBLIC POLICY AND ECONOMIC DEVELOPMENT. Spring term. M W F 10. Mr. GOLAY. (See Economics 712.)

[NATIVE CULTURES OF THE PACIFIC. Fall term. W 3-5. Mr. SHARP. (See Sociology and Anthropology 245.) Not offered in 1961-1962.]

THE CIVILIZATION OF JAPAN. Fall term. M W F 2. Mr. SMITH. (See Sociology and Anthropology 247.) Offered in 1961-1962 and alternate years.

ELEMENTARY JAPANESE. Six hours each term. Mr. JONES and Assistant. (See Japanese 101-102.)

JAPANESE READING. Three hours each term. Mr. JONES and Assistant. (See Japanese 201-202.)

JAPANESE COMPOSITION AND CONVERSATION. Three hours each term. Mr. JONES and Assistant. (See Japanese 203-204.)

[SEMINAR: COMPARATIVE SOCIAL ORGANIZATION OF COMPLEX SOCIETIES. Spring term. Mr. SKINNER. (See Sociology and Anthropology 286.) Not offered in 1961-1962.]

SEMINAR: COMPARATIVE MODERNIZATION OF CHINA AND JAPAN. Spring term. Th 2-4. MESSRS. SKINNER and SMITH.

(See Sociology and Anthropology 288.) Offered in 1961-1962 and alternate years.

[MAN AND CIVILIZATION. Spring term. Mr. SMITH. (See Sociology and Anthropology 208.) Not offered in 1961-1962.]

INTRODUCTION TO FAR EASTERN ART. Fall term. Not open to freshman. M W F 11. Mr. YOUNG. (See Fine Arts 601.)

[ART OF INDIA AND SOUTHEAST ASIA. Fall term. M W F 11. Mr. YOUNG. (See Fine Arts 603.) Not offered in 1961-1962.]

[ART OF CHINA AND JAPAN. Spring term. M W F 11. Mr. YOUNG. (See Fine Arts 604.) Not offered in 1961-1962.]

METHODS OF RESEARCH IN FAR EASTERN ART. Fall term. T 2-4:30. Mr. YOUNG. (See Fine Arts 931.)

PROBLEMS IN FAR EASTERN ART. Spring term. T 2-4:30. 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. M W F 8, M T W Th F 9. Miss MILLS and Assistant. (See Chinese 101-102.)

INTERMEDIATE CHINESE. Fall term. M T W Th F S 11. Miss MILLS and Assistant. (See Chinese 201.)

INTERMEDIATE CHINESE. Spring term. T Th S 11. Miss MILLS and Assistant. (See Chinese 202.)

INTRODUCTION TO CLASSICAL CHINESE. Spring term. M W F 11. Mr. SHADICK. (See Chinese 212.)

READINGS IN SOCIAL SCIENCE CHINESE. Throughout the year. Hours to be arranged. Staff. (See Chinese 301-302.)

READINGS IN CLASSICAL CHINESE. Throughout the year. Hours to be arranged. Mr. SHADICK. (See Chinese 351-352.)

CHINESE PHILOSOPHICAL TEXTS. Fall term. Hours to be arranged. Mr. SHADICK. (See Chinese 353.)

CHINESE LITERATURE IN TRANSLATION: PHILOSOPHICAL AND HISTORICAL LITERATURE. Fall term. M W F 10. Mr. SHADICK. (See Literature 321.)

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.

CHINESE PAINTING. Spring term. M W F 11. Mr. YOUNG. (See Fine Arts 605.)

[**SEMINAR: STUDIES IN CHINESE PAINTING: THE LATER CENTURIES.** T 2-4:30. Mr. YOUNG. (Offered in 1962-1963 and alternate years.)]

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. Throughout the year. Conducted as a seminar. M 3-5. Mr. BIGGERSTAFF. (See History 811-812.)

SEMINAR IN MODERN CHINESE HISTORY. One or two terms. Hours to be arranged. Mr. BIGGERSTAFF. (See History 875-876.)

[**CHINESE CULTURE AND SOCIETY—I.** Fall term. Mr. SKINNER. (See Sociology and Anthropology 251.) Not offered in 1961-1962.]

[**CHINESE CULTURE AND SOCIETY—II.** Spring term. Mr. SKINNER. (See Sociology and Anthropology 252.) Not offered in 1961-1962.]

SOCIAL ORGANIZATION IN COMMUNIST CHINA. Fall term. T Th S 10. Mr. SKINNER. (See Sociology and Anthropology 253.)

[**NATIVE CULTURES OF CHINA'S INLAND FRONTIERS.** Fall term. Mr. SKINNER. (See Sociology and Anthropology 243.) Not offered in 1961-1962.]

CHINESE GOVERNMENT AND POLITICS. Fall term. M W F 11. Mr. LEWIS. (See Government 343.)

[**SEMINAR IN THE POLITICS OF CHINA.** Both terms. Mr. LEWIS. (See Government 357-358.) Not offered in 1961-1962.]

611-612. **MODERN CHINA.** Throughout the year. Three hours a term. For graduate students in the China Program. Not open to undergraduates except by special permission. T 2-4. Staff.

A graduate level interdisciplinary survey of late modern and contemporary China. The attempt is made to bring into integrated focus China's land and people; her society, economy, and polity; and the modern manifestations of her great tradition. Emphasis is placed on a corpus of basic readings, and attention is given to the distinctive methods which each of the disciplines within the social sciences and the humanities brings to the study of modern China. The second semester is largely devoted to the period of Communist rule.

INDIA

ELEMENTARY HINDI. Throughout the year. Mr. FAIRBANKS and Assistant. (See Hindi 101-102.)

HINDI READING. Throughout the year. Mr. FAIRBANKS and Assistant. (See Hindi 201-202.)

HINDI COMPOSITION AND CONVERSATION. Throughout the year. Mr. FAIRBANKS and Assistant. (See Hindi 203-204.)

READINGS IN HINDI LITERATURE. Throughout the year. Mr. FAIRBANKS and Assistant. (See Hindi 221-222.)

ADVANCED COMPOSITION AND CONVERSATION. Throughout the year. Mr. FAIRBANKS and Assistant. (See Hindi 223-224.)

ELEMENTARY SANSKRIT. Mr. FAIRBANKS. (See Linguistics 283.)

[NATIVE CULTURES OF INDIA AND SOUTH ASIA. Spring term. T Th 2-3:30.

SOUTHEAST ASIA

ELEMENTARY BURMESE. Credit six hours each term. Mr. JONES and Assistant. (See Burmese 101-102.)

BURMESE READING. Three hours each term. Mr. JONES and Assistant. (See Burmese 201-202.)

BURMESE COMPOSITION AND CONVERSATION. Three hours each term. Mr. JONES and Assistant. (See Burmese 203-204.)

ADVANCED BURMESE READING. Three hours each term. Mr. JONES and Assistant. (See Burmese 221-222.)

ELEMENTARY INDONESIAN. Six hours each term. Mr. ECHOLS and Assistant. (See Indonesian 101-102.)

INDONESIAN READING. Three hours each term. Mr. ECHOLS and Assistant. (See Indonesian 201-202.)

INDONESIAN COMPOSITION AND CONVERSATION. Three hours each term. Mr. ECHOLS and Assistant. (See Indonesian 203-204.)

[READINGS IN INDONESIAN AND MALAY. Spring term. Hours to be arranged. Mr. ECHOLS. (See Indonesian 222.) Not offered in 1961-1962.]

LINGUISTIC STRUCTURE OF INDONESIAN. Fall term. Hours to be arranged. Mr. ECHOLS. (See Indonesian 243.)

ELEMENTARY THAI. Six hours each term. Mr. JONES and Assistant. (See Thai 101-102.)

THAI READING. Three hours each term. Mr. JONES and Assistant. (See Thai 201-202.)

THAI COMPOSITION AND CONVERSATION. Three hours each term. Mr. JONES and Assistant. (See Thai 203-204.)

READINGS IN ADVANCED THAI. Throughout the year. Mr. JONES and Assistant. (See Thai 221-222.)

ELEMENTARY VIETNAMESE. Six hours each term. Mr. JONES and Assistant. (See Vietnamese 101-102.)

Mr. OPLER. (See Sociology and Anthropology 240.) Not offered in 1961-1962.]

[SEMINAR: INDIA AND SOUTH ASIA. Fall term. F 4-6. Mr. OPLER. (See Sociology and Anthropology 283.) Not offered in 1961-1962.]

[MALAYO-POLYNESIAN LINGUISTICS. Fall term. Mr. ECHOLS. (See Linguistics 261.) Not offered in 1961-1962.]

SEMINAR IN THE LINGUISTICS OF MAINLAND SOUTHEAST ASIAN LANGUAGES. Throughout the year. Mr. JONES. (See Linguistics 271-272.)

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, GOLAY and KAHN.

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.

GOVERNMENT AND POLITICS OF SOUTHEAST ASIA. Spring term. M W F 8. Mr. KAHN. (See Government 344.)

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

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

[NATIVE CULTURES OF SOUTHEAST ASIA. Spring term. M W F 2. Mr. SHARP. (See Sociology and Anthropology 242.) Not offered in 1961-1962.]

[SEMINAR: SOUTHEAST ASIAN ANTHROPOLOGY. Mr. SHARP. (See Sociology and Anthropology 285.) Not offered in 1961-1962.]

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

997-998. **SEMINAR: FIELD RESEARCH IN SOUTHEAST ASIA.** Prerequisite, consent of the instructor.

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

THE FINE ARTS

MR. N. A. PATTILLO, JR., *Chairman*; MESSRS. WEBSTER SMITH, ALAN R. SOLOMON, JAMES H. TURNURE, F. O. WAAGE, 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 choosing this option may include, in fulfillment of the requirement of related subjects, courses in the practice of art given in the College of Architecture (see the Announcement of that College). A student 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.

HONORS. *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 a cumulative average of 80 for all courses in the College, and of 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.*

***101-102. INTRODUCTION TO ART.** Throughout the year. Credit three hours a term. Fine Arts 101 is prerequisite to Fine Arts 102. Open to all students. M W F 12. Discussion groups at hours to be arranged. Preliminary examinations to be scheduled in the evening. MESSRS. TURNURE, SMITH, SOLOMON, and YOUNG.

Intended to foster an understanding of a wide range of material by concentrating on a restricted number of examples of painting, sculpture, and architecture of the highest quality. The lectures will follow a generally chronological pattern. The fall term will begin with man's early artistic efforts and will continue to the later Renaissance. The emergence of the modern point of view from the later Renaissance to the present will be discussed in the spring term. When appropriate the great arts of Asia and the Americas will be related to those of Europe.

The sections, in which the discussion will be based largely upon reading, will allow a flexible approach, and will permit direct contact with original works of art.

***104. INTRODUCTION TO ART: PAINTING AND SCULPTURE.** 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.

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.

203. PREHISTORIC ART. Fall term. Credit three hours. Open to sophomores who have had Fine Arts 101-102 and to upperclassmen without prerequisite. M W F 12. MR. WAAGE.

The evolution and diffusion of Stone Age art and artifacts in Eurasia and Africa will be presented so as to acquaint the student at the same time with the major aspects and problems of archaeological activity in general. The time span extends from the Lower Palaeolithic period to the Metals Age civilizations of the Near East.

204. PRIMITIVE ART: THE ART OF TRIBAL SOCIETIES. Spring term. Credit three hours. Open to sophomores who have

had Fine Arts 101-102 and to upperclassmen without prerequisite. M W F 12. Mr. WAAGE.

Chronologically and culturally a continuation of Fine Arts 203 but treated primarily in terms of the painting and sculpture of Africa. Other bodies of primitive art, e.g., Australian, Eskimo, Northwest Coast, will be included to round out a consideration of the shaping and use of art forms to satisfy group needs in cultures where art was an indispensable element of everyday life.

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.

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.

426. **GOTHIC ARCHITECTURE.** Spring term. Credit three hours. Prerequisites, Fine Arts 112 or the equivalent and consent of the instructor. W 2-4:30. Mr. PATTILLO.

Reports on selected topics, discussions.

[505. **FLORENTINE AND CENTRAL ITALIAN PAINTING.** Fall term. Credit three hours. Not open to freshmen. T Th S 11. Mr. PATTILLO. Not offered in 1961-1962.]

506. **VENETIAN AND NORTH ITALIAN PAINTING.** Fall term. Credit three hours. Not open to freshmen. T Th S 11. Mr. PATTILLO.

Painting from the Bellinis and Mantegna to Tintoretto and Veronese.

507. **RENAISSANCE, BAROQUE, AND MODERN SCULPTURE.** Fall term. Credit three hours. Not open to freshmen and sophomores. M W F 9. Mr. SMITH.

A study of the main course of development of sculpture in Europe and America from fifteenth-century Italy to the present day, with emphasis in each period upon the works of a few representative artists.

510. **MANNERISM IN PAINTING, SCULPTURE, AND ARCHITECTURE.** Spring term. Credit three hours. Not open to freshmen and sophomores. M W F 9. Mr. SMITH.

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

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

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.

601. **INTRODUCTION TO FAR EASTERN ART.** Fall term. Credit three hours. Not open to freshmen. M W F 11. Mr. YOUNG.

A consideration of the major artistic achievements of India, Southeast Asia, China, and Japan, with particular reference to the aesthetic and religious principles underlying the development of the art of these countries. Attention will be focused on select masterpieces of painting, sculpture, and architecture in order to exemplify the main stylistic and cultural trends of the most important periods.

[603. **ART OF INDIA AND SOUTHEAST ASIA.** Fall term. Credit three hours. Not open to freshmen. M W F 11. Mr. YOUNG. Offered in 1962-1963 and alternate years.]

[604. **ART OF CHINA AND JAPAN.** Spring term. Credit three hours. Not open to freshmen. M W F 11. Mr. YOUNG. Offered in 1962-1963 and alternate years.]

605. **CHINESE PAINTING.** Spring term. Credit three hours. Not open to freshmen and sophomores. M W F 11. Mr. YOUNG.

A survey of the main trends in Chinese painting from the earliest times to the present, with emphasis on the development of landscape painting and the Chinese concept of nature. The influence of Buddhism, Taoism, and Confucianism as reflected in painting will also be discussed.

SEMINARS

931. **METHODS OF RESEARCH IN FAR EASTERN ART.** Fall term. Credit three hours. Prerequisite, consent of the instructor. T 2-4:30. Mr. YOUNG.

An introduction to advanced study. Discussion of the methods involved in stylistic and iconographic analysis along with a consideration of the basic bibliographical sources.

933. **PROBLEMS IN FAR EASTERN ART.** Spring term. Credit three hours. Prerequisite, consent of the instructor. T 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 between these countries.

[934. **STUDIES IN CHINESE PAINTING: THE LATER CENTURIES.** Credit three hours. Prerequisite, consent of the instructor. T 2-4:30. Mr. YOUNG. Offered in 1962-1963 and alternate years.]

940. **PICASSO AND RELATED MOVEMENTS.** Spring 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.

HONORS

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

705-706. **AMERICAN ART.** Throughout the year. Credit three hours a term. Not open to freshmen and sophomores. M W F 11. Mr. ———.

A survey of architecture, painting, and sculpture. The first term begins with the colonial period and continues to the end of the nineteenth century. The second term will be devoted to the twentieth century.

941. **POSTIMPRESSIONIST PAINTING.** Fall term. Credit three hours. Prerequisites, Fine Arts 554 or equivalent and consent of the instructor. Th 2-4:30. Mr. SOLOMON.

The origins of modern art in the period between Cézanne and the Fauves. Cézanne, Seurat, Gauguin, van Gogh, and Toulouse-Lautrec will be considered. Discussion and individual reports.

[942. **ANTIRATIONAL TENDENCIES IN TWENTIETH-CENTURY ART.** Credit three hours. Prerequisites, Fine Arts 554 or equivalent and consent of the instructor. Th 2-4:30. Mr. SOLOMON. Not offered in 1961-1962.]

944. **STUDIES IN BAROQUE PAINTING.** Spring term. Credit three hours. Prerequisite, consent of the instructor. F 2-4:30. Mr. TURNURE.

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

946. **LITERARY SOURCES IN THE ITALIAN RENAISSANCE.** Spring term. Credit three hours. Prerequisite, consent of the instructor. M 2-4:30. Mr. SMITH.

Reading and interpretation of fifteenth- and sixteenth-century writings on art and artists. Discussion and individual reports.

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 203, 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.** Fall term. Credit three hours. Prerequisite, consent of the instructor. Mr. WAAGE. Offered in 1962-1963 and alternate years.]

GEOLOGY AND GEOGRAPHY

Mr. W. S. COLE, *Chairman*; Messrs. A. L. ANDERSON, A. L. BLOOM, 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, 301, 303, 402, 501, 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 113 or Geology 115, one hour credit the first term). Intended for students in Arts and Sciences. Lectures, M W 10, or T Th 11. 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. BLOOM.

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. GEOLOGY FOR ENGINEERS.** Either term. Credit three hours (if taken after Geology 101-102 or 115, 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 aware of 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 and their influence on the agricultural sciences.

