

CORNELL UNIVERSITY

OFFICIAL PUBLICATION

APRIL 6, 1953

College of Arts and Sciences

ANNOUNCEMENT
FOR 1953-54 SESSIONS



The University Calendar

1953-54

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| Freshman Orientation begins | Sept. 18, <i>Friday</i> |
| Registration | Sept. 21-22, <i>Monday-Tuesday</i> |
| Instruction begins | Sept. 23, <i>Wednesday</i> , 1 p.m. |
| Midterm grades due | Nov. 11, <i>Wednesday</i> |
| Thanksgiving recess: | |
| Instruction suspended | Nov. 25, <i>Wednesday</i> , 12:50 p.m. |
| Instruction resumed | Nov. 30, <i>Monday</i> , 8 a.m. |
| Christmas recess: | |
| Instruction suspended | Dec. 19, <i>Saturday</i> , 12:50 p.m. |
| Instruction resumed | Jan. 4, <i>Monday</i> , 8 a.m. |
| Instruction ends | Jan. 23, <i>Saturday</i> |
| Second-term registration for | |
| first-term registrants | Jan. 25, <i>Monday</i> |
| Examinations begin | Jan. 26, <i>Tuesday</i> |
| Examinations end | Feb. 3, <i>Wednesday</i> |
| Midyear recess | Feb. 4-5, <i>Thursday-Friday</i> |
| Registration for those not | |
| first-term registrants | Feb. 6, <i>Saturday</i> |
| Instruction begins | Feb. 8, <i>Monday</i> , 8 a.m. |
| Midterm grades due | March 27, <i>Saturday</i> |
| Spring recess: | |
| Instruction suspended | March 27, <i>Saturday</i> , 12:50 p.m. |
| Instruction resumed | April 5, <i>Monday</i> , 8 a.m. |
| Instruction ends | May 29, <i>Saturday</i> |
| Examinations begin | May 31, <i>Monday</i> |
| Examinations end | June 8, <i>Tuesday</i> |
| Commencement Day | June 14, <i>Monday</i> |

CORNELL UNIVERSITY OFFICIAL PUBLICATION

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Faculty

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JAMES DABNEY BURFOOT, JR., Assistant Dean of the College of Arts and Sciences
ROLLIN LAWRENCE PERRY, Chairman of the Advisory Board for Underclassmen, College of Arts and Sciences
JOANNE WOOLLEY, Assistant Secretary of the College of Arts and Sciences

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ARTHUR AUGUSTUS ALLEN, Ph.D., Professor of Ornithology, Emeritus
ALFRED LEONARD ANDERSON, Ph.D., Professor of Geology
JOHN MAXWELL ANDERSON, Ph.D., Associate Professor of Zoology
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JOHN WALTER BICKNELL, Ph.D., Instructor in English
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MORRIS GILBERT BISHOP, Ph.D., Kappa Alpha Professor of the Romance Languages and Literatures

¹Leave of absence, fall term, 1953-54.

²Leave of absence, spring term, 1953-54.

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 PETER BLAU, Ph.D., Instructor in Sociology
 ALFRED T. BLOMQUIST, Ph.D., Professor of Chemistry
 ALBERT WILHELM BOESCHE, Ph.D., Professor of German, Emeritus
 NORMAN A. BONNER, Ph.D., Assistant Professor of Chemistry
 SAMUEL LATIMER BOOTHROYD, M.S., Professor of Astronomy, Emeritus
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 URIE BRONFENBRENNER, Ph.D., Professor of Psychology and of Child Development and Family Relationships
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*Leave of absence, fall term, 1953-54.

*Leave of absence, spring term, 1953-54.

*Leave of absence, fall term, 1953-54.

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⁶Leave of absence, fall term, 1953-54.

⁷Leave of absence, fall term, 1953-54.

⁸Leave of absence, 1953-54.

⁹Leave of absence, spring term, 1953-54.

¹⁰Leave of absence, spring term, 1953-54.

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¹¹Leave of absence, fall term, 1953-54.

¹²Leave of absence, spring term, 1953-54.

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¹²Leave of absence, fall term, 1953-54.

¹⁴Leave of absence, 1953-54.

¹⁵Leave of absence, 1953-54.

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¹⁶Leave of absence, 1953-54.

¹⁷Leave of absence, 1953-54.

¹⁸Leave of absence, 1953-54.

- DONALD F. SOLA, A.B., Instructor in Linguistics
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 PAUL M. ZALL, Ph.D., Instructor in English

¹⁹Leave of absence, 1953-54.

²⁰Leave of absence, fall term, 1953-54.

[This is a listing of the faculty of the College of Arts and Sciences for 1952-53. It does not necessarily include appointments or resignations for 1953-54.]

College of Arts and Sciences

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 proficiency in a foreign language; and (3) that he shall attain a basic knowledge of certain areas of the humanities, 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 general purpose of the College of Arts and Sciences is liberal and nontechnical. 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 the social studies.

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 (see p. 21). 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. Four years of English, and elementary and intermediate algebra must be included in these entrance requirements. The remaining units should normally be made up of foreign language (ancient or modern), science, and social studies (including history). Each candidate for admission is required to take the Scholastic Aptitude Test of the College Entrance Examination Board in January and to request the Board to report the result to the Director of Admissions, Cornell University.

All accepted applicants must take the English Achievement Test of the College Board not later than May for placement in class sections. Those who wish to continue in Cornell a modern foreign language begun in secondary school must take the appropriate foreign language achievement test of the College Board not later than May. (See "Proficiency and Distribution Requirements," p. 18.)

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. However, the specific requirements in English and algebra must be met either in secondary school or college unless waived in an individual case. The total preparation of each candidate will be considered also, and, if there appears to be a marked deficiency in preparation, advanced standing credit may be reduced proportionately.

An applicant for admission to the sophomore or junior class is required to take the College Transfer Test of the College 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 evidences relating to each applicant's character, seriousness of purpose, and fitness to undertake the work of the College.

Applicants for admission should consult the *General Information* booklet issued by the University. This publication contains more detailed information on entrance requirements, with notes on expenses, including tuition charges and fees, scholarships, loan funds, and matters of general interest to students. The *General Information* booklet and all other catalogues of Cornell University may be obtained by writing to Cornell University Official Publication, Edmund Ezra Day Hall, Ithaca, N.Y. Application forms are to be had from the Director of Admissions, Edmund Ezra Day Hall, and communications concerning admission should be addressed to him.

ADMISSION TO ADVANCED STANDING

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 of the sixty 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.

Freshmen in the College of Arts and Sciences may receive credit toward the degree of Bachelor of Arts for certain secondary subjects which are in excess of the minimum required for entrance by passing college-credit examinations in these subjects. Furthermore, freshmen may take college-credit examinations in subjects for which no entrance credits have been offered. Students are eligible to take these college-credit examinations *only* at entrance and at the end of their first term of residence in the college. In all cases, they must furnish the departments concerned with sufficient evidence of preparation to warrant the examinations requested.

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 1953-54 registration for the fall term will be held in the

period April 29 to May 8, 1953, and registration for the spring term will be held in the period November 16 to November 25, 1953.

Program changes will be permitted, without petition or fee, upon recommendation of the adviser prior to August 15 for the fall term and prior to January 5 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 mid-term 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 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 school 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 oppor-

tunities in these subjects, combination of subjects usually required of teachers, choice of the major subject, and related matters.

Questions may be directed to Mrs. M. G. Ocvirk, School of Education, Ithaca, N.Y., and to members of the advisory committee representing the various fields of concentration. New students interested in teaching are requested to confer with Professor Ocvirk 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 also agree that it would be unfortunate for the future of medicine if all premedical students were to take the same premedical course or major in the same subjects.

The Premedical Advisory Board suggests the following first-semester program: English 111 (three hours), French or German (six hours), or Latin (three hours); chemistry (three hours). The remaining three to six hours should be chosen from the courses listed under "Courses Open to Freshmen" (p. 17).

PRELEGAL STUDENTS . . . All prelegal students are invited to consult with the members of the Law Faculty at any stage of their college course as to their election of subjects and in regard to any other matters pertinent to the legal career. Students taking the six-year combined Arts-Law course who are planning to enter the Law School upon completion of their work in this college should also confer with the Secretary of the Law School not later than their sophomore year.

PREBUSINESS AND PUBLIC ADMINISTRATION . . . The School of Business and Public Administration will give predominant weight to the quality of an applicant's previous academic record rather than to the

particular courses which he has taken. But students who plan to enter the School are urged to include in their undergraduate programs basic courses in economics and American government. Students who expect to concentrate in accounting or statistics should take as much work in mathematics as is feasible. Students who intend to specialize in public administration should try to include a course in constitutional law in their undergraduate program prior to entering the School.

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 lecture or recitation, or at a laboratory exercise lasting two hours and a half or three hours.

A freshman will usually register in his first term for fifteen hours of work, in addition to the required hours in physical training and military science (see p. 25).

Every student must register in each term for at least twelve academic hours (including naval science but excluding military science and physical training). 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. Freshmen and sophomores, however, may carry a total of eighteen hours when the total includes an advanced course in military science. 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 training and military science, a student on probation may not register for more than fifteen academic hours a term.

COURSES OPEN TO FRESHMEN

See also "Proficiency and Distribution Requirements," p. 18.

The following are the courses in the College of Arts and Sciences regularly open to freshmen, except that (1) a student may not register for any course for which he has not satisfied the prerequisites, if any are specified (see announcement under each course); (2) a student may not register for any course for which he has presented an acceptable

equivalent at entrance. In the section, "Courses of Instruction," the courses open to freshmen are identified by asterisks.

| | |
|--|--|
| Astronomy 101, 102, 125, 127, 128 | 307, 308 |
| Biology 1 | Latin 105-106, 107-108, 109, 111, 112 |
| Botany 1 (either term) | Mathematics 121-122, 133, 161-162, 192 |
| Chemistry 101-102, 105-106, 111-112, 115-116, 201 | Music 101, 102, 103-104, 105-106, 108, 110, 201-202, 401-402, 406, 408, 410, 412 |
| Chinese 101, 102, 103, 201, 203 | Philosophy 101, 102, 103 |
| Economics 105-106 | Physics 103, 104, 107, 108 |
| English 111-112, 221-222 | Physiology 303 |
| Fine Arts 101-102, 111-112 | Portuguese 101, 102, 103, 201, 203 |
| French 101, 102, 103, 201, 203, 301-302 | Psychology 101, 102, 106, 112 |
| Geology 101-102, 105, 108, 111, 115 | Russian 101, 102, 103, 201, 203 |
| German 101, 102, 103, 105, 201-202, 301-302, 305-306 | Sociology 101, 103, 104 |
| Government 101, 102, 104 | Spanish 101, 102, 103, 201, 203, 301-302, 303-304 |
| Greek 101, 103, 201, 203 | Speech and Drama 131, 133 |
| Hindi 101, 102 | Thai 101, 102 |
| History 101-102, 103-104, 105-106, 107-108 | Vietnamese 101, 102 |
| Indonesian 101, 102 | Zoology 101-102, 103-104 |
| Italian 101, 102, 103, 201, 203, | |

PROFICIENCY AND DISTRIBUTION REQUIREMENTS

A. PROFICIENCIES

Before graduation each student must satisfy the following subject matter requirements:

1. English, by completing 111-112. This course must be begun in the first year of residence. Students demonstrating in class work and by examination a high level of accomplishment in English 111 may be exempted from English 112. Foreign students may satisfy the requirement by offering English 211, for which the prerequisite is satisfaction of the proficiency requirement as defined by the Division of Modern Languages.

2. Foreign Language. Each student must demonstrate proficiency in one foreign language, ancient or modern.

In the ancient languages (Latin, Greek), the requirement may be met by the successful completion of Latin 108 or 112, or Greek 203.

In the modern languages the requirement is met, not by taking any specific amount of course work, but rather by passing the appropriate

proficiency examination given by the Division of Modern Languages. This examination consists of the College Board Achievement Test (or its equivalent) plus the Cornell Auditory Test (in the appropriate language); both parts are given at the end of each term (as the final examination of Course 102), and also on November 4 and April 7 of the 1953-54 academic year. Students who pass Course 102 but fail the proficiency examination may satisfy the language requirement by completing Course 103 (in German, Course 103 or 105). The requirement may be satisfied in the following languages: French, German, Italian, Spanish, Russian, Chinese, Indonesian, and Hindi.

Students wishing to begin a modern language they have not previously studied may register for Course 101 in that language. Those entering Cornell who wish to continue a modern language they have already studied in school or another college must take the College Board Achievement Test in that language. On the basis of this test they will (1) be placed in Course 101; (2) be placed in Course 102; or (3) be declared proficient. Students who have not taken the College Board Achievement Test before entrance may not continue the study of a language until they have taken the proficiency examination administered by the Division of Modern Languages. This is necessary in order that they may be placed in the proper course.

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. DISTRIBUTION REQUIREMENTS

In each of the three groups of courses following, a student is required to earn six hours of credit by passing one of the indicated six-hour sequences:

1. LABORATORY SCIENCE:

Astronomy 101-102

Biology 1

Botany 1

Chemistry 101-102, or 105-106

Geology 101-102

Physics 103-104, or the equivalent

Zoology 101-102

2. HISTORY:

History 101 and 102, 103-104, 105-106, 107-108 or 151-152

3. LITERATURE:

Chinese 321-322, or 351-352

English 221-222, 251-252, or 329-330

French 301-302

German 301-302, 305-306, or 365-366

Greek 201-203

Italian 307-308

Latin 112 and 205, or 205-206

Literature 101-102, 201-202, 211-212, 301-302, 309-310, 311-312, 321-322, 325-326, 329-330, or 331-332

Russian 301-302

Spanish 301-302, or 303-304

From the following groups (4-8), a student must pass TWO of the indicated six-hour sequences. Only one sequence may be selected from any group.

4. MATHEMATICS OR A SECOND SCIENCE:

Mathematics 121-122 or any six hours of more advanced courses

Science (a second science chosen from the list in Group 1 above; students who have chosen a *Physical Science* will take a *Biological Science* and vice versa)

5. PHILOSOPHY:

Philosophy 101-102, 221-222, 301-302; or 321-322

6. ECONOMICS OR GOVERNMENT:

Economics 105-106

Government 101, and 102 or 104

7. PSYCHOLOGY OR SOCIOLOGY AND ANTHROPOLOGY:

Psychology 101 and one of the following: 102, 103, 106, 107, or 112.

Sociology and Anthropology 101 and 104 or 431; or 103 or 411 and one of the following: 412, 620, 622, 624; or for upperclassmen: 431-432.

8. FINE ARTS, MUSIC, OR SPEECH AND DRAMA:

Fine Arts 101-102; or 111-112

Music 101 and one of the following: 102, 103, 108 or 110

Speech and Drama, six hours chosen from Courses 175, 401, 455, 475

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

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: the first six hours of intensive courses in modern languages and the first twelve hours of non-intensive 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 or in a related field approved by his adviser. 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. A student desiring to do informal study outside his major department must secure the approval of the Faculty member under whom he proposes to work and of his adviser; he will then submit a petition to the Dean.

CREDIT FOR SUMMER SESSION

A student who plans to do work for credit in a summer session must submit in advance a petition approved by his adviser and filed in the Dean's office prior to June 1; such petitions will be considered and acted upon in accordance with their merits. Credit for work done in summer sessions at Cornell and elsewhere may be granted to the extent of thirty hours. To secure credit for work done elsewhere, a student must be in good standing. Any student who undertakes summer session work without prior approval of his adviser and the departments concerned 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 prescribed subjects and proficiencies, the University requirements in military science and physical training, 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 University Medical College, or the Cornell Law School, or the College of Veterinary Medicine, or the School of Business and Public Administration. (See "Major Subjects," 2, p. 20.) 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.

Consult also the italicized statements by the several departments under "Courses of Instruction" (pp. 30 ff.).

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 training), 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. Students on probation may not register in any summer session other than the Cornell Summer Session with the expectation of receiving credit in this College.

A student's general record may be so unsatisfactory that the Faculty will refuse him permission to continue in the College even though he has passed twelve hours in the preceding term.

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

LEAVES OF ABSENCE

For reasons satisfactory to the Faculty, a student may be given a leave of absence for a definite or indefinite length of time. If, because of financial, family, or health reasons, a student is required to absent himself for a period of time, but with the expectation of returning, he should apply for a leave of absence. Leaves of absence for medical reasons are issued only upon the recommendation of the University Clinic. Students withdrawing permanently should request an honorable dismissal.

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

REQUIREMENTS FOR GRADUATION

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

BACHELOR OF ARTS

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

1. Credit for one hundred and twenty hours, of which at least ninety hours must be for courses given in the College of Arts and Sciences. Elementary courses in military science and physical training, which are offered under the jurisdiction of the University, but not of any College, *may not* be counted as part of the thirty hours which a student may elect outside the College of Arts and Sciences, nor as part of the ninety hours required in the College. However, advanced courses in military and air science and tactics *may* be counted in the thirty hours allowed outside this College, to a maximum of twelve hours. (See also the *Announcement of the Independent Divisions and Departments.*)

2. A grade of 70 or better in at least seventy-two of the required one hundred and twenty hours.

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 "Proficiency and Distribution Requirements," p. 18.