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.

Geologic history of the earth with special reference to North America. For geology majors and other students desiring a broad view of the physical and organic history of the earth.

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

The geographic provinces of North America,

their geomorphic expression, climates, resources, development, and interrelationships.

207. **MINERALOGY.** Fall term. Credit three hours. Prerequisite, Chemistry 106. Lecture, M 10. Laboratories, W F 2-4:30. Mr. ORVILLE.

Crystallography, crystal chemistry, and systematic mineralogy of the rock-forming minerals.

208. **INTRODUCTORY PETROLOGY.** Spring term. Credit three hours. Prerequisite, Geology 207. Prerequisite or parallel, Geology 102. Lectures, M F 10. Laboratory, Th 2-4:30. Mr. ORVILLE.

Composition, classification, and origin 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.

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. 53.

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. BLOOM.

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

402. **GLACIAL AND PLEISTOCENE GEOLOGY.** Spring term. Credit three hours. Prerequisite, Geology 101-102. Lectures, T Th 9. Laboratory, T 2-4:30. Mr. BLOOM.

Glacial processes and the phenomena of the Pleistocene Epoch.

412. **GEOLOGIC INTERPRETATION OF AERIAL PHOTOGRAPHS AND MAPS.** Spring term. Credit three hours. Prerequisite, Geology 301 and 401. Lecture, M 12. Two

laboratories by arrangement. Mr. BLOOM. Alternate year course; offered in 1961-1962.

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

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. BLOOM.

040. **INFORMAL STUDY.** Mr. BLOOM. See italicized statement, p. 53.

MINERALOGY, PETROLOGY, AND GEOCHEMISTRY

501. **INTRODUCTORY GEOCHEMISTRY.** Fall term. Credit three hours. Prerequisite, Geology 208. Lectures, M W F 8. Mr. ORVILLE.

Distribution of major and minor elements in the earth, geochemical cycles of the elements, and the chemistry of weathering and petrogenesis.

503. **OPTICAL MINERALOGY.** Fall term. Credit three hours. Prerequisite, Geology 207. Lecture, W 12. Laboratories, F S 10:30-1. Mr. ORVILLE.

Theory of optical properties of crystals and its application to the determination and study of common rock-forming minerals with the petrographic microscope.

504. **OPTICAL PETROGRAPHY.** Spring term. Credit three hours. Prerequisites, Geology 208 and 503. Lecture, W 9. Laboratories, F S 8-10:30. Mr. ORVILLE.

Description, classification, and determination of the origin of igneous, metamorphic, and sedimentary rocks by the use of the petrographic microscope.

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.

The principles of stratigraphy, developed by detailed study of selected American and European systemic examples. Fall term: the Paleozoic. Spring term: the Mesozoic and Cenozoic.

572. **IGNEOUS AND METAMORPHIC PETROGENY.** Spring term. Credit three hours. Prerequisites, Chemistry 401, Mathematics 163, and Geology 501. Prerequisite or parallel, Geology 504. Lectures, M W F 11. Mr. ORVILLE.

Igneous and metamorphic rock-forming processes treated from the viewpoint of thermodynamics and silicate phase chemistry.

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. 53.

675. **MICROPALAEONTOLOGY.** 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; offered in 1961-1962.

The classic Paleozoic section of Central New York will be studied through lectures, readings, and field observations.

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. 53.

METALLIFEROUS AND NONMETALLIFEROUS DEPOSITS

701. INTRODUCTION TO METALLIFEROUS DEPOSITS. Fall term. Credit three hours. Prerequisite, Geology 102 or 113, and 208, or consent of 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. 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; offered in 1961-1962.

Properties, occurrence, associations, distribution, and economic utilization of the non-metals.

[704. GEOLOGY OF THE MINOR METALS. Spring term. Credit three hours. Prerequisite, Geology 701. Lectures, T Th 11. Laboratory, F 2-4:30. Mr. ANDERSON. Alternate-year course; not offered in 1961-1962.]

[721. ORE MICROSCOPY. Fall term. Credit two hours. Prerequisite, Geology 207-208. F S 8-10:30. Mr. ANDERSON. Alternate-year course; not offered in 1961-1962.]

[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; not offered in 1961-1962.]

775-776. ADVANCED STUDY OF MINERAL DEPOSITS. Credit three hours a semester. Prerequisites, Geology 701. Lectures, M W F 8, or hours otherwise arranged. Mr. ANDERSON. Alternate-year course; offered in 1961-1962.

Structural occurrence and origin of the economically important mineral deposits. Fall term: the deposits of primary origin associated more or less closely with igneous phenomena. Spring term: the deposits of secondary origin associated more or less directly with processes of weathering and sedimentation.

791-792. SEMINAR IN METALLIFEROUS AND NONMETALLIFEROUS DEPOSITS. Throughout the year. Credit one hour a semester. Registration by invitation of the instructor. T 4:45. Mr. ANDERSON.

795-796. ADVANCED OR SPECIAL WORK IN METALLIFEROUS AND NONMETALLIFEROUS DEPOSITS. Throughout the year. Credit variable. Prerequisites dependent on the nature of the work, but Geology 208, 504, and 701 (or 721-722) are ordinarily required. T 12. Mr. ANDERSON.

070. INFORMAL STUDY. Mr. ANDERSON. See italicized statement p. 53.

ENGINEERING GEOLOGY

801. ENGINEERING GEOLOGY. Fall term. Credit three hours. Prerequisites, Geology 303 and 501, or consent of the instructor. Lectures, M W 9. Laboratory, W 2-4:30. Mr. KIERSCH. Alternate-year course; offered in 1961-1962.

Advanced study of physical phenomena and rock properties including underground water and other fluids, subsidence, landslides, na-

tural and artificial dynamic stresses, and rock-soil weathering.

895-896. ADVANCED OR SPECIAL WORK IN ENGINEERING GEOLOGY. Throughout the year. Credit variable. Prerequisite, consent of instructor. Hours to be arranged. Mr. KIERSCH.

FIELD COURSE

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

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

GOVERNMENT

Mr. MARIO EINAUDI, *Chairman*; MESSRS. WALTER BERNS, HERBERT W. BRIGGS, ARCHIE T. DOTSON, GEORGE FISCHER, ANDREW HACKER, GEORGE MCT. KAHN, JOHN WILSON LEWIS, THEODORE LOWE, STEVEN MULLER, CLINTON ROSSITER.

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 better 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, with first preference for Arts students. Lectures, T Th 2. Discussion sections, Th 3, F 10, 11, 2, 3, S 10, 11. Messrs. BERNs, HACKER, LOWI, ROSSITER, 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. ——— 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. Registration limited to 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. T Th S 10. Mr. Lowi.

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. ROSSITER.

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 role of public opinion and 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.

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

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. M W F 12. 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. M W F 12. Mr. BERNs.

A study of the contemporary law of the Constitution, primarily in the area of civil liberties and civil rights. The course will be conducted primarily through discussion of assigned cases.

255. POLITICAL BEHAVIOR. Fall and spring terms. Credit three hours. Prerequisite, Government 217 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.

010. INFORMAL STUDY. Mr. LOWI. See italicized statement, page 57.

020. INFORMAL STUDY. Mr. HACKER. See italicized statement, page 57.

050. INFORMAL STUDY. Mr. ROSSITER. See italicized statement, page 57.

070. INFORMAL STUDY. Mr. DOTSON. See italicized statement, page 57.

090. INFORMAL STUDY. Mr. BERNs. See italicized statement, page 57.

their role in political life. Extraconstitutional forces and their relationship to institutions.

313. GOVERNMENT AND POLITICS IN THE COMMONWEALTH. Fall term. Credit three hours. 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.

331. PUBLIC CONTROL OF ECONOMIC LIFE. Fall term. Credit three hours. Open to upperclassmen. T Th S 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.

334. COMPARATIVE PUBLIC ADMINISTRATION. Spring term. Credit three hours. Prerequisite, Government 104. M W F 2. Mr. DOTSON.

An examination and analysis of the administrative institutions of major foreign powers. Particular attention will be given to agency systems, the public services, and planning and regulatory instrumentalities of selected governments. An effort will be made to develop a tentative typology for the comparative study of administrative institutions.

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. FISCHER.

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 con-

stitutionalism 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. FISCHER.

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.

343. CHINESE GOVERNMENT AND POLITICS. Fall term. Credit three hours. Prerequisite, Government 104 or consent of instructor. M W F 11. Mr. LEWIS.

General introduction to the politics of modern China with particular emphasis on the political processes of the People's Republic of China.

344. GOVERNMENT AND POLITICS OF SOUTHEAST 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 countries of Southeast Asia, with attention being given to the nature of the social and economic environments which condition them.

045. INFORMAL STUDY. Mr. FISCHER. See italicized statement, page 57.

055. INFORMAL STUDY. Mr. LEWIS. See italicized statement, page 57.

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. ROSSITER.

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. Not offered in 1961-1962.]

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.

INTERNATIONAL RELATIONS

412. INTERNATIONAL RELATIONS. Spring term. Credit three hours. Open to sophomores and upperclassmen. M W F 11. Mr. LEWIS.

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 overall 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

030. INFORMAL STUDY. Mr. MULLER. See italicized statement, page 57.

060. INFORMAL STUDY. Mr. EINAUDI. See italicized statement, page 57.

sophomores and upperclassmen. M W F 8. Mr. KAHN.

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. FISCHER. Not offered in 1961-1962.]

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.

040. INFORMAL STUDY. Mr. KAHN. See italicized statement, page 57.

080. INFORMAL STUDY. Mr. BRIGGS. See italicized statement, page 57.

HONORS PROGRAM

620. JUNIOR HONORS SEMINAR. Spring term. Credit 3 hours. Open only to juniors accepted as candidates for Honors in Government. Hours to be arranged. Mr. HACKER.

An examination of the development and scope of the study of government, combined with training in advanced research.

GRADUATE SEMINARS

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.

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.

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.

295-296. SEMINAR IN AMERICAN POLITICAL THOUGHT AND INSTITUTIONS. Throughout the year. Credit three hours. Open to graduate students and qualified

seniors. Hours to be arranged. Messrs. Rositer and Hacker.

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. Fischer.

366. **SEMINAR IN POLITICAL THEORY.** Spring term. Credit three hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Berns.

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. Muller.

385-386. **SEMINAR IN COMPARATIVE GOVERNMENT.** Throughout the year. Credit three hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Einaudi.

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.

476. **SEMINAR IN INTERNATIONAL LAW AND INTERNATIONAL ORGANIZATION.** Spring term. Credit three hours a term. Open to graduate students and law students. Hours to be arranged. Mr. Briggs.

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 611 in the fall term of their junior year, enroll in History 612-613 during the following two terms, 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 grades of 85 or better in all history and related courses; (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 1961-1962 should be made to the Department of History prior to preregistration in the spring term of 1961.

*103-104. **INTRODUCTION TO 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. Simon and Assistants.

A general survey of European history since

antiquity, stressing the cultural and intellectual heritage of the West. Much of the assigned reading is in selections from the writings of each period illustrating its contributions to this heritage; these are discussed in the sections.

*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. M W F 3. 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.

A survey of ancient history from the beginnings of civilization in the valleys of the Near East to the decline of the Roman Empire.

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. SZEFTL.

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. SZEFTL.

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. DAVIS.

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. LAFFEBER.

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 9. Mr. KAGAN. Not offered in 1961-1962.]

[212. HELLENISTIC AGE.] Spring term. Credit three hours. M W F 9. Mr. KAGAN. Not offered in 1961-1962.]

213. THE ROMAN REPUBLIC, 133-30 B.C. Fall term. Credit three hours. Prerequisite, History 121-122 or consent of the instructor. M W F 9. Mr. KAGAN.

An intensive study of the political, economic, social, and intellectual history of Rome from the Gracchi to the end of the Republic.

214. THE ROMAN EMPIRE, 30 B.C.-A.D. 180. Spring term. Credit three hours. Prereq-

uiste, History 121-122 or consent of the instructor. M W F 9. Mr. KAGAN.

An intensive study of the political, economic, social, and intellectual history of the Roman world from the emergence of the Augustan Principate to the death of Marcus Aurelius.

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.

The structure of secular and ecclesiastical government and the relations between them in the period 1000-1300.

[**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. Not offered in 1961-1962.]

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.

Topics of intellectual and social history considered against the political background of the growth of the French monarchy, 1100-1250.

[**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. Not offered in 1961-1962.]

[**402. EUROPE IN THE TWENTIETH CENTURY.** Spring term. Credit three hours. Prerequisite, History 104, 106, or 401. Not offered in 1961-1962.]

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.

A study of European politics and culture in the era of the great religious movements of the sixteenth and early seventeenth centuries.

[**421. THE ITALIAN RENAISSANCE.** Fall term. Credit three hours. Open to upperclassmen and graduate students. T Th S 11. Mr. Rice. Not offered in 1961-1962.]

[**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. Not offered in 1961-1962.]

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. M W F 12. Mr. SIMON.

An advanced discussion course on German history since the Peace of Westphalia. Includes consideration in the first term of the late Holy Roman Empire, territorial absolutism, the Enlightenment, liberalism, and the Revolution of 1848; in the second term, Bismarck and his unification, the reign of William II, World War I and revolution, the Weimar Republic, and National Socialism.

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 W 4-6. Mr. SIMON.

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. Not offered in 1961-1962.]

[**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 1961-1962.]

[**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. Not offered in 1961-1962.]

442. THE OLD REGIME IN FRANCE, 1660-1789. Spring term. Credit three hours. Open to upperclassmen and graduate students who have completed six hours of work in history. M W F 10. Mr. GUERLAC.

The social and political history of the French monarchy from the Age of Louis XIV to the Revolution. A reading knowledge of French is required.

[**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 10. Mr. GUERLAC. Not offered in 1961-1962.]

445. SOURCES OF EIGHTEENTH-CENTURY FRENCH HISTORY. Fall term. Credit three hours. Prerequisites, a reading knowledge of French and permission of the instructor. T Th 2. Mr. GUERLAC.

Primarily for graduate students. Close reading and discussion of key sources for the social and intellectual history of the French Enlightenment.

[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. SZEFTTEL. Not offered in 1961-1962.]

[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. SZEFTTEL. Not offered in 1961-1962.]

[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. SZEFTTEL. Not offered in 1961-1962.]

457. *RUSSIAN CONSTITUTIONAL HISTORY TO PETER THE GREAT*. Fall term. Credit three hours. Prerequisite, History 147-148 or consent of the instructor. For upperclassmen and graduate students. M W 2-3:30. Mr. SZEFTTEL.

An intensive study of the social, political, and economic institutions of Kiev Russia, the merchant republics of the North, the principalities of the Volga basin, and the State of Muscovy.

458. *RUSSIAN HISTORIOGRAPHY*. Spring term. Credit three hours. Prerequisite, History 147-148 or consent of the instructor. M W 2-3:30. Mr. SZEFTTEL.

Chronological analysis of the principal sources for Russian history, with reference to its basic problems. Development of historical writing from its beginning to the present (methods and schools).

[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. Not offered in 1961-1962.]

[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. Not offered in 1961-1962.]

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.

A study of English history from 1485 to 1688 in which equal attention will be given

to political, constitutional, economic, and cultural changes. Many of the principal prose works, poems, and plays of the period will be studied for the information they give concerning the life of the times.

[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. Not offered in 1961-1962.]

[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 1961-1962.]

711. *AMERICAN COLONIAL HISTORY TO 1763*. Fall term. Credit three hours. For upperclassmen and graduates. M W F 11 Mr. NETTELS.

712. *THE AGE OF WASHINGTON, 1763-1800*. Spring term. Credit three hours. For upperclassmen and graduates. M W F 11 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 3. 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 3. 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. Not offered in 1961-1962.]

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.

Emphasis will be placed on industrial changes, business consolidation, labor problems, conservation, growth of social control,

World Wars I and II, the Great Depression, the New Deal, America in world affairs.

[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. Not offered in 1961-1962.]

736. **THE AMERICAN REFORM IMPULSE, 1800-1860.** Spring term. Credit three hours. Open to upperclassmen and graduate students. M W F 3. 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. 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.

HONORS PROGRAM

611. **HONORS PROSEMINAR.** Fall term. Credit three hours. Open only to juniors accepted as candidates for Honors in History. M 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.

GRADUATE SEMINARS

275-276. **SEMINAR IN ANCIENT HISTORY.** Throughout the year. Credit three hours a term. Hours to be arranged. Mr. KAGAN.

The Peace of Nicias: studies in Greek politics and diplomacy, fifth century B.C.

379-380. **SEMINAR IN MEDIEVAL HISTORY.** Throughout the year. Hours to be arranged. Mr. TIERNEY.

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. BIGGER-STAFF.

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.** Spring 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.

921-922. **SCIENCE AND THE MODERN WORLD.** Throughout the year. Credit three hours. Prerequisite, History 103-104 or 105-106 plus fulfillment of the science requirement, or History 165-166. M W F 2. Mr. WILLIAMS.