4. Completion of the work in military science and physical training as prescribed by the University Faculty (see below).

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

Effective in June, 1954, the degree of Bachelor of Arts with Distinction in a student's major subject will be superseded by the degree of Bachelor of Arts with Honors in a student's major subject. This degree will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, have satisfactorily completed the Honors program in their major subject and have been recommended for the degree by the department representing their major subject.

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

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

UNIVERSITY REQUIREMENTS IN MILITARY SCIENCE AND PHYSICAL TRAINING

MILITARY SCIENCE . . . All physically qualified undergraduate men who are American citizens must take military science during their first four terms. Enrollment in the basic course of military science and tactics or air science and tactics, or in the first two years of naval science, satisfies this requirement. Students transferring to Cornell from other institutions are exempt from part or all of the requirement, according to the number

of terms of residence in college before transfer; and service in the armed forces in World War II also satisfies the military training obligation. Entering students who have had ROTC training in secondary or military schools are requested to bring WD AGO Form 131—Student's Record for presentation to the military department at the time of registration. (See also the *Announcement of the Independent Divisions and Departments.*)

Credit in advanced courses in the Army or Air ROTC programs to the extent of twelve hours may be counted in the thirty hours allowed outside the College.

In the Naval ROTC program eighteen hours may be counted toward the one hundred and twenty hours required for the degree as follows: Naval Science 301 and 302, three hours each, may be counted within the ninety Arts hours; and Naval Science 101, 102, 201, 202, three hours each, may be counted in the thirty hours allowed outside the College.

PHYSICAL TRAINING . . . All undergraduates must pursue four terms of work, three hours a week, in physical training. This requirement must be completed in the first two years of residence; postponements are to be allowed only by consent of the University Faculty Committee on Requirements for Graduation.

Exemption from this requirement may be made by the Committee designated above, when it is recommended by the Medical Office, by the Department of Physical Education, or because of unusual conditions of age, residence, or outside responsibilities. An exemption recommended by the Department of Physical Education shall be given only to students who meet standards of physical condition established by the Department of Physical Education and approved by the Committee on Requirements for Graduation. Students who have been discharged from the Armed Services may be exempted.

For students entering with advanced standing, the number of terms of physical training required is to be reduced by the number of terms which the student has satisfactorily completed (whether or not physical training was included in his program) in a college of recognized standing. (See also the *Announcement of the Independent Divisions and Departments.*)

HEALTH SERVICES AND MEDICAL CARE

These services are centered in the University Clinic or out-patient department and in the Cornell Infirmary or hospital. Students are entitled to unlimited visits at the Clinic; laboratory and X-ray examinations in-

licated for diagnosis and treatment; hospitalization in the Infirmary with medical care for a maximum of fourteen days each term and emergency surgical care. The cost for these services is included in the College and University general fee. For further details, including charges for special services, see the *General Information* booklet.

SCHOLARSHIPS AND PRIZES

Scholarships and prizes open to students of Arts and Sciences as members of the University are listed in the *General Information* booklet and in the booklets *Prize Competitions* and *Scholarships and Grants-in-Aid*. Only students of Arts and Sciences are eligible for the scholarships and prizes described below.

THE SPENCER L. ADAMS SCHOLARSHIPS . . . Two scholarships open to freshmen men. One scholarship will be awarded effective September, 1953. Annual award, \$800. Tenure four years, provided 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 GEORGE C. BOLDT MEMORIAL SCHOLARSHIPS . . . Mr. George C. Boldt, Jr., has created three scholarships, each of them worth \$500, as a memorial to his father. These scholarships will be awarded at the close of the junior year to the three men students of the College who shall be 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.

CHESTER BUCHANAN MEMORIAL SCHOLARSHIP . . . A gift of Mrs. Claire F. Buchanan, in memory of her son, Chester Buchanan, carries an annual stipend of \$125. 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 CORNELIA L. HALL SCHOLARSHIP . . . A gift of the late Mary F. Hall has established the Cornelia L. Hall Scholarship, worth \$120, "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 for the scholarship must be

filed in the office of the Dean before March 15 of the academic year preceding the year for which it is awarded.

THE HENRY L. O'BRIEN, JR., SCHOLARSHIP . . . This scholarship, established by the W. Alton Jones Foundation, Inc., as a memorial to Henry L. O'Brien, Jr., is worth \$400 a year. It will be awarded for the first time in September, 1953, 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.

THE GEORGE CHAPMAN CALDWELL PRIZE . . . The George Chapman Caldwell Prize of \$50, established in 1913, is awarded, for general excellence in Chemistry, by the staff of the Department of Chemistry to a member of the senior class in Arts with a major in Chemistry.

THE BESS BERLOW COHAN PRIZE . . . The Bess Berlow Cohan Prize of \$100, established in 1939, is awarded by a committee to the member of the senior class who has shown the greatest ability and progress in a combined study of Classics and English.

THE JULIETTE MacMONNIES COURANT PRIZE . . . The Juliette MacMonnies Courant Prize, founded by Mrs. Margaret MacMonnies Courant in memory of her daughter, consists of about \$40, either in cash or books as the recipient may determine. It is awarded annually to that woman student of the senior class whose major subject is French and who shall, in the opinion of the committee of award, have made the best record in her four years of work, with special reference to facility of expression in French.

THE DUNIWAY PRIZE . . . The Duniway Prize, founded by a bequest of the late Clyde A. Duniway, will be awarded annually to the best senior majoring in History or in Government and shall consist of books in the fields of History and Government to the value of approximately \$30. In selecting the winning candidate, the committee of award shall take into account his academic record, his ability to express himself clearly and idiomatically in speaking and writing, and his scholarly approach.

THE HAROLD ADLARD LOVENBERG PRIZE . . . The Harold Adlard Lovenberg Prize of \$40, established in 1939, is awarded for general excellence, by the staff of the Department of Chemistry, to a member of the junior class in Arts with a major in Chemistry.

Courses of Instruction

THE following list of courses will be offered in the academic year 1953-54. 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 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. HENRY A. MYERS, *Chairman*; Messrs. G. P. ADAMS, JR., M. L. HULSE, ARTHUR E. MURPHY, C. P. NETTELS, CLINTON L. ROSSITER, R. M. WILLIAMS, JR.

For a major in American studies, consult Mr. MYERS.

For a major in American studies the student is required to complete the courses in Group I and elect twelve additional hours from one of the concentrations in Group II.

English 329-330 and History 151-152 may not be counted both in the major and in satisfaction of the prescribed requirements.

GROUP I

AMERICAN PAINTING. (Arch. 424)

Economics 105-106. MODERN ECONOMIC SOCIETY.

English 329-330. AMERICAN LITERATURE.

Government 101. AMERICAN NATIONAL GOVERNMENT. Three additional hours in American government.

History 151-152. AMERICAN HISTORY.

Philosophy 313. AMERICAN PHILOSOPHY.

Sociology and Anthropology 431-432. STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY.

American Studies 401-402. SEMINAR IN AMERICAN STUDIES.

GROUP II

Concentration in Economics

- Economics 203-204. *MONEY, CURRENCY, AND BANKING.*
 Economics 224. *INCOME, OUTPUT, AND THE MONEY CIRCUIT.*
 Economics 231. *FINANCIAL HISTORY OF THE UNITED STATES.*
 Economics 321. *PRIVATE ENTERPRISE AND PUBLIC POLICY.*
 Economics 322. *PUBLIC REGULATION OF BUSINESS.*
 Economics 401. *LABOR CONDITIONS AND PROBLEMS.*
 Economics 402. *TRADE UNIONISM AND COLLECTIVE BARGAINING.*
 Economics 411. *LEGAL AND CONSTITUTIONAL ASPECTS OF LABOR PROBLEMS.*
 Economics 902. *NATIONAL INCOME AND WEALTH.*
 Economics 920. *FULL EMPLOYMENT AND FREE ENTERPRISE.*

Concentration in Government

- Government 102. *STATE AND LOCAL GOVERNMENT.*
 Government 216. *THE AMERICAN PRESIDENCY.*
 Government 218. *AMERICAN POLITICAL PARTIES.*
 Government 231. *PUBLIC ADMINISTRATION.*
 Government 234. *THE ADMINISTRATIVE PROCESS.*
 Government 235. *AMERICAN POLITICAL AND CONSTITUTIONAL THEORY.*
 Government 236. *PRINCIPLES AND PROBLEMS OF AMERICAN DEMOCRACY.*
 Government 241-242. *CONSTITUTIONAL LAW.*
 Government 324. *THEORY OF THE DEMOCRATIC STATE.*
 Government 417. *CONTEMPORARY AMERICAN FOREIGN POLICY: THE FAR EASTERN POLICY OF THE UNITED STATES.*

Concentration in History

- History 711. *AMERICAN COLONIAL HISTORY TO 1763.*
 History 712. *THE AGE OF WASHINGTON, 1763-1800.*
 History 717. *AMERICAN BIOGRAPHY.*
 History 721-722. *AMERICAN HISTORY: HISTORY OF THE WEST.*
 History 726. *RECENT AMERICAN HISTORY.*

Concentration in Literature

- English 336. *THE MODERN AMERICAN NOVEL.*
 English 349. *RECENT AMERICAN POETRY.*
 English 355. *AMERICAN FOLK-LITERATURE.*
 English 476. *AMERICAN COLONIAL LITERATURE.*
 English 478. *EMERSON, THOREAU, AND WHITMAN.*
 English 479. *POE, HAWTHORNE, AND MELVILLE.*
 English 481. *MARK TWAIN, HOWELLS, AND JAMES.*
 Speech and Drama 283. *AMERICAN ORATORS.*
 Speech and Drama 455. *AMERICAN DRAMA AND THEATRE.*

Concentration in Sociology and Anthropology

Sociology and Anthropology 311. *PUBLIC OPINION.*
 Sociology and Anthropology 320. *POLITICAL SOCIOLOGY.*
 Sociology and Anthropology 433. *SOCIAL STRATIFICATION.*
 Sociology and Anthropology 520. *PROBLEMS IN MINORITY GROUP RELATIONS.*

ASTRONOMY

Mr. R. W. SHAW, *Chairman*; Mrs. M. S. CARPENTER.

For a major in Astronomy the following courses must be completed: (1) in Astronomy, Courses 101 and 102, twelve hours of Interpretational Astronomy, six hours of Observational Astronomy, six hours of electives; (2) in related subjects, at least fifteen hours selected from approved courses in Chemistry, Geology, Mathematics, and Physics. Students who anticipate a major in Astronomy should complete Astronomy 101 and 102 not later than the sophomore year. Graduate students must register with the department on the regular registration days at the beginning of each term.

*101. *INTRODUCTION TO ASTRONOMY.* Fall term. Credit three hours. Lectures, T Th 11. Laboratory, M T W Th 2-4:30. Mr. SHAW.

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

*102. *INTRODUCTION TO ASTRONOMY.* Spring term. Credit three hours. Lectures, T Th 11. Laboratory, M T W Th 2-4:30. Mr. SHAW.

Fundamentals of astronomy with emphasis on the sun, the stars, the galaxy, the sidereal universe, and spectroscopy. Observation at Fuertes Observatory.

*125. *AIR NAVIGATION.* Fall term. Credit three hours. M W F 11. Mr. SHAW.

Practical course in the science of finding the position of an airplane relative to the earth's surface. Includes contact flying, dead reckoning, wind determination, radio navigation, and celestial navigation. Practice in the use of airplane computers, compasses, charts, radio, and sextants. Course covers all material needed in navigation for C.A.A. certificates.

[*127. *NAVIGATION AND NAUTICAL ASTRONOMY I.* Fall term. Credit three hours. Prerequisite, plane trigonometry. Mr. SHAW. Not offered in 1953-54.]

*128. *NAVIGATION AND NAUTICAL ASTRONOMY II.* Spring term. Credit three hours. Prerequisite, plane trigonometry. 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 other specialized techniques.

INTERPRETATIONAL ASTRONOMY

[221. *ORIGIN OF THE SOLAR SYSTEM.* Fall term. Credit three hours. Prerequisites, the Calculus and the consent of the instructor. Mr. SHAW. Not offered in 1953-54.]

226. *THEORY OF ORBITS*. Fall term. Credit three hours. Prerequisites, the Calculus and the consent of the instructor. M W F 12. Mrs. CARPENTER.

Theory of the orbits of objects moving according to Newton's Law of Gravitation. Computation of the orbit of a comet or asteroid from three or more observations.

[231. *STELLAR STRUCTURE*. Spring term. Credit three hours. Prerequisites, the Calculus and the consent of the instructor. Mr. SHAW. Not offered in 1953-54.]

238. *ASTROCHEMISTRY*. Spring term. Credit three hours. Prerequisites, the Calculus and the consent of the instructor. M W F 9. Mr. SHAW.

Chemical and physical structure of celestial objects. Behavior of matter under extremes of temperature and pressure. Formation of spectral lines and the quantitative analysis of stellar atmospheres. Formation of molecules and molecular aggregates. Atomic transformation and the origin of the elements.

[241. *THE GALAXY*. Fall term. Credit three hours. Prerequisites, the Calculus and the consent of the instructor. Mrs. CARPENTER. Not offered in 1953-54.]

[244. *EXTERNAL GALAXIES*. Spring term. Credit three hours. Prerequisites, the Calculus and the consent of the instructor. Mrs. CARPENTER. Not offered in 1953-54.]

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

Topic for fall term: Radio Astronomy. Credit two hours. T Th 12. Mrs. CARPENTER.

A survey of the astronomical problems to which radio techniques have been applied. Observed characteristics of the radio emission from the sun, moon, galaxy, "radio stars," and external galaxies, and their interpretations.

[275. *ASTROPHYSICS*. Fall or spring term. Credit three hours a term. Prerequisites, Astronomy 231 or 238 and differential equations. Mr. SHAW. Not offered in 1953-54.]

285. *ADVANCED GALACTIC STRUCTURE*. Spring term. Credit three hours. Prerequisites, Astronomy 241 and differential equations. Hours to be arranged. Mrs. CARPENTER.

295. *ADVANCED STUDY AND RESEARCH*. Either term. Credit variable. Prerequisite, consent of the instructor. STAFF.

OBSERVATIONAL ASTRONOMY

[461. *ASTRONOMICAL SPECTROSCOPY*. Fall term. Credit three hours. Prerequisite, consent of instructor. Mr. SHAW. Not offered in 1953-54.]

464. *ASTROMETRY*. Spring term. Credit three hours. Prerequisite, consent of instructor. Lectures T Th 12. Laboratory, F 2-4:30. Mrs. CARPENTER.

Observational methods and techniques. Coordinate measuring machine and filar micrometer. Astronomical photography. Visual and spectroscopic binaries.

[468. *GEODETIC ASTRONOMY*. Spring term. Credit three hours. Prerequisite, consent of instructor. Mr. SHAW. Not offered in 1953-54.]

BOTANY

Mr. H. P. BANKS, *Chairman*; Messrs. D. G. CLARK, R. T. CLAUSEN, W. C. MUENSCHER, L. C. PETRY, L. F. RANDOLPH, F. C. STEWARD, C. H. UHL.

For a major in Botany the student must complete Courses 1 and 117 and two of the following courses: 31, 123, 124, 126, 127; and in addition one course of three or four hours' credit in the field of Botany. In related subjects eighteen hours must be selected from approved courses in Bacteriology, Biochemistry, Chemistry, Entomology, Geology, Physics, Plant Pathology, and Zoology. Genetics 101 may be offered either as a course in Botany or in the related subjects.

For a major in Botany with advanced work in Bacteriology, the following courses must be completed: (1) Botany, Courses 1, 31, 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. **GENERAL BOTANY.** Throughout the year, but may be entered in the spring term. Credit three hours a term. If taken after general biology, credit two hours a term. Lectures, T Th 9 or 11. Laboratory, M T W Th or F 2-4:30; T 10-12:30; F or S 8-10:30; or S 9-11:30. Mr. PETRY and instructors.

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

31. **PLANT PHYSIOLOGY.** Either term. Credit four hours. Prerequisite, Botany 1, or biology, and introductory chemistry. Lectures, T Th 10. Laboratory, T Th 2-4:30, W F 2-4:30, or M 2-4:30, S 8-10:30. Mr. ———.

This course is designed to acquaint the student with the general principles of plant physiology. Topics such as water relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, growth, and reproduction are studied in detail. Particular emphasis is placed, both in laboratory and in classroom, on discussion of principles and their application to plants.

55. **WEEDS AND POISONOUS PLANTS.** Fall term. Credit three hours. Prerequisite, Botany 1 or its equivalent. Lectures, F 9. Laboratory, W F 2-4:30. Mr. MUENSCHER and assistant.

Special emphasis is given to the habits, characteristics, and properties which make weeds and poisonous plants harmful or undesirable, the losses and injury produced by them, and the methods for their prevention, eradication, and control.