A study of the impact of modern science on industry, agriculture, population, and society.

060. **INFORMAL STUDY.** Credit three hours. Prerequisite, permission of the chairman of the department. Available only to seniors with grades of 80 or better in all courses in the humanities and social sciences.

612-613. **SENIOR HONORS GUIDANCE.** Spring and fall terms. Credit three hours a term. Prerequisite, History 611.

These two terms will be devoted to the writing of an Honors essay under the guidance of a member of the department.

618. **SUPERVISED READING FOR HONORS.** Spring term, credit three hours. Prerequisite History 613 or 616. Major adviser.

Extensive reading in preparation for a comprehensive oral examination.

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. Not offered in 1961-1962.]

483. **SEMINAR IN MODERN EUROPEAN HISTORY.** Fall term. Credit three hours. W 4-6. Mr. SIMON.

Topics in German political or intellectual history.

497-498. **SEMINAR IN RUSSIAN HISTORY.** Throughout the year. Credit three hours a term. Hours to be arranged. Mr. SZEFTTEL.

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. Hours to be arranged. Mr. WILLIAMS.

LITERATURE

Mr. ROBERT M. ADAMS, *Chairman*; Messts. ERIC BLACKALL, HARRY CAPLAN, ANTHONY CAPUTI, PAUL DE MAN, J.-J. DEMOREST, ROBERT DURLING, J. M. ECHOLS, E. G. FOGEL, GEORGE GIBIAN, JAMES HUTTON, GORDON M. KIRKWOOD, G. A. MCCALMON, BURTON E. PIKE, I. RABINOWITZ, H. E. SHADICK, FRIEDRICH SOLMSEN, H. A. WICHELSN, T. ALEC BURKILL.

Major study in literature is restricted to those students who are prepared to undertake the Honors program. Such students must have demonstrated proficiency in the field of literary study (preferably in the basic sequences 101-102, 303-304); must have a reading knowledge of one language other than English; and must maintain a general academic average of 80 or better. After completing the basic sequences, they will be expected to take eighteen hours of advanced work, suitably diversified and concentrated. During their senior year they will be expected to write an Honors essay, under supervision; and at the end of the senior year, will take a comprehensive examination. All prospective literature majors should consult the Chairman during the second term of their sophomore year.

101-102. **MASTERWORKS OF WESTERN LITERATURE.** Throughout the year. Credit three hours a term. First term prerequisite to second. For sophomores and upperclassmen. M W F 9, 10, 11, 12, 2; T Th S 9, 10, 11. Mr. FOGEL 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 1961.

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*. Lit-

erature 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 apocryphal 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.

209-210. **THE LITERATURE OF THE NEW TESTAMENT.** Throughout the year. Credit three hours a term. First term not prerequisite to the second. T Th S 10. Mr. BURKILL.

A critical examination of the writings of the New Testament in the light of modern scholarship. No knowledge of Greek is required. Fall term: the Synoptic Gospels and the Fourth Gospel. Spring term: the Acts of the Apostles, the Pauline and other Epistles, the Apocalypse.

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. T Th S 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. M W F 10. Fall term, Mr. FOGEL. Spring term, Mr. ADAMS.

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 MODERN EUROPEAN NOVEL.** Throughout the year. Credit three hours a term. T Th S 11. Mr. PIKE.

Representative eighteenth- and nineteenth-century English, French, German, and Russian novels will be discussed in the first semester, nineteenth- and twentieth-century works in the second. All foreign works will be read in English translation. Permission of the instructor required to take the second semester without the first.

318. **SOUTHEAST ASIAN LITERATURE IN TRANSLATION.** Spring term. Credit three hours. T 2-4. Mr. ECHOLS.

321. **CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION.** Fall term. Credit three hours. M W F 10. Mr. SHADICK.

Philosophical and historical literature, including Confucian, Taoist, and Buddhist writings.

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.** Will not be offered in 1961-1962.]

For other courses in translation of Russian literature, see Russian 321, 323, and 328.

329. **EUROPEAN LITERATURE, 1900-1930.** Fall term. Credit three hours. For sophomores and upperclassmen. T Th S 10. Mr. —.

A review of noteworthy tendencies and achievements in recent literature of the Continent. Reading, in translation, of works by such authors as Gide, Proust, Apollinaire, Thomas Mann, Pirandello, Kafka, and others.

330. **EUROPEAN LITERATURE, 1930-—.** Spring term. Credit three hours. For sophomores and upperclassmen. T Th S 10. Mr. GIBIAN.

Reading, in translation, of works by such authors as Camus, Beckett, Giono, Babel, Ionesco, Moravia, and others.

401-402. **PRINCIPLES OF LITERARY CRITICISM.** Throughout the year. Credit three hours a term. Fall term, M 2-4 or W 2-4, Mr. CAPLAN. Spring term, M W F 2, Mr. —.

Theories of literary art. In the fall term, consideration will be given to Greek and Roman criticism; in the spring term, to English criticism from the Renaissance to the present day.

405. **THEORY AND PRACTICE OF TRANSLATION.** Fall term. Credit three hours. Hours to be arranged. Mr. ADAMS.

Studies of various translations into and out of English; versions, interpretations, and imitations. Periodic practice in translation; reports, and discussion. Prerequisite, consent of the instructor.

501-502. **INTRODUCTION TO COMPARATIVE LITERATURE.** Throughout the year. Credit three hours a term. Primarily for graduate students in comparative literature. Hours to be arranged. Mr. DE MAN.

A seminar in the practice and theory of literary interpretation, with special emphasis on the comparative study of critical methods. A reading knowledge of at least one language besides English is required.

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. J. B. ROSSER, *Chairman*; MESSRS. A. AEPPLI, R. P. AGNEW, W. BROWDER, Z. CIESIELSKI, C. R. CURJEL, R. H. FARRELL, W. FEIT, W. H. J. FUCHS, L. GROSS, I. N. HERSTEIN, D. HERTZIG, C. S. HERZ, R. G. HEYNEMAN, P. HILTON, R. C. W. HOURSTON, H. KESTON, J. C. KIEFER, Mrs. M. R. KINSOLVING, MESSRS. S. KOCHEN, G. R. LIVESAY, I. NAMIKA, A. NERODE, P. OLUM, S. V. PARTER, H. POLLARD, J. J. PRICE, W. RINDLER, A. ROSENBERG, M. SCHREIBER, E. P. SPECKER, F. L. SPITZER, R. J. WALKER, 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 399, and a further one-year sequence from 600-799.

Option III (Teaching). For prospective secondary school teachers. In mathematics, 241, 311, 341, 401-402 and at least three more hours of courses numbered above 193. In education, at least 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, 301, 302 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.

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. T Th S 9. 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.** Fall term. Credit three hours except for students offering trigonometry for entrance. Prerequisites, plane geometry and intermediate algebra. T Th S 9.

*161. **ANALYTIC GEOMETRY AND CALCULUS.** Either term. Credit three hours. Prerequisite, three years of college preparatory mathematics, including trigonometry. 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, M W F 8, 10, 11, 12; spring term, lectures M W 9, 10, 12; T Th 9, 10, 12. Recitations 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 10, 12, T Th 10, 12. Recitations to be arranged; spring term, M W F 8, 9, 11.

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 an advanced section of Mathematics 161. Fall, M W F 9; spring, M W F 8, 9, 10, 11, 12. T Th S 9, 10, 11.

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. Fall, M W F 10, 12, T Th S 10, 12; spring, M W F 9.

Topics similar to those of Mathematics 163.

*192. **CALCULUS.** Fall term. Credit three hours. Prerequisite, consent of the instructor. M W F 12. Mr. —.

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.** Spring term. Credit three hours. Prerequisite, Mathematics 192 or consent of the instructor. M W F 12. Mr. HEYNE-MAN.

Continuation of Mathematics 192, and a substitute for Mathematics 183.

194. **CALCULUS.** Fall 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. HEYNE-MAN.

Continuation of Mathematics 193. Includes a treatment of differential equations.

ALGEBRA AND LOGIC

301-302. **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. —.

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.

311. **ELEMENTARY LINEAR ALGEBRA.** Fall term. Credit three hours. Prerequisite, Mathematics 182. M W F 11. Mr. HERZ.

Primarily for undergraduates. Vectors, matrices, and linear transformations. Affine and Euclidean spaces. Transformation of matrices. Eigenvalues.

341. **ALGEBRA AND ELEMENTARY NUMBER THEORY.** Spring term. Credit three hours. Prerequisite, Mathematics 182. M W F 11. Mr. NERODE.

Primarily for undergraduates. Definitions and examples of groups. Finite abelian groups, congruence classes, characters. The fundamental theorem of arithmetic. Imaginary quadratic fields.

373-374. **MODERN ALGEBRA.** Throughout the year. Credit three hours a term. Pre-

241. **INTRODUCTION TO MODERN MATHEMATICS.** Spring term. Credit three hours. Prerequisite, Mathematics 182. T Th S 11. Mr. HERTZIG.

Primarily for undergraduates, particularly for prospective teachers and those with a cultural interest in mathematics. Set theory, logic, axiom systems, the real number field, other simple algebraic structures, cardinal numbers.

281-282. **HONORS SEMINAR.** Throughout the year. Credit three hours a term. Prerequisite, provisional acceptance as a candidate for Honors. Hours to be arranged. Mr. FUCHS.

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. M W 4-5:30. Mr. HERTZIG.

Presentation by students of material in mathematical literature. Required of all graduate students majoring in mathematics.

requisite, Mathematics 371-372 or consent of the instructor. First term prerequisite to second. T Th 2-3:30. Mr. FEIR.

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.

377-378. **SEMINAR IN ALGEBRA.** Throughout the year. Credit three hours a term. Prerequisite, Mathematics 374 or consent of the instructor. Hours to be arranged. Mr. ROSENBERG.

For graduate students or qualified undergraduates. Topics in advanced algebra of interest to students and teacher.

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. ROSSER.

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. ROSSER.

For graduate students and qualified undergraduates. A study of advanced topics in symbolic logic. Applications to mathematical reasoning will be stressed.

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. Mr. AEPPLI.

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.

411. **ELEMENTARY TOPOLOGY.** Spring term. Credit three hours. Prerequisite, Mathematics 183. T Th S 9. Mr. LIVESAY.

Primarily for undergraduates. Elementary combinatorial topology, Jordan curve theorem, fixed point theorems.

415-416. **ALGEBRAIC TOPOLOGY.** Throughout the year. Credit three hours a term. Prerequisites, Mathematics 505 and 373 or consent of the instructor. First term prerequisite to second. Hours to be arranged. Mr. OLUM.

For graduate students and qualified undergraduates. Homology and co-homology theory (and to a lesser extent homotopy theory) of complexes and more general spaces, with geometric applications. Second term will include more advanced topics such as sheaves, spectral sequences, and duality theory in manifolds.

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. NAMIOKA.

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

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. Messrs. NERODE and KOCHEN.

For graduate students or qualified undergraduates. Topics in mathematical logic of interest to students and teacher.

[417-418. **ADVANCED TOPOLOGY.** Throughout the year. Credit three hours a term. Prerequisite, Mathematics 415-416. Not given in 1961-1962.]

427-428. **SEMINAR IN TOPOLOGY.** Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. BROWDER.

For graduate students and qualified undergraduates. Topics in topology of interest to students and teacher.

433-434. **DIFFERENTIAL GEOMETRY.** Throughout the year. Credit three hours a term. Prerequisite, Mathematics 502 or 612 or consent of the instructor. First term prerequisite to second. M W F 2. Mr. CURJEL.

For undergraduate and graduate students. Classical theory of curves and surfaces. Tensor analysis and Riemannian geometry. Selected topics in differential topology (differentiable manifolds, etc.).

[451-452. **ALGEBRAIC GEOMETRY.** Throughout the year. Credit three hours a term. Prerequisites, Mathematics 183 and consent of the instructor. Not given in 1961-1962.]

[497-498. **LIE GROUPS.** Throughout the year. Credit three hours a term. Prerequisites, Mathematics 302, 505 or consent of the instructor. Not given in 1961-1962.]

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. M W F 2. Mr. LIVESAY.

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. M W F 3. Messrs. WIDOM and SCHREIBER.

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 302 and 505. Hours to be arranged. Mr. GROSS.

Topological linear spaces, linear transformations on Banach spaces, the spectral theorem for normal operators, Banach algebras, representations of locally compact groups, introduction to the theory of rings of operators.

527-528. **SEMINAR IN ANALYSIS.** Throughout the year. Credit three hours a term. Prerequisites, Mathematics 508 and consent of the instructor. Hours to be arranged. Mr. SPITZER.

For graduate students and qualified undergraduates. Topics in advanced analysis of interest to students and instructor.

532. **COMPLEX VARIABLES.** Spring term. Credit three hours. Prerequisites, Mathematics 505 and 615, or consent of the instructor. M W F 2. Mr. ———.

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. ———.

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. GROSS.

This constitutes the first semester of a five-semester sequence. Roughly half of the course

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 507. Not given in 1961-1962.]

[543-544. **ANALYTIC NUMBER THEORY.** Throughout the year. Credit three hours a term. Prerequisite, Mathematics 532. Not given in 1961-1962.]

[561. **HILBERT SPACE AND INTEGRAL EQUATIONS.** Spring term. Credit three hours. Prerequisite, Mathematics 372, 507 or the equivalent, or consent of the instructor. Not given in 1961-1962.]

571. **ADVANCED THEORY OF ORDINARY DIFFERENTIAL EQUATIONS.** Spring term. Credit three hours. Prerequisite, Mathematics 507. Hours to be arranged. Mr. POLLARD.

A survey of the modern theory of ordinary differential equations. Existence and uniqueness theorems; the topology of integral curves; periodic solutions; stability. Introduction to the problems of celestial mechanics.

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. Prerequisite, Mathematics 612. First term prerequisite to second. T Th S 10. Mr. FUCHS.

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. Pre-

requisite, Mathematics 614 or consent of the instructor. M W F 12. Mr. CIESIELSKI.

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. Prerequisites, Mathematics 614 and 615. M W F 12. Mr. CIESIELSKI.

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. AGNEW.

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 varia-

tions, matrices, integral equations, and eigenvalue problems.

[641-642. **PARTIAL DIFFERENTIAL EQUATIONS.** Throughout the year. Credit three hours a term. Prerequisite, Mathematics 610. Not given in 1961-1962.]

661. NUMERICAL ANALYSIS. Fall term. Credit three hours. Prerequisite, Mathematics 183 and 608 or consent of the instructor. M W F 9. Mr. PARTER.

Primarily for undergraduates. The elements of modern numerical computations, 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. PARTER.

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 1961-1962.]

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 11. Mr. KIEFER.

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. —.

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. —.

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 1961-1962.]

[725. STOCHASTIC PROCESSES. Spring term. Credit three hours. Prerequisite, consent of the instructor. Not given in 1961-1962.]

[731-732. ANALYSIS OF VARIANCE AND DESIGN OF EXPERIMENTS. Throughout the year. Credit three hours a term. Prerequisite-

site, Mathematics 722 or consent of the instructor. Not given in 1961-1962.]

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. W F 4-5:30. Mr. ———.

The elements of Wald's theory of decision functions. Randomization, sufficiency, completeness. Minimum variance estimators. Derivation of sequential minimax estimators by the methods of differential inequalities, Bayes solutions, and invariance. The Neyman-Pearson theory of testing hypotheses and interval estimation. Multi-decision problems. Existence

theorems, complete class theorems, and other general decision-theoretic results. Recent developments.

[747. **SEQUENTIAL ANALYSIS.** Fall term. Credit three hours. Prerequisite, Mathematics 722 or consent of the teacher. Not given in 1961-1962.]

761-762. **SEMINAR IN PROBABILITY AND STATISTICS.** Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. M 4-6. Mr. ———.

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.

201-202. **BURMESE READING.** Throughout the year. Credit three hours a term. Prerequisite for 201, qualification in Burmese; 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 Burmese; for 204, Course 203 or consent of the instructor. Hours to be arranged. Mr. JONES.

221-222. **ADVANCED BURMESE READING.** Throughout the year. Credit three hours a term. Prerequisite, Burmese 201-202 or the equivalent. Open to seniors and graduate students. Hours to be arranged. Mr. JONES.

Selected readings in Burmese writings in various fields.

CHINESE

Miss H. C. MILLS, Mr. 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. M W F 8 and M T W Th F 9.

*201. **INTERMEDIATE CHINESE.** Fall term. Credit six hours. Prerequisite, Chinese 102 or equivalent. Daily at 11.

*202. **INTERMEDIATE CHINESE.** Spring term. Credit three hours. Prerequisite, Chinese 201. T Th S 11.

*212. **INTRODUCTION TO CLASSICAL CHINESE.** Spring term. Credit three hours. Prerequisite, Chinese 201 or equivalent. M W F 11.

*301-302. **READINGS IN SOCIAL SCIENCE CHINESE.** Throughout the year. Credit three hours a term. Hours to be arranged.