115. **AQUATIC PLANTS.** Spring term. Credit three hours. Prerequisite, Botany 1 or its equivalent. Lecture, M 9. Laboratory, M W 2-4:30. Mr. MUENSCHER.

A study of the taxonomy and ecology of fresh-water plants, beginning with the algae and concluding with the aquatic angiosperms.

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

Prerequisite, Botany 1 or its equivalent and permission to register. Lectures, T Th 9. Laboratory, T Th 2-4:30. Mr. CLAUSEN.

A survey of the kinds of seed-plants and ferns, their classification, gross morphology, geographical distribution, and economic importance, together with an introduction to the principles and literature of taxonomy. Methods of identification are stressed.

118. *TAXONOMY OF VASCULAR PLANTS, ADVANCED COURSE*. Spring term. Credit four hours. Prerequisite, Botany 117 and either Botany 124 or Genetics 101 and permission to register. Lectures, T Th 9. Laboratory, T Th 2-4:30. Mr. CLAUSEN.

A continuation of Botany 117, including a consideration of evolutionary patterns in the seed plants and ferns; a demonstration of the principles and methods of taxonomy; and an introduction to problems of classification in the flora of North America. Trips will be scheduled in laboratory periods and on several Sundays in the second half of the term.

123. *PLANT ANATOMY*. Fall term. Credit four hours. Prerequisite, Botany 1 or its equivalent and permission to register. Lectures, T Th 9. Laboratory, either M W 2-4:30 or T Th 10-12:30. Mr. BANKS.

A detailed study of the internal structure of vascular plants with emphasis on determination and interpretation.

124. *CYTOLOGY*. Fall term. Credit four hours. Prerequisite, Botany 1 or Zoology 101-102 or its equivalent. Lectures, M W 9. Laboratory, M W or T Th 10-12:30. Assignment to laboratory section must be made at time of registration. Mr. UHL.

The principal topics considered are protoplasm, cells and their components, nuclear and cell division, meiosis and fertilization, and the relation of these to the problems of development, reproduction, taxonomy, and heredity. Both plant and animal materials are used.

[125. *MICROTECHNIQUE*. Spring term. Credit two hours. Prerequisites, Botany 1 and permission to register. Hours to be arranged. Mr. UHL. Not offered in 1953-54.

A laboratory course in methods of preparing plant material for microscopical study.]

126. *MORPHOLOGY OF VASCULAR PLANTS*. Spring term. Credit three hours a term. Prerequisites, Botany 1 or its equivalent, and permission to register. Lectures, M W 11. Laboratory, M W 2-4:30. Mr. BANKS.

An advanced course in the comparative morphology, life histories, and phylogeny of the lower vascular plants, both fossil and recent.

[127. *MORPHOLOGY OF VASCULAR PLANTS*. Spring term. Credit three hours a term. Prerequisites, Botany 1 or its equivalent, and permission to register. Mr. BANKS. Not offered in 1953-54.

An advanced course in the comparative morphology, life histories, and phylogeny of the higher vascular plants, both fossil and recent.]

171. *SPECIAL PROBLEMS IN GENERAL BOTANY, TAXONOMY, MORPHOLOGY, ANATOMY, PALEOBOTANY, ECONOMIC BOTANY, CYTOL-*

OGY, AND PHYSIOLOGY. Throughout the year. Credit not less than two hours a term. Hours by appointment.

Students engaged in special problems or making special studies may register in this course. They must satisfy the instructor under whom the work is taken that their preparation warrants their choice of problem.

217. *SEMINAR IN TAXONOMY OF VASCULAR PLANTS.* Fall and spring terms. Required of graduate students taking work in taxonomy. Prerequisite, Botany 118. Conference, M 4:30. Mr. CLAUSEN.

A consideration of current research and literature; reports on problems of research by graduate students and members of the staff.

[224. *CYTOGENETICS.* Spring term. Credit three hours. Prerequisites, Botany 124 and Genetics 101 or their equivalent. Mr. RANDOLPH. Not offered in 1953-54.

An advanced course dealing mainly with the chromosome mechanism of heredity and with recent researches in cytology, cytotaxonomy, and cytogenetics.]

231. *PLANT PHYSIOLOGY, ADVANCED LECTURE COURSE.* Throughout the year. Credit three hours a term. Limited to seniors and graduate students. Prerequisite, training in botany and chemistry, to be determined in each case by the Department. Lectures, M W F 10. Mr. STEWARD.

232. *PLANT PHYSIOLOGY, ADVANCED LABORATORY COURSE.* Throughout the year. Credit three hours a term. Prerequisite or parallel, Botany 231. Laboratory, T Th or W F 2-5:30. Mr. CLARK.

233. *SEMINAR IN PLANT PHYSIOLOGY.* Fall and spring terms. Required of graduate students in plant physiology. Conference, F 11. Messrs. CLARK, STEWARD, and ———.

The discussion of current problems in plant physiology and the presentation of reports on the research of graduate students and members of the staff.

234. *PLANT PHYSIOLOGY, ADVANCED LECTURE COURSE.* Fall term. Credit one hour. Prerequisite, Botany 231 or adequate preparation in botany and chemistry. W 8. Mr. SNYDER.

This course deals primarily with physiology in relation to hormones, photoperiodism, and vernalization.

CHEMISTRY

Mr. FRANKLIN A. LONG, *Chairman*; Messrs. SIMON H. BAUER, RICHARD BERSOHN, R. BYRON BIRD, ALFRED T. BLOMQUIST, NORMAN A. BONNER, W. DONALD COOKE, PAUL J. FLORY, ROBERT M. HEXTER, JAMES L. HOARD, JOHN A. HUNT, JOHN R. JOHNSON, ALBERT W. LAUBENGAYER, JERROLD MEINWALD, WILLIAM T. MILLER, MELVIN L. NICHOLS, R. KEITH OSTERHELD, DONALD D. PHILLIPS, ROBERT A. PLANE, HAROLD A. SCHERAGA, MICHELL J. SIENKO.

All courses listed below, except Chemistry 224 (fall term), 307-308, and 402, 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 111-112 and 115-116; 224; 307-308,

311-312; 407-408, 411-412; and at least six additional hours in Chemistry, to include any two of the following advanced courses: 245, 320, 431, and 575. (2) in related subjects: Mathematics 161, 162, 163; Physics 107 and 108; German 101, unless two units have been offered for entrance.

These requirements must be met by majors in chemistry of the class of 1956 and subsequent classes and should be met as far as possible by majors in chemistry who will graduate earlier.

INORGANIC CHEMISTRY

Students exceptionally well prepared in chemistry should read the section on p. 14 in regard to college credit examinations.

*101-102. *GENERAL CHEMISTRY*. Throughout the year. Credit three hours a term. Chemistry 101 is prerequisite to Chemistry 102. A terminal course for those students who do not intend to take more chemistry. Will not serve as prerequisite for more advanced courses in chemistry. Open to those who have had or have not had high school chemistry. Lectures, M F 10 or 11. Combined discussion-laboratory period, T W or Th 8-11, or 10-1, or M T W Th or F 1:40-4:30, or S 8-11. Mr. HUNT, Mr. OSTERHELD, and assistants.

Emphasis on the more important chemical principles and facts, on the scientific method, 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 or F 8-11, or 10-1, or M T W Th or F 1:40-4:30, or S 8-11. Mr. SIENKO, Mr. PLANE and assistants.

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

*111-112. *INTRODUCTORY INORGANIC CHEMISTRY*. Throughout the year. Credit three hours a term. Chemistry 111 is prerequisite to Chemistry 112. Chemistry 115-116 must be taken with Chemistry 111-112, except by consent of the instructor. Open to those students who have offered high school chemistry for entrance. Required of candidates for the degree of B.Ch.E. and recommended for candidates for the degree of A.B. with a major in chemistry. Lectures, M W F 8. Mr. LAUBENGAYER.

A study of the concepts and laws of inorganic chemistry and a systematic treatment of the common elements and their compounds based on atomic structure and the Periodic System.

*115-116. *INTRODUCTORY INORGANIC LABORATORY AND QUALITATIVE ANALYSIS*. Throughout the year. Credit three hours a term. Chemistry 115 is prerequisite to Chemistry 116. Must be taken with Chemistry 111-112. Laboratory, T Th 8-11, W F 10-1, or W 1:40-4:30 and S 10-1. Recitation, one hour a week, to be arranged. Messrs. LAUBENGAYER, BONNER, and HEXTER and assistants.

The theories of chemistry are applied in a study of the preparation and properties of the common elements and their compounds and to the separation and detection of their ions.

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

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. *ADVANCED INORGANIC LABORATORY*. Either term. Credit two to six hours. Prerequisite, Chemistry 308 and 312 and consent of the instructor. Chemistry 580 is designed to accompany Chemistry 575-576 but may be taken separately. Hours to be arranged. Messrs. HUNT, LAUBENGAYER, OSTERHELD, PLANE, and SIENKO.

Laboratory practice. The preparation, purification, properties, and reactions of inorganic compounds, including those of the rarer elements.

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 11.

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

ANALYTICAL CHEMISTRY

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

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

215. *ELEMENTARY QUANTITATIVE ANALYSIS*. Either term. Credit four hours. Prerequisite, Chemistry 201, or 112 and 116. Primarily for students in the premedical and biological curricula. Lectures, M W 12. Laboratory, M W or T Th 2-4:30 (either term) or T Th 8-10:30 (spring term only). Mr. BIRD, Mr. COOKE, 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 112 and 116. Required of candidates for the degrees of B.Ch.E. and A.B. with a major in chemistry. Lectures, M W 10. Laboratory, F 1:40-4:30 and S 9-12 (either term) or T Th 9-12 (fall term only). Mr. BIRD, Mr. NICHOLS, 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*. Spring term. Credit two to four hours. Prerequisite, Chemistry 403 or 407, or consent of the instructor. Primarily for seniors and graduate students. Laboratory may be taken separately by graduate students who have completed Chemistry 290. Lectures, T Th 11. Laboratory, one or two afternoons a week, to be arranged. Mr. COOKE.

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. *ADVANCED ANALYTICAL LABORATORY*. Either term. Credit two to six hours. Prerequisite, consent of instructor. Hours and place to be arranged. Messrs. BIRD, COOKE, and NICHOLS.

275. *QUANTITATIVE MICROANALYSIS*. Fall term. Credit three or more hours. Prerequisite, consent of the instructor. Primarily for graduate students. Enrollment is limited. Laboratory, W F 9-5. Mr. NICHOLS and assistant.

Laboratory practice in typical methods of both organic and inorganic quantitative microanalysis.

280. *SPECTROCHEMICAL ANALYSIS FOR ELEMENTS*. Spring term. Credit three hours. Prerequisites, Chemistry 403 or 407, and 411, or consent of the instructor. Enrollment is limited to 12 students. Lectures, T Th 9. Laboratory, one afternoon a week, to be arranged. Mr. BAUER and assistant.

The theory and practice of elementary spectrochemical analysis will be discussed in the lectures and illustrated in the laboratory. Qualitative and quantitative analyses of unknowns will be assigned in a sequence of graded complexity.

[285. *SPECTROCHEMICAL ANALYSIS FOR MOLECULAR GROUPS*. Fall term. Credit three hours. Prerequisites, Chemistry 280 or 245. Enrollment is limited to 6 students. One lecture and two laboratory periods a week, to be arranged. Mr. BAUER and assistant.

The theory and practice of analysis of compounds for selected molecular groupings, using infrared, Raman, ultraviolet, and fluorescence spectroscopy. Qualitative and quantitative unknowns will be assigned. Given in alternate years. Not offered in 1953-54.]

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

A study of the application of modern analytical methods to chemical problems. Topics discussed are varied from year to year and include polarography and other electrochemical methods; non-aqueous titrations; chromatography and ion exchange; mass spectrometry; colorimetry; visible, ultraviolet, infrared and Raman spectroscopy; as well as other optical methods of analysis.

ORGANIC CHEMISTRY

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

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 may be limited, especially 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. Mr. PHILLIPS.

A study of aliphatic and aromatic organic compounds, their occurrence, relations and uses.

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 306.

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

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

306. *ORGANIC LABORATORY*. Spring term. Credit two hours. Prerequisite, Chemistry 303 and 305. Laboratory, M W 2-4:30. Mr. PHILLIPS and assistant.

A continuation of Chemistry 305.

307-308. *INTRODUCTORY ORGANIC CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 106 or 112. Qualitative analysis is desirable but not required. Chemistry 307 is prerequisite to Chemistry 308. Chemistry 311-312 must be taken with Chemistry 307-308. Required of candidates for the degrees of B.Ch.E. and A.B. with a major in chemistry. Lectures, M W F 9. Mr. JOHNSON.

A systematic study of the more important compounds of carbon, their occurrence, methods of synthesis, relations, and uses.

311-312. *INTRODUCTORY ORGANIC LABORATORY*. Throughout the year. Credit two hours a term. Chemistry 311 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, T Th 1:40-4:30 or F 1:40-4:30 and S 9-12 (either term) or T Th 9-12 (fall term only). Mr. BLOMQUIST, Mr. MEINWALD, and assistants.

The student prepares typical compounds of carbon and familiarizes himself with their properties, reactions, and relations.

320. *IDENTIFICATION OF ORGANIC COMPOUNDS*. Either term. Credit four hours. Prerequisite, 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. MILLER and assistants.

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

330. *ADVANCED ORGANIC LABORATORY*. 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, hours to be arranged. Messrs. BLOMQUIST, JOHNSON, MEINWALD, MILLER, and PHILLIPS.

An advanced course in organic synthetic procedures, involving preparation of intermediates for organic research and use of standard reference works.

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

Fall term: survey of the principles of organic chemistry with illustrations drawn from reactions of hydrocarbons and carbonyl compounds; emphasis is on addition reactions. Spring term: continuation to other classes of organic compounds including consideration of replacement reactions, tautomerism, stereochemistry, and molecular arrangements.

375-376. *SELECTED TOPICS IN ORGANIC CHEMISTRY*. Throughout the year. Credit two hours a term. Prerequisite, Chemistry 365-366 or consent of the instructor. Primarily for graduate students. Students may register for either term separately. Lectures, T Th 9. Mr. BLOMQUIST.

Fall term: organic compounds of nitrogen and sulfur. Spring term: the simpler heterocycles and alicyclic compounds. Given in alternate years.

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

The mechanism of polymerization processes and the chemical structure and properties of high polymers will be discussed, with examples chosen from the more significant natural and synthetic high molecular weight materials. Given in alternate years. Not offered in 1953-54.]

385. *PHYSICAL ASPECTS OF ORGANIC CHEMISTRY*. Fall term. Credit two hours. Prerequisite, Chemistry 320 or 365-366, and consent of the instructor. Primarily for graduate students. Lectures, M W 11. Mr. MILLER.

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

[395-396. *CHEMISTRY OF NATURAL PRODUCTS*. Throughout the year. Credit two hours a term. Prerequisite, Chemistry 320 or 365-366. Primarily for graduate students. Open to undergraduates by consent of the instructor. Students may register for either term separately. Lectures, T Th 9. Mr. PHILLIPS.

A discussion of the organic chemistry of natural products. Fall term: alkaloids, terpenes, antibiotics, and plant pigments. Spring term: proteins, carbohydrates, vitamins and steroids. Given in alternate years. Not offered in 1953-54.]

PHYSICAL CHEMISTRY

402. *INTRODUCTION TO PHYSICAL CHEMISTRY*. Either term. Credit two hours. Prerequisite, Chemistry 106. Prerequisite or parallel courses; Mathematics 163 and Physics 117. For students in engineering. Lectures, W F 12. During the

spring term an additional lecture will be given, M 12, for students who wish to obtain three hours' credit in this course. Mr. BAUER and assistant.

A brief survey of physical chemistry with emphasis on topics of interest to students in engineering.

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

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

[405-406. *ELEMENTARY PHYSICAL CHEMISTRY*. Throughout the year. Credit: Chemistry 405, three hours; Chemistry 406, two hours. Prerequisite, Chemistry 303 and 305 and Mathematics 153-154. Chemistry 405 is prerequisite to Chemistry 406. Open only to students in the biological sciences. Lectures, fall term, T Th S 12; spring term, T Th 12. Mr. HOARD. Not offered in 1953-54.]

407-408. *INTRODUCTORY PHYSICAL CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 163, 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. FLORY.

A study of elementary principles and methods of physical chemistry and their applications to the chemical and physical properties of matter. Specific topics include gases, liquids, solids, molecular structure, the laws of thermodynamics, solutions, physical and chemical equilibria, chemical kinetics, and electrochemical systems.

411-412. *INTRODUCTORY PHYSICAL LABORATORY*. Throughout the year. Credit two hours a term. Prerequisite or parallel course, Chemistry 403-404 or 407-408. Chemistry 411 is prerequisite to Chemistry 412. Enrollment may be limited. Required of candidates for the degree of B.Ch.E. and A.B. with a major in chemistry. Laboratory, M T or Th F 2-4:30. Mr. HOARD, Mr. SCHERAGA, and assistants.