*351-352. **READINGS IN CLASSICAL CHINESE.** Throughout the year. Credit three hours a term. Prerequisite, Chinese 212 or equivalent. Hours to be arranged. Mr. SHADICK.

*353. **CHINESE PHILOSOPHICAL TEXTS.** Fall term. Credit three hours. Admission with permission of instructor. Hours to be arranged. Mr. SHADICK.

CZECH

Mr. R. L. LEED.

[111-112. **ELEMENTARY COURSE.** Throughout the year in alternate years. Credit

three hours a term. Open to graduate students and upperclassmen who have qualified in Russian. Hours to be arranged. Not offered in 1961-1962.]

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. P. DE MAN, J.-J. DEMOREST, D. GROSSVOGEL, R. A. HALL, JR., MRS. J. PARRISH, 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 in 300 series (also 010), or (b) Linguistics 201-202 and French 223-224, 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 13 and 14 before registering for this course. Fall term, drill at 8, 9, 10, 11, or 12; lecture M W 8 or 10, W F 12 or T Th 8. Spring term, drill daily at 8, 9, 10, 11, or 12; 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 13 and 14 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.

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.

*191. **ELEMENTARY COURSE.** Either term. No credit. M W F 2 or T Th S 8. Intensive grammar review and reading.

*201. **INTERMEDIATE READING COURSE.** Either term. Credit three hours. Prerequisite, qualification in French. Fall term: M W F 9, 12 or T Th S 9, 10. Spring term: M W F 12, 3 or T Th S 9, 10. Mr. SEZNEC 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, qualification in French. 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. Prerequisites, qualification in French and Linguistics 201-202. Open only to juniors, seniors, and graduate students. M W F 3. Mr. PORTER. Not offered in 1961-1962.]

243-244. **HISTORY OF THE FRENCH LANGUAGE SINCE 1300.** Throughout the year in alternate years. Credit three hours a term. Prerequisites, 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 the end of the Old French period to modern times. The extension of the standard language; Middle, Renaissance, and Modern French. The structure of the modern language from the point of view of speech and its written representation. The results of linguistic analysis contrasted with traditional grammatical description. Lectures, discussion, readings in Middle and early Modern French texts and exercises.

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. Messrs. HALL and PORTER.

*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. 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.** Throughout the year. Credit three hours a term. Prerequisite, French 301 or its equivalent. May be entered in the spring term. T Th S 12. Mr. ———.

The first term deals with the humanist writers of the early French Renaissance, particularly Rabelais. The second term treats chiefly of Montaigne and the writers of the Pléiade.

313-314. **LITERATURE OF THE SEVENTEENTH CENTURY.** Throughout the year. Credit three hours a term. Prerequisite, French 301 or its equivalent. May be entered in the spring term. T Th 2-3:30. Mr. ———.

[315-316. **LITERATURE OF THE EIGHTEENTH CENTURY.** Not offered in 1961-1962.]

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.

323-324. **CONTEMPORARY FRENCH LITERATURE.** Throughout the year. Credit three hours a term. Prerequisite, French 302 or its equivalent. May be entered in the second term. M W F 3. Mr. ———.

Contemporary intellectual currents of our time as manifested in the literature of the last twenty years. Lectures and classroom discussions in French.

325-326. **LITERATURE OF THE 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. DE MAN.

Romanticism, realism and naturalism, their theory, development and achievements. Selected readings in the novel, drama, and poetry. Lectures and classroom discussion in French.

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.

353-354. **STUDIES IN FRENCH STYLE.** Throughout the year. Credit three hours a term. Prerequisite, a high level of proficiency acceptable to course instructor. Consult instructor before registration. M W F 3. Mr. SEZNEC.

A study of the stylistic significance of tenses and of sentence structure. Designed for those who are oriented toward a literature major or who are mainly concerned with language as literary expression.

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. ———.

Subject to be announced.

375-376. **GRADUATE SEMINAR.** Throughout the year. May be entered in the second semester. Credit three hours a term. T 3:30. Mr. DEMOREST.

Subject to be announced.

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, R. R. CATURA, J. M. COWAN, P. DE MAN, P. DEMETZ, H. L. KUFNER, B. E. PIKE, and Staff.

For a major in German, the following are to be completed: (1) German 223-224, 301-302, 303-304; (2) either (a) German 305-306, 311, 313, 316, or (b) Linguistics 201-202, German 241-242, 243; (3) twelve 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.

COURSES FOR UNDERGRADUATES

*101. **ELEMENTARY COURSE.** Either term. Credit six hours. Students who have previously studied German should consult pages 13 and 14 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 13 and 14 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.

*191. **ELEMENTARY COURSE.** Either term. No credit. T Th S 10.

Intensive grammar review and reading.

*201-202. **MASTERPIECES OF GERMAN LITERATURE.** Throughout the year. Credit three hours a term. Prerequisite for 201, qualification in German; for 202, German 201. M W F 11 or T Th S 11. Messrs. BONAWITZ, PIKE, and others.

The aim is to introduce the student to German literature.

*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. BONAWITZ.

*203-204. **INTERMEDIATE COMPOSITION AND CONVERSATION.** Throughout the year. Credit three hours a term. Prerequisite for 203, qualification in German; for 204, German 203 or consent of the instructor. T Th S 11 or 12.

223. **ADVANCED COMPOSITION AND CONVERSATION.** Fall term. Credit three hours. Prerequisite, German 204 or consent of the instructor. T Th S 10. Mr. KUFNER.

Emphasis is placed upon increasing the student's oral and written command of German. Detailed study of present-day syntax.

224. **STUDIES IN GERMAN LANGUAGE AND STYLE.** Spring term. Credit three hours.

Prerequisite, German 223 or consent of the instructor. T Th S 10. Mr. KUFNER.

A study of the stylistic resources of German. Selected texts will serve as the basis for practice in written and oral expression.

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. Fall term, Mr. KUFNER. Spring term, Mr. BONAWITZ.

The relation of German to English and other Indo-European languages; the development of the German language up to approximately the year 1500. Students will have the opportunity of extensive readings from Bachmann's *Mittelhochdeutsches Lesebuch* and from some Old High German texts.

[243. **LINGUISTIC STRUCTURE OF GERMAN.** Fall term in alternate years. Credit three hours. Prerequisites, qualification in German, and Linguistics 201, taken previously or concurrently. Open only to juniors, seniors, and graduate students. T Th S 11. Mr. KUFNER. Not offered in 1961-1962.]

[244. **APPLIED GERMAN LINGUISTICS.** Spring term in alternate years. Credit three hours. Prerequisite, German 243. Open only to juniors, seniors, and graduate students. T Th S 11. Mr. KUFNER. Not offered in 1961-1962.]

[*301-302. **PROSE AND DRAMA OF THE NINETEENTH CENTURY.** Throughout the year in alternate years. Credit three hours a term. Prerequisite, German 202 or (for freshmen) advanced placement. Not offered in 1961-1962.]

*303-304. **GOETHE.** Throughout the year. Credit three hours a term. Prerequisite, German 202 or (for freshmen) advanced placement. M W F 9. Mr. BLACKALL and Mr. BONAWITZ.

*305-306. **EIGHTEENTH CENTURY LITERATURE (EXCLUDING GOETHE).** Throughout the year in alternate years. Credit three hours a term. Prerequisite, German 202 or (for freshmen) advanced placement. M W F 12. Messrs. DEMETZ and 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.

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 GERMANIC LINGUISTICS*. Throughout the year in alternate years. Credit three hours a term. W 2-4. Mr. KUFNER. Not offered in 1961-1962.]

283-284. *OLD SAXON AND OLD HIGH GERMAN*. Throughout the year in alternate years. Credit three hours a term. Hours to be arranged. Mr. KUFNER.

290. *SEMINAR IN GERMANIC LINGUISTICS*. Spring term. Hours and credits to be arranged. Mr. KUFNER.

Subject: Introduction to German dialectology.

501. *BIBLIOGRAPHY AND METHOD*. Fall term. Credit one hour. Th 4:30-5:30. Mr. BLACKALL 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. BONAWITZ.

[511-512. *THE GERMAN LANGUAGE SINCE 1500*. Throughout the year. Credit three hours a term. Mr. BLACKALL. Not offered in 1961-1962.]

HINDI

Mr. G. H. FAIRBANKS and Staff.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged.

316. *LYRIC POETRY, 1832 TO THE PRESENT*. Spring term in alternate years. Credit three hours. Prerequisite, German 202 or consent of the instructor. Hours to be arranged. Mr. PIKE.

090. *INFORMAL STUDY*. Open to qualified juniors and seniors.

[519. *GERMAN LITERATURE IN THE PERIOD OF THE REFORMATION*. Fall term. Credit three hours. Not offered in 1961-1962.]

521-522. *GERMAN LITERATURE IN THE SEVENTEENTH CENTURY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. DE CAPUA.

[531. *LESSING AND THE ENLIGHTENMENT*. Fall term. Credit three hours. Mr. DE CAPUA. Not offered in 1961-1962.]

[532. *SCHILLER*. Spring term. Credit three hours. Mr. DE CAPUA. Not offered in 1961-1962.]

541-542. *GOETHE*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. BLACKALL.

522. *GERMAN ROMANTICISM*. Spring term. Credit three hours. Hours to be arranged. Mr. PIKE.

[561-562. *GERMAN LITERATURE 1832-1890*. Throughout the year. Credit three hours a term. Mr. DE CAPUA. Not offered in 1961-1962.]

[571-572. *GERMAN LITERATURE SINCE 1890*. Throughout the year. Credit three hours a term. Mr. PIKE. Not offered in 1961-1962.]

591-592. *SEMINAR IN GERMAN LITERATURE*. Throughout the year. Credit three hours a term. Details to be arranged. Messrs. DEMETZ and DE MAN.

HISTORY OF GERMANY SINCE 1648. (See History 425-426.)

OLD NORSE LANGUAGE AND LITERATURE. Consult Mr. BLACKALL.

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.

203-204. **INTERMEDIATE COMPOSITION AND CONVERSATION.** Throughout the year. Credit three hours a term. Prerequisite, qualification in Hindi or consent of the instructor. Hours to be arranged.

221-222. **READINGS IN HINDI LITERATURE.** Throughout the year. Credit three hours a term. Prerequisite, Hindi 202. 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

Mr. R. A. HALL, JR., and Staff.

For a major in Italian, consult Mr. Hall.

*101-102. **ELEMENTARY COURSE.** Throughout the year. Credit six hours a term. Drill daily, 9, 11, or 12; lecture, T Th 10.

111-112. **ELEMENTARY COURSE.** Throughout the year. Credit three hours a term. Open to graduate students and upper-classmen who have qualified in Romance language or Latin. M W F 2.

*191. **ELEMENTARY COURSE.** Either term. No credit. T Th 2-3:30.

Intensive grammar review and reading.

*203. **INTERMEDIATE COMPOSITION AND CONVERSATION.** Fall term as required. Credit three hours. Prerequisite, qualification in Italian. T Th 2-3:30.

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 re-

quired. Credit three hours. Prerequisite, Italian 203. T Th 2-3:30.

290. **SEMINAR IN HINDI LINGUISTICS.** Either term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. FAIRBANKS.

[222. **READING IN INDONESIAN AND MALAY.** Spring term in alternate years. Credit three hours. Prerequisite, Indonesian 201-202 or the equivalent. Open only to juniors, seniors, and graduate students. Hours to be arranged. Mr. ECHOLS. Not offered in 1961-1962.]

243. **LINGUISTIC STRUCTURE OF INDONESIAN.** Fall term in alternate years. Credit three hours. Prerequisites, Indonesian 101-102 or the equivalent and Linguistics 201. Open only to juniors, seniors, and graduate students. Hours to be arranged. Mr. ECHOLS.

Introduces the student of the Indonesian language to a consideration of the sounds, forms, and syntax of modern Indonesian, using recorded materials and selected texts.

quired. Credit three hours. Prerequisite, Italian 203. T Th 2-3:30.

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. Not offered in 1961-1962.]

303-304. **DANTE.** Throughout the year. Credit three hours a term. Prerequisite, reading knowledge of Italian. M W F 2. Mr. HALL.

Reading of the *Divine Comedy*, with especial attention to its cultural and historical background.

305-306. **STUDIES IN THE ITALIAN RENAISSANCE.** Throughout the year. Credit three hours a term. Prerequisite, reading knowledge of Italian. M W F 3. Mr. HALL.

Readings in late fifteenth-century and sixteenth-century Italian literature, from Lorenzo de' Medici to Tasso.

[313. **LEOPARDI, MANZONI, AND THE ROMANTIC PERIOD.** Not offered in 1961-1962.]

JAPANESE

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. **JAPANESE READING.** Throughout the year. Credit three hours a term. Prerequisite for 201, qualification in Japanese;

[315-316. **LITERATURE OF THE LATE NINETEENTH AND TWENTIETH CENTURY.** Throughout the year. Credit three hours a term. Prerequisites, a reading knowledge of Italian and consent of the instructor. May be entered in the second term. M W F 2. Mr. HALL. Not offered in 1961-1962.]

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, R. B. JONES, JR., H. L. KUFNER, R. L. LEED, C. S. LEONARD, JR., D. F. SOLÁ, and MRS. SHAH.

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. HOCKETT.

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.

An extended practical course in transcription and accurate imitation of the sounds of various languages, designed to supplement Linguistics 204; primarily for majors and graduate students.

208. **FIELD METHODS AND LINGUISTIC TYPOLOGY.** Spring term. Credit two or three hours. Prerequisite, Linguistics 203. Hours to be arranged. Mr. HOCKETT.

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 Japanese; for 204, Course 203 or consent of the instructor. Hours to be arranged. Mr. JONES.

A survey of three or four languages of varied types, and an introduction to the techniques of field work with an informant. Primarily for majors and graduate students.

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.

[261. **MALAYO-POLYNESIAN LINGUISTICS.** Fall term in alternate years. Credit three hours. Prerequisite, Linguistics 201-202. Open only to seniors and graduate students. Hours to be arranged. Mr. ECHOLS. Not offered in 1961-1962.]

271-272. **SEMINAR IN THE LINGUISTICS OF MAINLAND SOUTHEAST ASIAN LANGUAGES.** Throughout the year. Credit three hours a term. Prerequisite, Linguistics 201-202. Open only to seniors and graduate students. Hours to be arranged. Mr. JONES.

Descriptive and comparative studies will be dealt with in alternate terms. Topics will be selected in accordance with the interests of the student.

[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. Not offered in 1961-1962.]

283. **ELEMENTARY SANSKRIT.** Fall term in alternate years. Credit three hours. Prerequisite, advanced standing. Hours to be arranged. Mr. FAIRBANKS.

Introduction to the sounds and forms of Sanskrit; readings in Sanskrit.

284. **COMPARATIVE METHODOLOGY.** Spring term in alternate years. Credit three hours. Prerequisite, Linguistics 201-202 or equivalent. Hours to be arranged. Mr. FAIRBANKS.

A study of the methods and techniques in comparative linguistics; application of these methods to various language families depending on the student's background.

[285-286. **COMPARATIVE INDO-EUROPEAN LINGUISTICS.** Throughout the year in alternate years. Credit three hours a term. Hours to be arranged. Mr. FAIRBANKS. Not offered in 1961-1962.]

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.

QUECHUA

Mr. D. F. SOLÁ.

111-112. **ELEMENTARY COURSE.** Throughout the year. Credit three hours a term. Open only to graduate students and

upperclassmen who have qualified in Spanish. Hours to be arranged.

A basic course in the Cuzco dialect of Quechua, emphasizing auditory comprehension and verbal control.

RUSSIAN

MESSRS. G. H. FAIRBANKS, GEORGE GIBIAN, MRS. A. L. JARYC, Mr. R. L. LEED, and Staff.

A major in Russian consists of one of the following programs:

(A) For students majoring in Russian literature: (1) Russian 204 or evidence of equivalent attainments; (2) eighteen hours of Russian courses numbered from 301 to 399, no more than six hours of which may be in translation; (3) fifteen hours of related subjects; and (4) a comprehensive examination at the end of the senior year. Students electing this program should consult with Mr. Gibian.

(B) For students majoring in Russian linguistics: (1) Linguistics 201-202; (2) Russian 201, 202, 203, 204, 241-242, 244; (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. Students electing this program should consult with Mr. Fairbanks.

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, 8, 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.

*191. **ELEMENTARY COURSE.** Spring term. No credit. Hours to be arranged. Intensive grammar review and reading.

*201. **INTERMEDIATE READING COURSE.** Either term. Credit three hours. Prerequisite, qualification in Russian. 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 hours. Prerequisite, qualification in Russian. M W F 12 or 2 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.

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.

Designed for students needing further practice in reading Russian that is not literary.

[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. Not offered in 1961-1962.]

244. **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.

A descriptive study and analysis of Russian linguistic structure. Russian phonetics, phonemics, morphology, and syntax.

251-252. **HONORS WORK IN RUSSIAN.** Throughout the year. Credit three hours a term. To be taken in the junior year. Course 251 is normally prerequisite to Course 252. Hours to be arranged. Mr. FAIRBANKS (Russian linguistics), Mr. GIBIAN (Russian literature).