Qualitative and quantitative experiments illustrating the principles of physical chemistry, and practice in performing typical physicochemical measurements. A part of the scheduled time is used for the discussion of experiments rather than for laboratory work.

420. *ADVANCED LABORATORY PRACTICE IN PHYSICAL CHEMISTRY*. Either term. Credit two to six hours. Prerequisite, consent of the instructor. Hours and place to be arranged. Messrs. BAUER, BERSOHN, BIRD, BONNER, FLORY, HOARD, LONG, and SCHERAGA.

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

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 physical methods for determining molecular structure.

[440. *COLLOID CHEMISTRY*. Spring term. Credit two hours. Prerequisite, Chemistry 404 or 408. Lectures, T Th 11. Mr. SCHERAGA.

Physical chemistry of surfaces and colloids, including electrokinetic phenomena, stability, and properties of various types of colloidal systems. Given in alternate years. Not offered in 1953-54.]

[445. *APPLICATION OF THE PHASE RULE*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408. Lectures, M W F 12. Not offered in 1953-54.]

448. *PHYSICAL CHEMISTRY OF PROTEINS*. Spring term. Credit two hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, T Th 11. Mr. SCHERAGA.

Chemical constitution, molecular weight, and structural basis of proteins; thermodynamic, hydrodynamic, optical and electrical properties; protein reactions. Given in alternate years.

450. *SOLID STATE*. Spring term. Credit three hours. Prerequisite, Chemistry 404 or 408. Lectures, M W F 12. Mr. HOARD.

Discussion of structural types established for crystals through X-ray analysis, ionic and atomic radii, coordination number, packing relations, and stereochemistry of molecules and complex ions. Correlation of structure with physical properties, especially for ionic and metallic crystals. Given in alternate years.

455. *KINETICS OF CHEMICAL REACTIONS*. Spring term. Credit three hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Open to undergraduates by consent of the instructor. Lectures, M W F 11. Mr. LONG.

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

461. *RADIOCHEMISTRY*. Fall term. Credit three hours. Prerequisite, Chemistry 404 or 408, or consent of the instructor. Primarily for graduate students. Lectures, T Th S 8. Mr. BONNER.

A discussion of properties of the nucleus; spontaneous and induced nuclear reactions; radioactivity measurement; applications of radioisotopes; chemical techniques in the investigation of nuclear phenomena; and chemistry of radioactive elements. Given in alternate years.

472. *THERMODYNAMICS*. Spring term. Credit three hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, M W F 9. Mr. HOARD.

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

480. *STATISTICAL MECHANICS*. Fall term. Credit three hours. Prerequisite, Chemistry 491 or equivalent is desirable but not required. Primarily for graduate students. Lectures, M W F 8. Mr. BIRD.

An introduction to equilibrium and non-equilibrium statistical mechanics, with particular emphasis on physicochemical applications; calculation of thermodynamic functions; equation of state of gases and liquids; properties of crystals; condensation; surface tension; transport phenomena (diffusion, thermal diffusion, viscosity, thermal conductivity) of gases and liquids. 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. FLORY.

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 1953-54.]

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

Space groups, reciprocal lattices, three dimensional diffraction, interpretation of X-ray diffraction data, structure determination by Fourier synthesis. Given in alternate years. Not offered in 1953-54.]

[491. *INTRODUCTION TO QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Primarily for graduate students. Lectures, T Th S 10. Mr. BERSOHN.

Elementary presentation of the fundamentals of quantum mechanics. Given in alternate years. Not offered in 1953-54.]

[492. *QUANTUM MECHANICS OF VALENCE*. Spring term. Credit three hours. Prerequisite, Chemistry 491 or its equivalent. Primarily for graduate students. Lectures, M W F 9. Mr. BAUER. Given in alternate years. Not offered in 1953-54.]

[495. *MOLECULAR SPECTRA*. Fall 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). Relations between molecular structure and molecular constants. Given in alternate years. Not offered in 1953-54.]

601-602. *HONORS SEMINAR*. Throughout the year. Credit one hour a term. Prerequisite, scholastic standing in highest one-third of senior class and consent of instructor. Primarily for majors who qualify for advanced study and research in chemistry. One hour a week, to be arranged. Messrs. HOARD, JOHNSON, and LONG.

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

THE CLASSICS

Mr. ———, *Chairman*; Messrs. HARRY CAPLAN, ROBERT E. CARTER, JAMES HUTTON, GORDON M. KIRKWOOD, FRIEDRICH SOLMSEN, 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 206), 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 and Ger-

man, Ancient Philosophy, Fine Arts 301, 302, 804, courses 201-202, 207-208, 214, 401, and 412 in the Division of Literature, and Linguistics 201-202 and 281-282.

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.

Those whose major study is in Classical Civilization must complete (a) eighteen hours in Latin or Greek; (b) courses 201-202, and 207 in the Division of 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 375. 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. Since Honors work in Classics is largely informal, candidates will be responsible to a member of the Department who will be designated as their Honors adviser.

GREEK

*101. *GREEK FOR BEGINNERS*. Either term. Credit three hours. M W F 12. Fall term, Mr. SOLMSEN; spring term, Mr. CAPLAN.

Introduction to Homer's *Iliad*.

*103. *HOMER'S ILIAD*. Either term. Credit three hours. Prerequisite, Greek 101. M W F 12. Fall term, Mr. HUTTON; spring term, Mr. KIRKWOOD.

Continuation of Greek 101.

*201. *ATTIC GREEK*. Either term. Credit three hours. Prerequisite, Greek 103. Fall term, M W F 9, Mr. CARTER. Spring term, M W F 12, Mr. SOLMSEN.

Xenophon, *Anabasis*; Plato, Selections

*203. *EURIPIDES, IPHIGENIA IN TAURIS, AND ALCESTIS; NEW TESTAMENT, SELECTIONS*. Either term. Credit three hours. Prerequisite, Greek 201. T Th S 10. Fall term, Mr. KIRKWOOD; spring term, Mr. CARTER.

209-210. *GREEK COMPOSITION*. Throughout the year. Credit one hour a term. Prerequisite, Greek 103 or the equivalent. T 2. Fall term, Mr. CARTER; spring term, 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. SOLMSEN; spring term, Mr. KIRKWOOD.

305-306. *LYRIC POETRY; AESCHYLUS, PROMETHEUS BOUND; THEOCRITUS; 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 one hour a term. Prerequisite, Greek 209-210 or the equivalent. W 2. Mr. KIRKWOOD.

[389. *GREEK DIALECTS*. Credit two hours. For graduate students. Not offered in 1953-54.]

050. *INFORMAL STUDY*. For qualified majors.

LATIN

*105-106. *LATIN FOR BEGINNERS*. Throughout the year. Credit three hours a term, M W F 12. Mr. CARTER.

*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. M W F 11. Mr. ———.

Primarily designed for students who have had two years of Latin in 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. CARTER. 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. HUTTON.

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. HUTTON; spring term, Mr. SOLMSEN.

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

[315-316. *THE GREATER REPUBLICAN WRITERS: PLAUTUS, CICERO, LUCRETIUS*. Throughout the year. Credit three hours a term. Prerequisite, Latin 205-206. Not offered in 1953-54.]

317-318. *LITERATURE OF THE EARLY EMPIRE: TACITUS, ANNALS; JUVENAL; PLINY'S LETTERS; SENECA'S LETTERS*. Throughout the year. Credit three hours a term. Prerequisite, Latin 205-206. M W F 9. Fall term, Mr. KIRKWOOD; spring term, Mr. CAPLAN.

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. CARTER.

[347. *HISTORY OF THE LATIN LANGUAGE*. Credit two hours. For upperclassmen and graduate students. Not offered in 1953-54.]

[348. *VULGAR LATIN: PETRONIUS, CENA TRIMALCHIONIS; VULGAR LATIN INSCRIPTIONS*. Credit two hours. Not offered in 1953-54.]

350. *COMPARATIVE GRAMMAR OF GREEK AND LATIN*. Spring term. Credit two hours. For upperclassmen and graduate students. T Th 12. Mr. CARTER.

[369. *MEDIEVAL LATIN LITERATURE*. Credit three hours. Prerequisite, three years of high school Latin or the equivalent. Not offered in 1953-54.]

381-382. *SEMINAR: HORACE*. Throughout the year. Credit three hours a term. For graduate students. Library, Classical Seminar Room. T 2-4. Mr. CAPLAN.

[390. *ITALIC DIALECTS*. Credit two hours. For graduate students. Not offered in 1953-54.]

060. *INFORMAL STUDY*. For qualified majors.