253-254. **HONORS THESIS IN RUSSIAN.** Throughout the year. Credit three hours a term. To be taken in the senior year. Mr. FAIRBANKS (Russian linguistics), Mr. GIBIAN (Russian literature).

315. **PUSHKIN.** Fall term. Credit three hours. Prerequisite, qualification in Russian. Hours to be arranged. Mr. GIBIAN.

[316. **RUSSIAN POETS.** Fall term. Credit three hours. Prerequisite, qualification in Russian. Hours to be arranged. Mr. GIBIAN. Not offered in 1961-1962.]

[317. **RUSSIAN DRAMA.** Spring term. Credit three hours. Prerequisite, qualification in Russian. Hours to be arranged. Mr. GIBIAN. Not offered in 1961-1962.]

318. **RUSSIAN PROSE FICTION.** Spring term. Credit three hours. Prerequisite, qualification in Russian. Hours to be arranged. Mr. GIBIAN.

321. **SOVIET LITERATURE IN TRANSLATION.** Fall term. Credit three hours. T Th 9. Mr. GIBIAN.

323. **TURGENEV AND TOLSTOY IN TRANSLATION.** Fall term. Credit three hours. T Th S 11. Mr. GIBIAN.

328. **DOSTOYEVSKY IN TRANSLATION.** Spring term. Credit three hours. T Th S 9. Mr. GIBIAN.

COURSES FOR GRADUATE STUDENTS

151-152. **GRADUATE READING COURSE.** Throughout the year. Credit three hours a term. Open only to graduate students. Hours to be arranged.

281. **OLD BULGARIAN.** Fall term in alternate years. Credit three hours. Hours to be arranged. Mr. FAIRBANKS.

Descriptive analysis of the phonology and morphology of the language; readings in Old Bulgarian texts.

282. **OLD RUSSIAN.** Spring term in alternate years. Credit three hours. Hours to be arranged. Mr. FAIRBANKS.

Descriptive analysis of the phonology and morphology of Old Russian texts with the aim of studying the development of the language.

[283-284. **COMPARATIVE SLAVIC LINGUISTICS.** Throughout the year in alternate years. Credit three hours a term. Hours to be arranged. Mr. FAIRBANKS. Not offered in 1961-1962.]

290. **SEMINAR IN SLAVIC LINGUISTICS.** Offered in accordance with student needs. Credit three hours a term. Hours to be arranged. Mr. FAIRBANKS.

SERBO-CROATIAN

Mr. R. L. LEED.

111-112. **ELEMENTARY COURSE.** Throughout the year in alternate years. Credit three hours a term. Open to graduate students

and upperclassmen who have qualified in Russian. Hours to be arranged.

SPANISH

MESSYS. F. B. AGARD, D. BRENES, R. L. HADLICH, D. F. SOLÁ, 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 13 and 14 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 13 and 14 before registering for this course. Fall term, drill daily, 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.

*191. **ELEMENTARY COURSE.** Either term. No credit. T Th S 9. Intensive grammar review and reading.

*201. **INTERMEDIATE READING COURSE.** Either term. Credit three hours. Prerequisite, qualification in Spanish. M W F 8. 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, qualification in Spanish. M W F 11 or T Th S 11, and two hours to be arranged.

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 9, and two hours to be arranged.

The study of advanced grammar. Exercises designed to improve the student's ability to speak, read, and write Spanish.

223. **ADVANCED COMPOSITION AND CONVERSATION.** Fall term. Credit three hours. Prerequisite, Spanish 204. T Th S 11, and two hours to be arranged.

The study of fundamental aspects of style in standard spoken Spanish and advanced problems in comparative usage in English and Spanish. Frequent oral and written reports in Spanish are required. Cultural content is oriented to Spain.

224. **ADVANCED COMPOSITION AND CONVERSATION.** Spring term. Credit three hours. Prerequisite, Spanish 223. T Th S 11, and two hours to be arranged.

Extensive reading in current Spanish language publications. The study of fundamental aspects of style in standard written Spanish. Exercises in creative writing in Spanish. Cultural content is oriented to Spanish America.

[241-242. **HISTORY OF THE SPANISH LANGUAGE.** Throughout the year in alternate years. Credit three hours a term. Prerequisite, qualification in Spanish. Open only to juniors, seniors, and graduate students. M W F 2. Mr. AGARD. Not offered in 1961-1962.]

243. **SPANISH SYNTAX.** Fall term in alternate years. Prerequisite, qualification in Spanish. Open only to juniors and seniors. M W F 2. Mr. AGARD or Mr. SOLÁ.

The study of the important syntactic patterns of spoken and written Spanish; contrastive analysis of Spanish and English syntax.

244. **LINGUISTIC STRUCTURE OF SPANISH.** Spring term in alternate years. Credit three hours. Prerequisites, qualification in Spanish and Linguistics 201. Open only to juniors and seniors. M W F 2. Mr. AGARD or Mr. SOLÁ.

The descriptive analysis of Spanish phonology and morphology; contrastive study of the principal regional varieties of Spanish.

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. Not offered in 1961-1962.]

*303-304. **SURVEY OF SPANISH-AMERICAN 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 and classroom discussions in Spanish on the literature from the colonial period to the present, with special consideration of the Spanish, French, and national influences on style and content.

[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. Mr. BRENES. Not offered in 1961-1962.]

[313-314. **LITERATURE OF THE GOLDEN AGE.** Not offered in 1961-1962.]

[315-316. **THE PICARESQUE NOVEL.** Not offered in 1961-1962.]

319. **NINETEENTH- AND TWENTIETH-CENTURY SPANISH DRAMA.** Throughout the year. Credit three hours a term. Prerequisite, Spanish 301-302 or consent of the instructor. May be entered in the second term. Hours to be arranged. Organization meeting September 20, Goldwin Smith, 288, 4 p.m. Mr. BRENES.

A study of the romantic, realistic, and contemporary drama, 1800 to the present. Fall

term, the nineteenth century; spring term, the twentieth century, including the current drama.

387-388. **SEMINAR IN SPANISH LITERATURE.** Throughout the year. Credit three hours a term. Hours to be arranged. Mr. BRENES.

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

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. ———.

hours a term. Prerequisite for 203, qualification in Thai; for 204, Course 203 or consent of the instructor. Hours to be arranged. Mr. JONES.

221-222. **ADVANCED THAI.** Throughout the year. Credit three hours a term. Prerequisite, Thai 201-202 or the equivalent. Open to seniors and graduate students. Hours to be arranged. Mr. JONES.

Selected readings in Thai writings in various fields.

VIETNAMESE (ANNAMESE)

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. **VIETNAMESE READING.** Throughout the year. Credit three hours a term. Prerequisite for 201, qualification in Vietnamese; 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 Vietnamese; for 204, Course 203 or consent of the instructor. Hours to be arranged. Mr. JONES.

MUSIC

Mr. WILLIAM W. AUSTIN, *Chairman*; Messrs. WILLIAM CAMPBELL, DANIEL ELLER, DONALD GROUT, JOHN HSU, KAREL HUSA, JOHN KIRKPATRICK, RUDOLPH KREMER, 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 Department, 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 Cornell Chorus, the Cornell University 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. KURLAND.

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. KREMER.

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 10 and Th 2. Mr. PALMER.

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. Pre-

requisite, Music 201-202. M W 12 and Th 2. Mr. PALMER. Not offered in 1961-1962.]

[206. **FUGUE.** Spring term. Credit two hours. Prerequisite, Music 203-204. M W 12 and Th 2. Mr. PALMER. Not offered in 1961-1962.]

[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. HUSA. Not offered in 1961-1962.]

[209-210. **COMPOSITION.** Throughout the year. Credit two hours a term. Hours to be arranged. Mr. HUSA. Not offered in 1961-1962.]

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.

The fundamentals of score reading and conducting. Students will frequently conduct a small orchestra, and occasionally opportunity will be given to those who qualify to conduct the University Orchestra.

[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. Not offered in 1961-1962.]

277. **ANALYTIC TECHNIQUE.** Fall term. Credit three hours. Prerequisite, Music 203-204 or the equivalent. (Music 203 may be taken concurrently.) T Th 9-11. Mr. PALMER.

Designed to develop a technique of analysis applicable to the music of any period. Examples from various periods in the history of music will be intensively studied, and the growth of the important structural principles underlying Western music will be traced.

021-022. **INFORMAL STUDY.** Credit hours to be arranged. Mr. PALMER.

023-024. **INFORMAL STUDY.** Credit hours to be arranged. Mr. HUSA.

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.** Fall term. Credit three hours. Open to all students. Lectures T Th 11. Recitation sections Th 2, 3, F 8, 9, 10, 11, 12, 2, 3, S 8, 9, 10, 11. Concerts on evenings of Oct. 24, Dec. 5, Dec. 19, and Jan. 16. Mr. ELLER and assistants.

Studies to foster the growth of rational enjoyment of the art of music: the elements and instruments of music, and musical forms, as exemplified in music of various epochs and nations, and various degrees of complexity.

[*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 1962.]

[*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 1962.]

*114. **BEETHOVEN'S SYMPHONIES.** Spring term. Credit three hours. Open to all students. Lectures T Th 11. Recitation sections Th 2, 3, F 8, 9, 10, 11, 12, 2, 3, S 8, 9, 10, 11. Concerts on evenings of Feb. 23,

Mar. 9, Apr. 8, and May 6. Mr. HUSA and staff.

Study of the nine symphonies of Beethoven, their styles and forms.

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.

041. **SUPPLEMENTARY STUDIES IN PERFORMANCE AND PEDAGOGY FOR PROSPECTIVE TEACHERS.** Credit hours to be arranged. Consent of the instructor required. Mr. CAMPBELL and staff.

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 1961-1962.]

*409-410. **UNIVERSITY ORCHESTRA.** W 7:30-10 p.m., full orchestra; alternate T 7:30-9:30 p.m., sectional rehearsals. Mr. HUSA.

*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. W 2-4. 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.

380. **SEMINAR IN CONTEMPORARY MUSIC.** Spring term. Credit three hours. Open to qualified juniors and seniors by permission. Th 9-11. Mr. PALMER.

Detailed analysis of a few works important in the modern movement.

PHILOSOPHY

Mr. STUART M. BROWN, JR., *Chairman*; MESSRS. MAX BLACK, KEITH S. DONNELLAN, NORMAN MALCOLM, CHARLES D. PARSONS, NELSON C. PIKE, SYDNEY S. SHOEMAKER, FRANK N. SIBLEY, ZENO VENDLER.

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. Fall term: M W F 9, 10, 12; T Th S 9, 10; spring term: M W F 9, 12; T Th S 9, 10, 12. Registration is limited to 30 students a section. MESSRS. DONNELLAN, PARSONS, PIKE, and SHOEMAKER.

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. Fall term: M W F 10, T Th S 9, 12; spring term: M W F

9, 12, T Th S 9. Registration is limited to 30 students a section. MESSRS. DONNELLAN, PIKE, and SHOEMAKER.

A study of Hobbes' *Leviathan*, Hume's *Dialogues concerning Natural Religion*, and Tolstoy's *What Is Art?*

*110. **INTRODUCTION TO LOGIC.** Either term. Credit three hours. Open to freshmen and sophomores, and others with the consent of the instructor. (Recommended for prospective majors in philosophy.) M W F 12, T Th S 11. Registration is limited to 40 students a section. MESSRS. SIBLEY and VENDLER.

An introduction to the principles and tech-

niques of traditional and symbolic logic. Includes discussion of types of arguments, problems in logic, and logical concepts relevant to philosophy.

202. **ELEMENTARY SEMANTICS.** Spring term. Credit three or four hours. Open to sophomores and upperclassmen. Lectures, M W 2. Discussion sections, M W 3. Discussion sections for students desiring four hours credit: to be arranged. The instructor's permission is needed in order to undertake this extra work. 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 four 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. Registration is limited to 30 students. Two lectures and one discussion period. M W F 2. Fall term, Mr. MALCOLM. Spring term, Mr. SIBLEY.

An investigation of selected philosophical problems. Study of contemporary as well as classical sources. Topic for fall: freedom of the will. Topic for spring: knowledge of the external world.

221. **ETHICS.** Fall term. Credit four hours. Open to sophomores and upperclassmen. Lectures M W F 11; discussion sections to be assigned. Mr. BROWN.

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.

COURSES FOR UPPERCLASSMEN AND GRADUATES

301-302. **HISTORY OF PHILOSOPHY.** Throughout the year. Credit four hours a term. First term not prerequisite to the second. Open to juniors and seniors, and others with the consent of the instructor. T Th S 9. Discussion sections to be arranged. Mr. VENDLER.

Occidental philosophical thought from its Greek origins to the end of the nineteenth century; the most important systems in their cultural context. Fall term: ancient and medieval period. Spring term: modern period.

305. **SPECIAL TOPICS IN THE HISTORY OF PHILOSOPHY.** Fall term. Credit three hours. Prerequisite, six hours of philosophy or consent of the instructor. T Th S 12. Mr. PARSONS.

Topic for 1961-1962: Kant.

308. **CONTEMPORARY PHILOSOPHY.** Spring term. Credit three hours. Prerequisite, six hours of philosophy or consent of the instructor. M W F 10. Mr. DONNELLAN.

A study of major figures or movements in twentieth-century philosophy. Topic for 1961-1962: G. E. Moore.

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.

319-320. **CHRISTIAN THEOLOGY.** Credit three hours a term. T Th S 12. Mr. BURKILL. The evolution of Christian thought from New Testament time to the present day.

322. **PHILOSOPHY OF RELIGION.** Spring term. Credit three hours. Open to juniors and seniors, and to sophomores by consent of the instructor. T Th S 12. Mr. PIKE.

A philosophical examination of some major theological issues such as the nature and existence of God, the problem of evil, miracles, immortality of the soul, religious obligation, faith and reason.

325. **ETHICAL THEORY.** Spring term. Credit three hours. Prerequisite, Philosophy 221 or consent of the instructor. M W F 11. Mr. SHOEMAKER.

Selected topics in ethical theory such as utilitarianism, moral sense theory, and Aristotle's ethics. Topic for 1961-1962: to be announced.

[326. **POLITICAL AND SOCIAL PHILOSOPHY.** Spring term. Credit three hours. Not given in 1961-1962.]

327. **INTRODUCTION TO PHILOSOPHY OF SCIENCE.** Fall term. Credit three or four hours. Open to juniors, seniors, and graduate

students. Lectures, M W 2. Discussion, F 2. Extra session for those taking the course for four hours credit Th 2. (Instructor's consent needed for this extra work.) Mr. BLACK.

Critical analysis of scientific methods with special reference to the natural sciences: detailed study of such topics as causality, theory making, concept formation and measurement.

333. PHILOSOPHY OF PSYCHOLOGY. Spring term. Credit three hours. Open to seniors majoring in philosophy or psychology and to others with the consent of the instructor. M W F 11. Mr. MALCOLM.

A study of the central concepts in selected theories and movements in psychology, such as Freudian psychology, Gestalt psychology, behaviorism, parapsychology, and psychical research. In any given semester, one or possibly two special topics will be chosen for systematic treatment.

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. T Th S 10. Mr. PARSONS.

Introduction to current methods of formal logic and their philosophical implications—propositional calculus, calculus of functions, theory of descriptions, properties of formal systems, decidability and incompleteness.

[**414. INDUCTIVE LOGIC.** Spring term. Credit three hours. Not given in 1961-1962.]

421. PROBLEMS IN PHILOSOPHY OF SCIENCE. Spring term. Credit three hours. Will be offered in alternate years. Prerequisite, Philosophy 327 or consent of the instructor. M W F 12. Mr. BLACK.

SEMINARS

[**575. PLATO.** Spring term. Credit three hours. Not given in 1961-1962.]

580. MODERN PHILOSOPHERS. Fall term. Credit three hours. M 3-5. Mr. SHOEMAKER. Topic for 1961-1962: Locke.

586. ETHICS AND VALUE THEORY. Spring term. Credit three hours. Mr. ———. Topic for 1961-1962: to be announced.

587. AESTHETICS. Fall term. Credit three hours. W 3-5. Mr. SIBLEY. Topic for 1961-1962: to be announced.

588. METAPHYSICS. Spring term. Th 3-5. Mr. DONNELLAN. Topic for 1961-1962: to be announced.

Intensive study of one or two selected problems. Topics for 1961-1962: to be announced.

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. MALCOLM.

Topic for 1961-1962: memory.

425. CONTEMPORARY ETHICAL THEORY. Fall term. Credit three hours. Open to philosophy majors, graduate students, and others with the consent of the instructor. M W F 12. Mr. DONNELLAN.

Topic for 1961-1962: to be announced.

427. PROBLEMS IN METAPHYSICS. Spring 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 1961-1962: to be announced.

[**429. PHILOSOPHY OF LOGIC.** Spring term. Credit three hours. Offered in alternate years. Not given in 1961-1962.

Selected topics such as the nature of inference, the logical paradoxes, the theory of types, Godel's theorem.]

[**405. PHILOSOPHY OF HISTORY.** Fall term. Credit three hours. Offered in 1960-1961; will not be offered in 1961-1962.

Historical explanation, laws, causation.]

[**417. PHILOSOPHICAL ANALYSIS.** Spring term. Credit three hours. Offered in 1960-1961; will not be offered in 1961-1962.

An examination of such concepts as causation, dispositional properties, and natural kinds.]

594. PHILOSOPHICAL ANALYSIS. Spring term. T 3-5. Mr. MALCOLM.

Topic for 1961-1962: Spinoza.

595. SEMANTICS AND LOGIC. Fall term. Credit three hours. T 2-4. Mr. BLACK. Topic for 1961-1962: to be announced.

601. HONORS SEMINAR. Spring term. Credit three hours. M 3-5. Mr. VENDLER. Topic for 1961-1962: to be announced.

039. INFORMAL STUDY. Members of the Department.

PHYSICS

Mr. L. G. PARRATT, *Chairman*; Messrs. L. L. BARNES, A. J. BEARDEN, K. BERKELMAN, H. A. BETHE, H. G. BOOKER, R. BOWERS, R. C. BRADLEY, R. BROUT, S. T. BUTLER, P. CARRUTHERS, G. COCCONI, D. R. CORSON, R. M. COTTS, T. R. CUYKENDALL, J. W. DEWIRE, D. A. EDWARDS, C. W. GARTLEIN, T. GOLD, K. I. GREISEN, P. L. HARTMAN, D. F. HOLCOMB, T. KINOSHITA, J. A. KRUMHANS, D. M. LEE, R. M. LITTAUER, R. McALLISTER, B. D. McDANIEL, P. MORRISON, H. F. NEWHALL, J. OREAR, T. J. PETERSON, R. O. POHL, H. S. SACK, E. E. SALPETER, B. M. SIEGEL, R. H. SILSBEE, A. SILVERMAN, R. L. SPROULL, P. C. STEIN, D. H. TOMBOULIAN, R. R. WILSON, and W. M. WOODWARD.

A student will ordinarily be accepted as a major in physics if he has passed at a good level of proficiency one year of college physics and of calculus. Two physics-major options are available with respective minimum requirements as follows:

OPTION A: (a) 30 credit hours of physics courses selected from those courses indicated by the symbol # in the list below, including Physics 410 and 443; and (b) three credit hours in mathematics beyond Mathematics 612; or their equivalent. Graduate courses in physics (numbered above 499) will not be accepted as substitutes in meeting requirement (a). Students interested in this option should take in the freshman year calculus and Physics 207-208 (or their equivalent by advanced placement); it is possible but difficult to complete this option starting in the sophomore year. Students in engineering may transfer into this option with Physics 225-226 or 227-228 reckoned as six of the 30 credit hours of requirement (a).

OPTION B: (a) 15 credit hours of physics courses numbered above 208 and approved by the major adviser, including Physics 220 and 436; (b) three credit hours in mathematics beyond the three-term sequence of analytic geometry and calculus; and (c) 18 credit hours in approved courses in the natural sciences other than physics; or their equivalent.

Option A is intended primarily for students who plan to pursue graduate studies in a physical or biological science, or otherwise to become professional scientists; Option B is intended primarily for students who have broader interests, e.g., students who seek a general cultural education at the Bachelor-degree level with an emphasis in physics, and those who plan to teach in precollege programs, to enter the medical profession, or to pursue graduate studies in a non-science field.

Students graduating with a physics major after February, 1964, must meet the requirements of either Option A or Option B, rather than the requirements last stated in the Announcement of the College of Arts and Sciences for the year 1960-1961; students graduating before then may, with the approval of the major adviser, satisfy either the old or the new requirements.

A student who wishes a thorough preparation for graduate work in physics should take all the courses indicated by the symbol # and also Mathematics 616, or their equivalent.

A student may be granted Honors in Physics if he (a) has an average grade of 85 or better in all physics courses offered in fulfillment of the major requirements; (b) has taken Physics 491 and 492; and (c) has, in addition to satisfying the major requirements, four hours (or more) credit in one of the following: (1) special project work, (2) graduate physics courses (numbered above 499), 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.

***101-102. GENERAL PHYSICS.** Throughout the year. Credit three hours per term. Prerequisite, three years of college preparatory mathematics or consent of the instructor. First term is prerequisite to the second. Most students majoring in a science or mathematics should elect Physics 207-208 instead of this course. Demonstration lectures, M F 9 or 11. One discussion section and one two-hour laboratory period per week as assigned. Preliminary examinations will be held at 8 p.m.

Oct. 16, Nov. 20, Dec. 18, Feb. 26, Mar. 19, and Apr. 23. MESSRS. OREAR, BEARDEN, and Staff.

The vast progress in man's understanding of the physical world, including discussion of present-day problems. Basic principles and their relation to all of physical science. Topics of study include mechanics, heat, electricity, light, relativity, quantum theory, structure of matter, nuclear physics, and elementary particles.

Physics 121-122 and 223-228 are designed primarily for the two-year physics program required of students in the College of Engineering. The first year's work consists of 121 and 122; the second year's work consists of one of the two-term sequences 223-224, 225-226, or 227-228. The initial assignment to a given sequence in the second year will be made on the

basis of the student's previous performance in introductory physics and mathematics courses. Students should see their instructor for section assignments.

***121. INTRODUCTORY ANALYTICAL PHYSICS.** Fall term. Credit three hours. Prerequisite, calculus or co-registration in Mathematics 161. Primarily for students of engineering. Lecture, T 9, 11, or 2. Two discussion periods per week and one 2½ hour laboratory period every other week as assigned. Preliminary examinations will be held at 7:30 p.m. Oct. 24, Nov. 28, and Jan. 9. Messrs. NEWHALL, STEIN, and Staff.

Introductory mechanics: kinematics, dynamics, statics, energetics, conservation laws, and special motions. The laboratory work consists of measurements illustrative of these topics.

***122. INTRODUCTORY ANALYTICAL PHYSICS.** Spring term. Credit three hours. Prerequisites, Physics 121 and calculus or co-registration in Mathematics 162, 182, or 192. Primarily for students in engineering. Lecture, T 9, 11, or 2. Two discussion periods per week and one 2½ hour laboratory period every other week as assigned. Preliminary examinations will be held at 7:30 p.m. Mar. 6, Apr. 10, and May 8. Messrs. NEWHALL, STEIN, and Staff.

Kinetic theory of gases, mechanics of gases, introductory thermodynamics. Electrostatic phenomena and introduction to electrical circuits. The laboratory work consists of measurements in mechanics and in geometrical optics.

200. PHYSICS FOR STUDENTS OF BIOLOGY. Either term. Credit three hours. Prerequisites, six credit hours of college work in each of the following: physics, chemistry, and biological science. Students having grades below 70 in either Physics 101 or 102 may not register for the course without 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 related to the study of biology, topics such as the properties of matter, electricity and magnetism, electromagnetic radiation, and nuclear physics.

***201-202. ASPECTS OF THE PHYSICAL WORLD.** Throughout the year. Credit three hours per term. Prerequisites, three years of college preparatory mathematics and high school physics or chemistry, or consent of the instructor. Primarily for nonphysics majors. Lectures, M W F 2 and two 2-hour laboratory periods per week as assigned; from week to week, discussion sessions will be held during some of the lecture hours and laboratory periods depending on the particular topics being considered. Mr. MORRISON and Staff.

A set of widely ranging but related topics will be considered, without attempt to cover the whole subject of physical science systematically at any level. A diversity of treatment will be employed, ranging from the exploration of some literary consequences to detailed problem-solving and laboratory experiment. The central aim is to give College of Arts and Sciences students some insight into the methods and the results of physics and its neighboring sciences, but the course is also open to others. Typical topics: energy—its meaning, measures, and use; the nature of rotational motion; relativity and space-time; elementary particles; the elements of molecular biology.

***207-208. FUNDAMENTALS OF PHYSICS.** Throughout the year. Credit four hours per term. Prerequisite, calculus or co-registration in Mathematics 161-162, or consent of instructor. First term is prerequisite to the second. Intended as a first course for most students majoring in a science or mathematics; appropriate as a second course for many students who have completed Physics 201-202. Demonstration lecture, W 11, three discussion periods, and one 2½ hour laboratory period per week as assigned. Preliminary examinations will be held at 7:30 p.m. Nov. 1, Dec. 6, Mar. 14, and Apr. 25. Messrs. COTTS, BETHE, POHL, and Staff.

Emphasis is placed on the fundamental concepts in each of the several branches of physics and on the analytical techniques of problem and laboratory work.

211. INTERMEDIATE MECHANICS. Fall term. Credit three hours. Prerequisites, Physics 102 or 208, and Mathematics 162, or consent of instructor. Intended as a second course for Option B physics majors. T Th S 9. Mr. HOLCOMB.

Statics, oscillating systems (mechanical, electrical, and acoustical), central forces, and relativity.

#213. THE REVOLUTION IN PHYSICS, 1895-1925. Fall term. Credit three hours. Prerequisites, Physics 208 and co-registration in Mathematics 183, or consent of instructor. Primarily for students intending to major in a science or mathematics. M W F 11. Mr. GREISEN.

Developments leading to modern physical concepts such as quantum theory of radiation, quantum statistics, wave-particle duality, relativity, and atomic structure.

#220. INTERMEDIATE EXPERIMENTAL PHYSICS. Either term. Credit four hours.

Prerequisites, Physics 102 or 208, and Mathematics 162, or consent of instructor. Required of all physics majors. M W F 1:40-4:30. Messrs. GREISEN and McALLISTER.

Lectures on topics in experimental techniques. Selected laboratory experiments to suit the student's need, e.g., mechanics, errors and probability, electricity, magnetism, optics, spectroscopy, and modern physics.

223. 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, two discussion periods per week, and one 2½ hour laboratory period every other week as assigned. Messrs. TOMBOULIAN, 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 includes experiments in electrical measurements.

224. INTRODUCTORY ANALYTICAL PHYSICS. Spring term. Credit three hours. Prerequisite, Physics 223 or equivalent. Lecture, Th 9 or 11, two discussion periods per week, and one 2½ hour laboratory period every other week as assigned. Messrs. TOMBOULIAN, 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 includes experiments in physical electronics and wave optics.

225. INTRODUCTORY ANALYTICAL PHYSICS. Fall term. Credit three hours. Prerequisites, same as for Physics 223. Lecture, T 9 or 11, two discussion periods per week, and one 2½ hour laboratory period every other week as assigned. Mr. BRADLEY and Staff.

The main topics are the same as those listed under Physics 223, but their treatment is more analytical and somewhat more intensive.

226. INTRODUCTORY ANALYTICAL PHYSICS. Spring term. Credit three hours. Prerequisite, Physics 225 or consent of the instructor. Lecture, T 9 or 11, two discussion periods per week, and one 2½ hour laboratory period every other week as assigned. Mr. BRADLEY and Staff.

The range of topics is similar to that listed under Physics 224, but coverage is more intensive.

227. INTRODUCTORY ANALYTICAL PHYSICS. Fall term. Credit three hours. Prerequisites, same as for Physics 223. Lecture, T 9 or 11, two discussion periods per week, and one 2½ hour laboratory period every other week as assigned. Mr. EDWARDS and Staff.

The subject matter of electricity and magnetism listed under Physics 223 is covered at a level sufficiently advanced to stimulate students of superior competence and interest.

228. INTRODUCTORY ANALYTICAL PHYSICS. Spring term. Credit three hours. Prerequisite, Physics 227 or consent of the instructor. Lecture, T 9 or 11, two discussion periods per week, and one 2½ hour laboratory period every other week as assigned. Mr. EDWARDS and Staff.

Topics similar to those of Physics 224. The treatment is designed to meet the needs of students who intend to pursue more advanced courses in physics.

307. PHYSICAL OPTICS. Fall term. Credit four hours. Prerequisite, Physics 211 or 224, or consent of the instructor. Lectures, T Th S 9 and T 12. Mr. HARTMAN.

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.

314. ATOMIC, NUCLEAR, AND SOLID STATE PHYSICS. Spring term. Credit three hours. Prerequisites, Physics 224 and Engineering 4103, or consent of the instructor. Primarily for students in electrical engineering. Three lectures per week as scheduled by the College of Engineering. Mr. DEWIRE.

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.

#318. ANALYTIC MECHANICS. Spring term. Credit four hours. Prerequisites, Physics 208 or 226, and co-registration in Mathematics 612, or consent of the instructor. M W F 11 and W or Th 2. Mr. COCCONI.

Analytical mechanics of material particles, systems of particles and rigid bodies; oscillating systems; planetary motion, stability of orbits; collisions; Euler's equations, gyroscopic motion; Lagrange's equations; Hamilton's equation; relativistic mechanics.

322. INTERMEDIATE ELECTRICITY AND MAGNETISM. Spring term. Credit four hours. Prerequisites, Physics 211 or 224, and

Mathematics 163, or consent of the instructor. M W F 9 and Th 12. Mr. BERKELMAN.

Topics selected from Physics 325-326, treated with less mathematical sophistication.

#325-326. **ELECTRICITY, MAGNETISM, AND LIGHT.** Throughout the year. Credit four hours each term. Prerequisites, Physics 208 or 226, and Mathematics 612, or consent of the instructor. First term prerequisite to the second. Lectures, T Th S 11 and W or Th 3. Two preliminary examinations will be held in evenings. Fall term, Mr. WOODWARD. Spring term, Mr. BROUT.

Electrostatic and electromagnetic fields, polarization of dielectric and magnetic media, Maxwell's equations, plane electromagnetic waves.

#410. **ADVANCED EXPERIMENTAL PHYSICS.** Either term. Credit four hours per term. Prerequisites, Physics 220 or 226, or consent of the instructor. Limited to seniors except by special permission. Laboratory, M T or W Th 1:40-4:30, and lecture F 1:40-3:00. Messrs. HARTMAN, BOWERS, CUYKENDALL, LEE, McDANIEL, SIEGEL, SILSBEE, SILVERMAN, SPROUL, and WOODWARD.

Lectures and problems on selected topics in experimental techniques. About seventy different experiments are available in the laboratory among the subjects of mechanics, acoustics, optics, spectroscopy, electrical circuits, electronics and ionics, heat, X-rays, crystal structure, solid state physics, cosmic rays, and nuclear physics. During a term the student is expected to perform four to eight experiments, selected to meet his individual needs. Emphasis is placed on independent work.

[431. **INTRODUCTORY THEORETICAL PHYSICS.** Fall term. Credit four hours. Primarily for graduate students in sciences other than physics. Prerequisites, Physics 211 and 322, and Mathematics 610, or consent of the instructor. M W F 9. Mr. —.

Classical mechanics and electromagnetic theory. Not offered in 1961-1962.]

[436. **MODERN PHYSICS.** Spring term. Credit four hours. Prerequisites, Physics 322 and Mathematics 608 or 612, or consent of the instructor. M W F 10. Mr. —.

Selected topics in atomic, solid state, and nuclear physics; fundamental particles, atomic spectra, the periodic table, X-rays, cosmic rays, properties of nuclei, and nuclear interactions. Not offered in 1961-1962.]

#441. **KINETIC THEORY AND THERMODYNAMICS.** Fall term. Credit four hours. Prerequisites, Physics 208 or 226, and Mathe-

matics 612, or consent of the 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, quantum statistics; basic concepts of thermodynamic systems: first and second laws, thermodynamic functions, and applications to physical systems.

#443. **ATOMIC PHYSICS AND INTRODUCTION TO QUANTUM MECHANICS.** Fall term. Credit four hours. Prerequisites, Physics 213, 318, and 325, or consent of the instructor. M W F 10 and W or Th 2. Mr. SILVERMAN.

Difficulties with the classical interpretations of atomic properties and atomic structure are resolved in terms of quantum mechanics.

#444. **NUCLEAR AND HIGH-ENERGY PARTICLE PHYSICS.** Spring term. Credit four hours. Prerequisite, Physics 443 or consent of the instructor. M W F 10 and T 2. Mr. GREISEN.

Behavior of high-energy particles and radiation; elementary particles and their characteristics; basic properties of nuclei; nuclear reactions; nuclear forces; cosmic rays; general symmetries and conservation laws of nature.

#454. **ELECTRONIC PROPERTIES OF SOLIDS AND LIQUIDS.** Spring term. Credit four hours. Prerequisite, Physics 443 or consent of the instructor. M W F 9 and T or W 2. 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.

490. **INFORMAL STUDY IN PHYSICS.** Either term. Credit one to four hours per term. Prerequisites, Physics 410 and 443, and consent of the instructor. Ordinarily limited to seniors. Hours to be arranged. Taught by any member of the staff who agrees to do so.

Individual project work. Reading or laboratory work in any branch of physics.

#491-492. **HONORS SEMINAR.** Throughout the year. Credit one hour each term. Prerequisite, consent of the student's major adviser (or of the instructor if the student is not majoring in physics). Ordinarily limited to seniors. M 2. Fall term, Mr. HOLCOMB. Spring term, Mr. BEARDEN.

Practice in the organization, oral presentation, and discussion of selected topics in physics.

500. **INFORMAL GRADUATE LABORATORY.** Either term. Credit one to three hours

per term. Associated with the Physics 410-510 laboratory. Primarily for graduate students who do not have the prerequisites for Physics 510. M T or W Th 1:40-4:30. Mr. HARTMAN and Staff.

510. ADVANCED EXPERIMENTAL PHYSICS. Either term. Credit three hours per term. Prerequisite, Physics 220 or the equivalent. Two terms of Physics 510 are ordinarily required during the first year for graduate physics students. Laboratory, M T or W Th 1:40-4:30. MESSRS. HARTMAN, BOWERS, CUYKENDALL, DEWIRE, LEE, MCDANIEL, 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.

The four courses Physics 571, 572, 573, and 574 are designed as a logical two-year sequence to cover basic graduate theoretical physics.

571. CLASSICAL MECHANICS. Fall term. Credit three hours. Prerequisites, Physics 318 and co-registration in Mathematics 615 or 621, or consent of the instructor. T Th S 11. Mr. KRUMHANSL.

Lagrange's equations and application to particle motion and particle accelerators; small vibrations and linear vector spaces; continuum mechanics with application to wave motion and scattering; Hamilton's equations; introduction to variational methods for classical fields.

572. QUANTUM MECHANICS. Spring term. (Will also be given in fall term on sufficient demand.) Credit four hours. Prerequisites, Physics 571 and co-registration in Mathematics 616 or 622, or consent of the instructor. T Th S 11 and S 12. Mr. BETHE.

The wave function and its interpretation. The Schrödinger equation; oscillator, hydrogen atom; transformation theory (classical and quantum). Approximate methods of solution. Operators and matrices. Electron spin, the exclusion principle.

573. ELECTRODYNAMICS. Fall term. Credit four hours. Prerequisites, Physics 326 and co-registration in Mathematics 615 or 621, or consent of the instructor. M W F 9 and S 12. Mr. SALPETER.

Introductory potential theory; Maxwell's equations and their meaning; quasi-static problems; energy and momentum of the field;

Stress is laid on independent work on the part of the student.

514. X-RAYS: THE INTERMEDIATE ENERGY RANGE IN PHYSICS. Spring term. Credit three hours. Prerequisite, Physics 443 or consent of the instructor. Offered only if registration exceeds nine students. M W F 11. Mr. PARRATT.

X-rays provide study of physical phenomena in the intermediate energy range in atomic and solid state physics. Interactions between matter and energy in this range emphasize both particle and wave characteristics. Selected topics in production, absorption, scattering, diffraction, and energy levels in atoms and solids; and special tool-applications as class interest justifies and as time permits.

[**516. COSMIC RAYS.** Spring term. Credit three hours. Prerequisites, Physics 443, or consent of the instructor. Offered in alternate years and only if registration exceeds nine students. Hours to be arranged. Mr. COCCONI. Not offered in 1961-1962.]

waves in space and in guides; radiation and scattering; special relativity.

574. INTERMEDIATE QUANTUM MECHANICS. Spring term. Credit three hours. Prerequisites, Physics 572 and 573, or consent of the instructor. M W F 9. Mr. SALPETER.

Discussion of various applications of quantum mechanics such as collision theory, theory of spectra of atoms and molecules, theory of solids, emission of radiation, relativistic quantum mechanics.

578. STATISTICAL MECHANICS AND KINETIC THEORY. Spring term. Credit three hours. Prerequisites, Physics 571 and 572, or consent of the instructor. T Th S 9. Mr. KRUMHANSL.

Statistical mechanics, general principles and applications to the properties of gases, liquids, crystals, and transport phenomena.

635. SOLID STATE PHYSICS. Fall term. Credit three hours. Prerequisite, Physics 572 or consent of the instructor. M W F 11. Mr. SILSBEE.

An introduction to solid state physics including studies of crystal structure; mechanical, thermal, and electrical properties; magnetism; band structure; and selected topics.

636. ADVANCED SOLID STATE PHYSICS. Spring term. Credit three hours. Prerequisite, Physics 635 or consent of the instructor. T Th S 10. Mr. CARRUTHERS.

Selected advanced topics in modern theoretical and experimental solid state physics.

645. INTRODUCTORY NUCLEAR PHYSICS. Fall term. Credit three hours. Prerequisite, Physics 572 or consent of the instructor. Mr. COCCONI.

Properties of nuclei, detection of particles, alpha decay, fission and thermonuclear reactions, gamma decay, beta decay, two nucleon systems, nuclear models, nuclear reactions.

646. HIGH-ENERGY NUCLEAR PHYSICS. Spring term. Credit three hours. Prerequisite, Physics 645 or consent of the instructor. Offered in alternate years and only if registration exceeds nine students. M W F 11. Mr. BERKELMAN.

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.

651. ADVANCED QUANTUM MECHANICS. Fall term. Credit three hours. Prerequisite, Physics 574 or consent of the instructor. T Th S 10. Mr. KINOSHITA.

Relativistic wave equations, field theory, renormalization, problem of strong interactions, divergences of field theory.

658. THEORY OF NUCLEI. Spring term. Credit three hours. Prerequisite, Physics 645

or consent of the instructor. Offered in alternate years and only if registration exceeds nine students. M W F 9. Mr. KINOSHITA.

Selected topics from the theory of nuclei, including nuclear forces, nuclear structure, and nuclear reactions.

[662. THEORY OF HIGH-ENERGY PHENOMENA. Spring term. Credit three hours. Prerequisite, Physics 651 or consent of the instructor. Offered in alternate years and only if registration exceeds nine students. T Th S 11. Mr. KINOSHITA. Not offered in 1961-62.]

680. SEMINAR IN ADVANCED PHYSICS. Either term. Credit one to three hours a term. Upon sufficient demand, seminars will be arranged from time to time in topics not currently covered in regular courses. Typical seminar subjects are advanced solid-state theory, applied group theory, plasma physics, general relativity theory, electronic circuitry, low-temperature physics, X-ray crystalline diffraction, magnetic resonance, etc.

690. INFORMAL STUDY IN PHYSICS. Either term. Credit one to three hours a term. 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. ———, *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, T. A. RYAN, 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) 15 hours of intermediate or advanced courses in related fields 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, 12 or 2; lectures T Th 9, sections S 9, 10, 12, M 9, 11, 2 or 3; lectures W F 11, sections M 8, 10, 12, T 8, 9, 11 or 12. Spring term: lectures T Th 11, sections F 8, 10, 12, M 8, 10, 12 or 3; lectures W F 12, sections S 9, 10, T 8, 9, 12, 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. 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, 12, 2, 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.

An examination of the broad problems of psychology, e.g., mind and body, the basis of knowledge, the basis of conduct, as they have been envisaged at various periods of history. Special emphasis is laid on the rela-

tion between psychological thinking and developments in philosophy, religion, the sciences, literature, and the arts. Designed for the gen-

eral student, but recommended for those who plan to do advanced work in psychology, and required of psychology majors.

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. ZIMMERMANN.

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. T Th S 9. 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.

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. Prerequisites, 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. FEELING AND EMOTION. Fall term. Credit three hours. Prerequisite, 9 hours in psychology or consent of instructor. M W F 10. Mr. MACLEOD.

The phenomena of feeling and emotion are examined in the context of both experimental and physiological research and of their expression in the visual arts, music, drama, literature, and religion. Designed for psychologists and for students in the humanistic disciplines with an interest in the psychological approach. Not given in 1961-1962.]

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. Prerequisites, 6 hours of psychology beyond the 100 level. Some knowledge of physiology or physiological psychology is desirable. M W F 11. Mr. GOLDSTEIN.

An attempt to uncover the evolutionary and ecological processes at work molding the behavior of animals. Principles will be advanced and used to design representative types of behavior in hypothetical animals. Detailed consideration will then be given to the analysis of the behavior of existing insects, birds, and mammals. Psychological and ethological theories of animal behavior will be discussed, especially the views of these theories toward the evolution of behavior.

426. EXPERIMENTAL PSYCHOPATHOLOGY. Either term. Credit three hours. Prerequisites, psychology or biology major and upperclass standing. M 2, W 2-4, laboratory hour 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. Spring 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, a course in statistics and two courses in social psychology, personality, or experimental psychology, or consent of the instructor. T F 9-10:30. Mr. MELTZER.

Analysis of the concepts and issues in current theory and research. 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. GORDON F. STREIB, *Acting Chairman*, MESSRS. ROBERT ASCHER, WILLIAM DELANY, MRS. ROSE K. GOLDSSEN, MESSRS. CHARLES F. HOCKETT, ALLAN R. HOLMBERG, CHARLES C. HUGHES, WILLIAM W. LAMBERT, ALEXANDER H. LEIGHTON, ROBERT MCGINNIS, LEO MELTZER, MORRIS E. OPLER, PERTTI J. PELTO, JOHN M. ROBERTS, LAURISTON SHARP, G. WILLIAM SKINNER, ROBERT J. SMITH, J. MAYONE STYCOS, WAYNE E. THOMPSON, ROBIN M. WILLIAMS, JR.

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 or 275; (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 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. Taitetz, 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 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. The first digit does not refer to level or difficulty of the 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 analyzing social and cultural change to selected problems of "modernization" in nineteenth-century England and the United States and to twentieth-century Mexico, Russia, China, and India. Locates patterns and variations in relationships between the economic development of each country and changes in its: (1) population and ecology; (2) family and kinship systems; (3) community and administrative organization; (4) stratification; (5) political system; (6) communications media and; (7) institutionalized values, morals, 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. Mr. 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 (in-

cluding 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. PELTO 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. Designed especially to prepare undergraduate and graduate students for technical assistance missions abroad.

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. ———.

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. Mr. ———.

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 HUMAN EVOLUTION (Zoology 222). Spring term. Credit three hours. M W F 11. Mr. ASCHER.

A study of the antecedents of man, early hominid forms, and the emergence of modern man. The interplay of cultural and biological factors in human evolution is emphasized. Topics include interpretations of the fossil hominid record, modern human variability, and the microevolution of contemporary populations.

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 PELTO.

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. PELTO.

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. Not offered in 1961-1962.]

209. LANGUAGE AND CULTURE. Fall term. Credit three hours. M W F 12. Mr. HOCKETT.

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 2:30-4. Mr. PELTO.

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. Not offered in 1961-1962.]

215. COMPARATIVE RELIGIOUS SYSTEMS. Fall term. Credit three hours. M W F 10. Mr. —.

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. Not offered in 1961-1962.]

[217. **ART AND CULTURE.** Fall term. Credit three hours. M W F 2. Mr. SMITH. Offered in 1962-1963 and alternate years.]

221. PREHISTORIC ARCHAEOLOGY: ORIGINS OF CULTURE. Fall term. Credit three hours. M W F 3. Mr. ASCHER.

A survey of man's prehistoric past with emphasis on the eastern hemisphere. Designed to provide extended time-depth and broad spatial perspective for comparative anthropological and historical studies.

223. AMERICAN ARCHAEOLOGY. Fall term. Credit three hours. M W F 2. Mr. ASCHER.

A survey of human developments in the Western hemisphere from initial peopling to

European colonization. Particular emphasis is placed on the nuclear areas of Mexico and Peru.

226. METHOD IN PREHISTORIC ARCHAEOLOGY. Spring term. Credit three hours. Prerequisite, one of the following: Sociology and Anthropology 112, 221, 223, or consent of the instructor. M W 3, with a laboratory period to be arranged. Mr. ASCHER.

A study and critical evaluation of procedures in archaeology. Problems in the recovery and marshaling of data, and in the reconstruction, classification, and comparison of prehistoric cultures. Students will participate in archaeological survey, excavation, and laboratory analysis of data.

228. FIELD ARCHAEOLOGY. Summer. Credit six hours. Consent of the instructor. Mr. ASCHER.

The scientific, problem orientated, survey and excavation of archaeological sites to provide practical training in field research and laboratory methods. The student has the opportunity to develop basic skills including archaeological observation, restoration, and interpretation. Methods of analysis and interpretation consistent with the aims of the social sciences are emphasized. Students prepare individual projects which utilize the data recovered in the season's excavation.

ARCHAEOLOGY: NUMISMATICS (Fine Arts 801).

ARCHAEOLOGY: CERAMICS AND THE TECHNIQUES OF EXCAVATION (Fine Arts 802).

PRIMITIVE ART: THE ART OF EARLY SOCIETIES. (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. M W F 9. Mr. ROBERTS. To be offered 1962-1963 and alternate years.]

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, pre-

historic 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. To be offered 1962-1963 and alternate years.]

235. NATIVE CULTURES OF THE AMERICAN SOUTHWEST. Fall term. Credit three hours. T Th 2-3:30. Mr. ROBERTS.

A survey of the prehistoric and historic (Pueblo, Navaho, Apache, Pima, Papago, 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. Not offered in 1961-1962.]

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. Not offered in 1961-1962.]

[242. **NATIVE CULTURES OF SOUTHEAST ASIA.** Spring term. Credit three hours. M W F 2. Mr. SHARP. Not offered in 1961-1962.]

[243. **NATIVE CULTURES OF CHINA'S INLAND FRONTIERS.** Fall term. Credit three hours. Th 2-4. Mr. SKINNER. Not offered in 1961-1962.]

[245. **NATIVE CULTURES OF THE PACIFIC.** Fall term. Credit three hours. W 3-5. Mr. SHARP. Not offered in 1961-1962.]

247. THE CIVILIZATION OF JAPAN. Fall term. Credit three hours. M W F 2. Mr. SMITH.

The study of cultural development and aspects of contemporary culture in Japan.

[251. **CHINESE CULTURE AND SOCIETY—I.** Fall term. Credit three hours. Open to upperclassmen and graduate students. T Th S 10. Mr. SKINNER. To be offered in 1962-1963 and alternate years.]

[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. To be offered in 1962-1963 and alternate years.]

The following seminars are open only to graduate students or qualified seniors.

275. **SEMINAR: ANTHROPOLOGICAL THEORY.** Fall term. Credit two hours. T 4-6. Mr. PELTO.

276. **SEMINAR: PROBLEMS IN ANTHROPOLOGY.** Spring term. Credit two hours. T 4-6. Mr. SMITH.

277. **SEMINAR: THE CONTENT OF CULTURES.** Fall term. Credit two hours. M 4-6. Mr. ROBERTS.

[278. **SEMINAR: COMMUNICATIONS SYSTEMS.** Spring term. Credit two hours. F 4-6. Mr. ROBERTS. Not offered in 1961-1962.]

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. W 4-6. Mr. SHARP. Not offered in 1961-1962.]

[281. **SEMINAR: MIDDLE AND SOUTH AMERICA.** Fall term. Credit to be arranged. W 4-6. Mr. HOLMBERG. Not offered in 1961-1962.]

[283. **SEMINAR: INDIA AND SOUTH ASIA.** Fall term. Credit to be arranged. F 4-6. Mr. OPLER. Not offered in 1961-1962.]

[285. **SEMINAR: SOUTHEAST ASIAN ANTHROPOLOGY.** Fall term. Credit three hours. W 4-6. Mr. SHARP. Not offered in 1961-1962.]

[286. **SEMINAR: COMPARATIVE SOCIAL ORGANIZATION OF COMPLEX SOCIETIES.** Spring term. Credit three hours. Th

253. **SOCIAL ORGANIZATION IN COMMUNIST CHINA.** Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 251-252 or consent of instructor. T Th S 10. Mr. SKINNER.

A sociological study of continuity and change in China since 1949. Attention is directed to the research methods appropriate to the study of an inaccessible society.

2-4. Mr. SKINNER. To be offered in 1962-1963.]

288. **SEMINAR: COMPARATIVE MODERNIZATION OF CHINA AND JAPAN.** Spring term. Credit two hours. Th 2-4. Messrs. SKINNER and SMITH.

Consideration will be given to the socio-cultural factors which conditioned the differential responses to pressures for change in nineteenth century Ch'ing China and Tokugawa Japan. The seminar will endeavor to define and account for the striking differences in the subsequent timing and patterning of modernization in the two societies. On the basis of this comparison, hypotheses will be sought which can be tested in other modernizing societies.

290. **SEMINAR: THEORY IN ARCHAEOLOGY.** Spring term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. ASCHER.

A study of special problems in the logic of interpretation of archaeological data within the framework of anthropology, history, and sociology.

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, Taiwan, 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, HUGHES, and PELTO.

III. SOCIOLOGY

A. METHODS IN SOCIOLOGICAL RESEARCH

302. **METHODS OF RESEARCH: SOCIOLOGY.** Spring term. Credit three hours. Prerequisite, one course in sociology or consent of the instructor. M W 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 published 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. Not offered in 1961-1962.]

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. MCGINNIS.

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. MCGINNIS 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. ———.

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. ———.

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 5-11. 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. CLASS, STATUS, AND POWER. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or consent of the instructor. M W F 9. Mr. DELANY.

A study of theories and research dealing with the nature, conditions, and consequences of systems of socio-economic inequality in, mainly, American communities and society. Focuses upon status, occupational, income, and power hierarchies, patterns of vertical social mobility, interrelationships of the hierarchies and their changes since the industrial revolution. Implications of socio-economic stratification for politics and government, individual styles of life, life chances and the general

integration, effectiveness and stability of societies.

446. BUREAUCRACY IN MODERN SOCIETY. Spring term. Credit three hours. Open to upperclassmen. T Th 5-9. Mr. DELANY.

Study of the nature, conditions for growth and consequences 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, political interest groups and parties, hospitals and government agencies. Implications of bureaucracy for effective organizational functioning, for the organizational members, their families, the communities in which they live and, especially, for conflicts in values within the individualistic, democratic, and humane traditions of American society.

[**480. SEMINAR IN SOCIOLOGY OF SCIENCE.** Spring term. Credit three hours. Hours to be arranged. Mr. ——. Not offered in 1961-1962.]

484. SEMINAR IN ORGANIZATIONAL BEHAVIOR. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 446 or consent of the instructor. 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. Not offered in 1961-1962.]

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. GOLDSSEN.

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 5-11. Mr. STYCOS. Not offered in 1961-1962.]

505. COLLECTIVE BEHAVIOR AND SOCIAL MOVEMENTS. Fall term. Credit three hours. Open to upperclassmen. M W F 10. Mr. DELANY.

Within the general study of collective behavior the focus is upon a critical examination of theories of "mass society" and "mass culture" advanced by such writers as Ortega y Gasset, W. Lippman, C. W. Mills, D. MacDonald, K. Mannheim and L. Wirth in light of evidence from social research. The nature

of "mass society" in contrast to other forms, its historical conditions and its consequences for, especially, politics, government, and both the fine and popular arts will be considered.

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. STREIB.

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. M W 2-3:30. Mr. —.

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.

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. M 2-4. Mr. —.

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

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. M W F 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. Not offered in 1961-1962.]

580. SEMINAR IN SELECTED DEMOGRAPHIC PROBLEMS. Spring term. Credit three hours. M 4-6. Mr. STYCOS.

An advanced treatment of particular aspects of contemporary demographic change. From year to year the seminar will vary in geographic and substantive emphasis. Stress will be placed on the role of population dynamics in developing areas of the world.

586. SEMINAR IN SOCIAL GERONTOLOGY. Spring term. Credit three hours. Open to upperclass majors with consent of the instructor. T 2-4. Mr. STREIB.

030. INFORMAL STUDY. MESSRS. STREIB and DELANY.

three hours. Prerequisite, Sociology and Anthropology 632 or equivalent. T Th S 11. Mr. —.

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. —.

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.

[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 1961-1962.]

080. **INFORMAL STUDY.** Mr. ———.

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 concepts, methods, and theories used to describe and conceptualize the ways that people react to one another. 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. Prerequisite, a course in psychology or in sociology and anthropology. T Th 10 and one additional hour to be arranged. Mr. MELTZER.

Analysis of interpersonal relationships which develop in such groupings as committees, clubs, work teams, friendships, neighborhoods, organizations, fraternities and sororities. Case reports of known groups will be analyzed in terms of social psychological theory, method, and empirical findings. Other methods of studying groups, such as social surveys, experimentation, and controlled observation, in both natural and laboratory settings, will be discussed and evaluated. Recent attempts to apply knowledge in this area to problems of industrial functioning, democratic leadership, and mental health will be critically reviewed.

[724. **EXPERIMENTAL GROUP DYNAMICS.** Fall term. Credit three hours. Prereq-

uisites, a course in statistics, and a course in social or experimental psychology, or consent of the instructor. Open to upperclassmen and graduate students. T Th 10. Laboratory, M 3-5. Mr. MELTZER. Not offered in 1961-1962.]

775. **PROSEMINAR IN SOCIAL PSYCHOLOGY.** Spring term. Credit three hours. Prerequisites, a course in statistics, and two courses in social psychology, personality, or experimental psychology, 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.** Fall 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 candi-

date 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, M. A. CARLSON, JOSEPH GOLDEN, G. A. MCCALMON, E. C. NUTTALL, T. M. SCHEIDEL, W. H. STANTON, H. A. WICHELS, J. F. WILSON, G. J. CANTER.

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 and Rhetoric, 020; in Speech Pathology and Phonetics, 030, in Dramatic Art, 040). Students who wish to graduate with Honors in Speech and Drama should make application to the Chairman at the beginning of their junior year. For provisional acceptance as a candidate for Honors, a student must have chosen Speech and Drama as his major, have a cumulative average of 80 for all work in the College, and no grades below 80 for courses in Speech and Drama.

Students planning to teach speech and drama in the secondary schools should secure from the Department office, as early as possible, the schedule of courses approved for provisional certification in New York State. For those preparing to teach English, the Department recommends Courses 201 or equivalent, 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 limitations and potentialities of speech, particularly in popular discourse and the drama. The first term examines how and why man speaks, with special attention to utterance and rhetorical composition as social instruments. 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 is required.

PUBLIC SPEAKING AND RHETORIC

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. WILSON, SCHEIDEL, WICHELS, and Assistants.

Designed to help the student communicate his ideas and convictions effectively in oral discourse. Study of basic principles of expres-

121. AN INTRODUCTION TO THE THEATRE ARTS. Spring term. Credit three hours. Not open to freshmen or to students who have taken Speech and Drama 106. T Th S 10. Mr. CARLSON.

A survey of the elements of dramatic communication, intended to develop appreciation and rational enjoyment of the theatre in all its forms. This is not a production course, and no experience in dramatic production is required. Lectures, readings, demonstrations, and field trips.

***131. SPEECH AND VOICE TRAINING.** Either term. Credit two hours. Open to freshmen. Consult Mr. Nuttall before registering. Fall term, W F 12. Spring term, T Th 10. Mr. ———.

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.

itory 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 avail-

able 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 9 or 12. Fall term, Mr. SCHEIDEL. Spring term, Messrs. SCHEIDEL and WILSON.

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 or 11. Messrs. ARNOLD and 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 WILSON.

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. Fall term. Credit three hours. Open to upperclassmen and graduate students. T Th 11-12:15. Mr. WILSON.

Study of style in various forms of public address: legislative, legal, ceremonial, campaign, sermon. Speeches illustrating the forms of address will be drawn from the works of Burke, Webster, Lincoln, F. D. Roosevelt, Churchill, and others. Some practice in speech composition, oral and written.

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.

241. THE PSYCHOLOGY OF PERSUASIVE DISCOURSE. Spring term. Credit three hours. Open to upperclassmen and graduate students. T Th 11-12:15. Mr. SCHEIDEL.

An examination of the available means of persuasion in various settings. Lectures, readings, and reports on problems and theories of persuasion with special emphasis on empirical findings. Topics considered will include: the persuader's creative and analytical processes, audience perception and response, the modes of appeal, the ethics of persuasion. Critical analysis of contemporary persuasion; some practice in preparing persuasive materials.

255. RHETORIC AND PUBLIC ADDRESS. Fall term. Credit three hours. Primarily for graduate students. Th 2-4:30. Mr. ARNOLD.

Analytical study of the literature of public address and selected essays on rhetorical criticism.

282. PUBLIC ADDRESS IN HISTORICAL PERSPECTIVE: 1750-1850. Spring term. Credit three hours. Open to upperclassmen and graduate students who have had one of the following: Speech and Drama 105, Speech and Drama 201 or equivalent, six hours of English history or American history. T Th S 10. Mr. ARNOLD.

Critical study of the settings, content, and persuasive influence of significant British and American addresses. Special attention will be given to speeches treating the American and French revolutions, ratification of the Constitution of the United States, the Napoleonic wars, religious and ethical idealism, economic nationalism, and slavery. Addresses by Burke, Pitt, Fox, James Wilson, Hamilton, Cardinal Newman, Emerson, Webster, Cobden, Disraeli, Wilberforce, and Wendell Phillips will be among those studied. Lectures, readings, research papers.

[287-288. **THEORIES OF PUBLIC ADDRESS.** Not offered in 1961-1962.]

290. THESES AND SPECIAL PROBLEMS IN PUBLIC ADDRESS. Either term. Credit and hours arranged. Messrs. ARNOLD, SCHEIDEL, WICHELNS, and WILSON.

Open to graduate students working on theses and to other graduates prepared for independent study of special topics in rhetoric and public address.

[291-292. **RHETORICAL CRITICISM.** Not offered in 1961-1962.]

SPEECH PATHOLOGY AND PHONETICS

333. **ENGLISH PHONETICS.** Spring term. Credit three hours. Not open to freshmen. M W F 12. Mr. CANTER.

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 1961-1962.]

[337. **HISTORICAL PHONETICS.** Not offered in 1961-1962.]

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. CANTER.

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.** Fall term. Credit three hours. M W F 11. 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.** Spring 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. Open to seniors and graduate students by consent of the instructors. T Th 2:15-3:30. Messrs. NUTTALL and CANTER.

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.** Spring term. Credit three hours. M W F 2. Mr. NUTTALL.

An introduction to the causes and problems of hearing loss and deafness with special emphasis on hearing loss in the young and its effects upon speech behavior. Methods of testing hearing and of interpreting test results will be explored through study and practice.

390. **THESES AND SPECIAL PROBLEMS IN SPEECH PATHOLOGY AND PHONETICS.** Either term. Credit and hours arranged. Messrs. NUTTALL and CANTER.

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. *The Speech Clinic is one of the student services of the University. It serves all regularly enrolled students on a noncredit basis. Those wishing assistance in connection with speech problems may consult Mr. Nuttall for advice and, if necessary, assignment to a member of the Speech Clinic staff for individualized aid and instruction.*

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. STAINTON.

Readings, reports, and exercises in the direction and production of plays.

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.** Not offered in 1961-1962.]

*421. **DRAMATIC INTERPRETATION.** Either term. Credit three hours. T Th 11. Laboratory M 2-4. Fall term, Mr. ALBRIGHT. Spring term, Mr. GOLDEN.

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; STAGE-CRAFT.** Fall term. Credit three hours. Not open to freshmen. T Th 12. Laboratory, Th 2-4:30. Mr. CARLSON.

The theory and practice of stage production and design, theatre structure and equipment, problems and practice in 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 instructors 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. CARLSON and ALBRIGHT and the Staff of the University Theatre.

Projects in the productions of the University Theatre.

[437. **DRAMATIC PRODUCTION; STAGE LIGHTING AND DESIGN.** Not offered in 1961-1962.]

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 to be arranged. Messrs. CARLSON and ALBRIGHT and Staff.

451. **HISTORY OF THE THEATRE.** Fall term. Credit three hours. Open to upperclassmen. M W F 10. Mr. STANTON.

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. Mr. McCALMON.

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. Mr. McCALMON.

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. STANTON.

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.** Spring term. Credit three hours. T Th 11. Laboratory T 2-4:30. Mr. STANTON.

An examination of the nonfiction film: the documentary and its derived types including propaganda, informational, and classroom films. Attention will be given to the artistic and functional values of motion picture essays, both American and foreign. Lectures, discus-

sions, and reports; examples of various types of films will be shown and analyzed.

485. **MODERN THEORIES OF STAGE PRESENTATION.** Spring term. Credit three hours. Primarily for graduates. Hours to be arranged. Mr. STANTON.

490. **THESES AND SPECIAL PROBLEMS IN DRAMA AND THE THEATRE.** Either term. Credit and hours to be arranged. Messrs. ALBRIGHT, GOLDEN, MCCALMON, and STANTON.

Open to graduate candidates working on theses, and to other graduates prepared for independent study of special topics in drama and 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 restrictions 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.** Not offered in 1961-1962.]

[504. **HONORS SEMINAR.** Not offered in 1961-1962.]

ZOOLOGY

Mr. W. A. WIMSATT, *Chairman*; Messrs. H. B. ADELMANN, J. M. ANDERSON, L. C. COLE, P. W. GILBERT, S. L. LEONARD, C. P. LYMAN (Visiting Professor), J. R. VALLENTYNE.

For a major in zoology there must be completed: (1) Zoology 101-102 or 103-104, 211-212, 451, Plant Breeding (Genetics) 101; (2) twelve hours selected from the following: Zoology 222 (two hours only), 224, 301, 302, 304, 401-402, 404, 452, 454, 476 (two hours only), 491, 496, 515-516, courses in the 900 series when offered, 050 (three hours only), Conservation 7-8, Entomology 150, and (3) eighteen hours in related fields, selected from courses in bacteriology, biochemistry, botany, chemistry, conservation, entomology, geology, mathematics, or physics. Students majoring in zoology are strongly advised to fulfill the requirement of eighteen hours in related fields with courses in chemistry, mathematics, physics, and botany; and to satisfy the college foreign language requirement with German, Russian, or French.

Introductory Zoology (Zoology 101-102) or General Zoology (Zoology 103-104) should be taken by prospective majors during the freshman year and Comparative Anatomy of Vertebrates (Zoology 211-212) during the sophomore year, if possible. Students graduating under the provision of double registration in connection with the Cornell Medical College or the New York State Veterinary College will be required to complete all courses listed under (1), four hours selected from the courses listed under (2), and fifteen hours in the related fields listed under (3).

Honors candidates must take at least nine hours of advanced and intensive Honors work (Zoology 050) under the supervision of a staff member; 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. Students with the prerequisites are urged to apply for admission to the Honors program. Application for admission to Honors work should be made to Mr. Leonard, preferably early in the junior year. 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. ANDERSON 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.

***105. HUMAN PHYSIOLOGY.** Fall term. Credit three hours. Prerequisite, a previous course, either in high school or college, in biology and in chemistry. Open to students in the Colleges of Arts and Sciences, Home Economics, and Agriculture, and to others, but should not be taken by prospective majors in zoology. M W F 10. Mr. —.

An introductory course designed primarily to present fundamental and practical information concerning the physiological processes and systems of the human body. Lectures and demonstrations.

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. —.

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. Lectures, 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 11. May be counted for 2 hours of credit in satisfaction of Zoology major requirements. Mr. ASCHER and Assistant.

A study of the antecedents of man, early hominid forms, and the emergence of modern man. The interplay of cultural and biological factors in human evolution is emphasized. Topics include interpretations of the fossil hominid record, modern human variability, and the microevolution of contemporary populations.

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. —.

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. ———.

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. Prerequisites, 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.

A course for advanced undergraduates and graduate students, stressing function at the

level of the individual organism. Emphasis will be on physiological processes as these relate to natural habitats and on phylogenetic characteristics as these restrict the variety of habitats available for occupancy by various invertebrates. The methods of response and toleration physiology will be utilized to investigate life processes in various invertebrates exposed to experimentally varied conditions. The interpretation of life tables and mortality data will be introduced as experimental techniques.

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. COLE.

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. ———.

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. ———.

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. ———.

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. ———.

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. VALLENTYNE.

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 three hours. Prerequisites, one year of college work in a biological science, one course in geology, organic chemistry, and consent of the instructor. Ecology and biochemistry are desirable. Enrollment is limited. Lectures T Th 9. Laboratory M or T 2-4:30. Mr. VALLENTYNE and assistant.

An introduction to the geochemical roles of living organisms, including the chemical composition of the organism-environment complex, the influence of living matter on erosional and depositional processes, biogeochemical cycles, fossil organic matter, and biological

transformations of minerals. The laboratory is exclusively devoted to the geochemistry of organic matter.

[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. Not offered in 1961-1962.]

902. THE BIOLOGY OF MAMMALS. Spring term. Credit three hours. Prerequisites, one year of introductory zoology or biology, and at least one semester of comparative anatomy or the equivalent. M W F 11. Mr. LYMAN.

Deals with the structure and the functional and physiological adaptations of mammals as a group. Topics include characteristics of mammals as a class, the orders of mammals with a brief review of their evolutionary history and zoogeography, the organ systems and their specializations with emphasis on skin and epidermal derivatives, the skeleton and its adaptations for locomotion of various types, teeth and the digestive tract, special senses and their representation in the central nervous system, population cycles, emigrations and special physiological adaptations for various types of existence—flying, aquatic, desert, etc.

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

301-302. BRAIN MECHANISMS AND MODELS. Throughout the year. Credit three hours a term. Prerequisites, calculus, graduate

or advanced undergraduate standing, and consent of instructor. Lecture W 2, with additional hours to be arranged. Mr. ROSENBLATT,

with assistance of Mr. BLOCK and guest lecturers.

Fall semester: review of fundamentals of neurophysiology, psychological and physiological criteria for brain models, computers, and digital automata in relation to brain mechanisms, review of representative models, theory

of elementary perceptrons. The Mark I perceptron will be available for laboratory work. Spring semester: theory of multi-layer and cross-coupled perceptrons; recognition of temporal patterns; problems of figure organization, cognitive sets, sequential programs, and other problems of advanced models.

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.

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 bionomics 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 trip.

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, Air Science, Naval Science, Physical Education, and Clinical

and Preventive Medicine. The offerings in military training are described in the Announcement of that name, the others in leaflets published by the departments.

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