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.

Continuation of 370, with change of author or topic.

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

CLASSICAL CIVILIZATION

[408. *CLASSICAL RHETORIC AND ORATORY*. Credit three hours. Not offered in 1953-54.]

[410. *LATIN AND GREEK ELEMENTS OF THE ENGLISH LANGUAGE*. Credit two hours. Not offered in 1953-54.]

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

FOUNDATIONS OF WESTERN THOUGHT. (See Literature 207.)

EARLY CHRISTIAN LITERATURE AND ITS HELLENIC BACKGROUND. (See Literature 208.)

HUMANISM AND THE RENAISSANCE. (See Literature 214.)

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

CLASSIC MYTHS. (See Literature 412.)

OUTLINES OF ANCIENT HISTORY. (See History 101, 102.)

GREEK HISTORY. (See History 211.)

[*THE HELLENISTIC AGE*. (See History 212.) Not offered in 1953-54.]

- [*THE ROMAN REPUBLIC*. (See History 213.) Not offered in 1953-54.]
- THE ROMAN EMPIRE*. (See History 214.)
- INTRODUCTION TO ART*. (See Fine Arts 101-102.)
- [*GREEK SCULPTURE*. (See Fine Arts 301.) Not offered in 1953-54.]
- ART OF THE ROMAN EMPIRE*. (See Fine Arts 302.)
- [*ARCHAEOLOGY*. (See Fine Arts 801.) Not offered in 1953-54.]
- [*NUMISMATICS: ANCIENT COINAGE*. (See Fine Arts 804.) Not offered in 1953-54.]
- HISTORY OF PHILOSOPHY*. (See Philosophy 301.)
- HISTORY OF POLITICAL THEORY*. (See Philosophy 325.)
- PLATO AND ARISTOTLE*. (See Philosophy 575-576.)

ECONOMICS

Mr. G. P. ADAMS, JR., *Chairman*; Messrs. M. A. COPELAND, J. G. B. HUTCHINS, A. E. KAHN, M. S. KENDRICK, R. E. MONTGOMERY, CHANDLER MORSE, J. E. MORTON, P. M. O'LEARY, H. L. REED.

For a major in Economics the following courses must be completed: (1) Economics 105 and 106, or the equivalent; and twenty-four hours of advanced courses, including Economics 901; (2) in related subjects, fifteen hours in not more than three of the following departments: Far Eastern Studies 201-202, Geology 105 and 108, Government, History, Mathematics, Philosophy, Psychology, and Sociology. Approved advanced courses in the field of Statistics may also be counted in satisfaction of the requirement in related subjects.

No course may be offered as a related subject which is counted in satisfaction of the distribution requirements.

Students who intend to register in Arts and Sciences and in the School of Business and Public Administration or in the Law School will be required to complete fifteen hours of advanced courses in Economics, including Economics 901, and six hours of related courses.

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 Honors in Economics will be required to pass a special examination and should consult their advisers before the beginning of their senior year.

*105. *MODERN ECONOMIC SOCIETY*. Fall term. Credit three hours. Open to a limited number of freshmen. M W F 8, 12, 1, 2, or 3; T Th S 8. Mr. MORSE and assistants.

A survey of the existing economic order, its more salient and basic characteristics, and its operations.

*106. *MODERN ECONOMIC SOCIETY*. Spring term. Credit three hours. Prerequisite, Economics 105. M W F 8, 12, 1, 2, or 3; T Th S 8. Mr. MORSE and assistants.

107. *INTRODUCTION TO ECONOMICS*. Either term. For students in engineering. Credit three hours. Hours to be arranged. Mr. MORSE and assistants.

An introduction to the more essential economic features of contemporary American society.

MONEY, BANKING, AND TRADE FLUCTUATIONS

203. *MONEY, CURRENCY, AND BANKING*. Spring term. Credit three hours. Prerequisite, Economics 106. M W F 11. Mr. ———.

A study of our currency system and banking processes for the primary purpose of training the student to determine the influence of monetary factors in economic problems.

[204. *MONEY, CURRENCY, AND BANKING*. Spring term. Credit three hours. Prerequisite, Economics 203. M W F 11. Mr. REED. Not offered in 1953-54.]

[210. *COMMERCIAL BANKING*. Spring term. Credit three hours. Prerequisite, Economics 204, which may be taken concurrently. T Th S 10. Mr. REED. Not offered in 1953-54.]

220. *BUSINESS CYCLES*. Spring term. Credit three hours. Prerequisite, Economics 203. T Th S 10. Mr. COPELAND.

A study of the character, history, causes, and effects of business cycles and of efforts to modify them. There will be a systematic survey of the special literature in the field, and attention will be given to the question of the significant data bearing on the current situation. The philosophy of forecasting systems will receive attention.

[224. *INCOME, OUTPUT, AND THE MONEY CIRCUIT*. Spring term. Credit three hours. Consult instructor before registering. M W F 2. Mr. COPELAND. Not offered in 1953-54.]

[231. *FINANCIAL HISTORY OF THE UNITED STATES*. Fall term. Credit three hours. Prerequisite, Economics 204. T Th S 10. Mr. O'LEARY. Not offered in 1953-54.]

ACCOUNTING AND STATISTICS

ACCOUNTING. (Business and Public Administration—) Either term. Credit three hours. Prerequisite Economics 101 or 106. Hours to be arranged. Mr. ———.

Theory of debit and credit; the journal and ledger; the development of books of original entry; preparation of income statements and balance sheets.

ACCOUNTING. (Business and Public Administration—) Either term. Credit three hours. Hours to be arranged. Mr. ———.

Capital stock accounts; bonds and their valuation; amortization, reserves and reserve funds, analysis of income statements and balance sheets.

ADVANCED ACCOUNTING. (Business and Public Administration 112) Fall term. Credit three hours. Prerequisite, Economics 302. Limited to seniors. Consult the instructor before registering. Hours to be arranged. Mr. SHANNON.

Problems of income determination and allocation; the admission, valuation and presentation of each typical asset and equity element in a balance sheet and the related revenue and expense aspects; analysis and interpretation of financial

statements according to varying philosophies; special topics—sinking funds, special reserves, and operating schedules.

ADVANCED ACCOUNTING. (Business and Public Administration 113) Spring term. Credit three hours. Prerequisite, Business and Public Administration 112. Limited to seniors. Consult the instructor before registering. Hours to be arranged. Mr. SHANNON.

Problems of a partnership; consignments; branch accounting; consolidated statements; foreign exchange; estate and trust accounting; accounting for governmental and institutional units; reorganization and liquidation statements.

STATISTICS. (Industrial and Labor Relations 210) Either term. Credit three hours. Two lectures and one two-hour laboratory. T Th 11 and a laboratory to be arranged. Mr. ———.

An introduction to the basic concepts and uses of descriptive statistics and problems of drawing valid inferences from statistical data. Specific topics included are classification, averages, dispersion, correlation, probability, tests of significance, confidence intervals.

ECONOMIC AND SOCIAL STATISTICS. (Industrial and Labor Relations 211) Either term. Credit three hours. Prerequisite, Industrial and Labor Relations 210 or the equivalent. Two lectures and one two-hour laboratory. T Th 12 and a laboratory to be arranged. Mr. ———.

Application of statistical techniques to economic data, with particular emphasis on the analysis of index numbers, time series, income distributions, etc.

309. **NATIONAL INCOME AND WEALTH.** Fall term. Credit three hours. Prerequisite, Economics 106 or the equivalent. M W F 2. Mr. COPELAND.

An examination of the commoner statistical measurements of general economic activity and financial structure, and an appraisal of their significance for current business analysis and economic planning.

For additional courses in statistics, see page 143.

ORGANIZATION AND CONTROL OF INDUSTRY

311. **CORPORATION FINANCE.** Either term. Credit three hours. Prerequisite, Economics 301 or its equivalent. Fall term, T Th S 9; spring term, T Th S 9. Mr. ———.

A study of the financial practices of business corporations in the United States; types of corporate securities; sources of capital funds; determination and administration of corporate incomes; financial difficulties and corporate reorganizations; the relation of corporate practices to the functioning of the American economic system; and the regulatory activities of the Securities and Exchange Commission.

321. **PRIVATE ENTERPRISE AND PUBLIC POLICY.** Fall term. Credit three hours. Prerequisite, Economics 106. M W F 9. Mr. KAHN.

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 various real and fancied sources of monopoly in the American economy, with particular emphasis on our system of business organization, its price, production, and marketing policies.

322. *PUBLIC REGULATION OF BUSINESS*. Spring term. Credit three hours. Prerequisite, Economics 321 or consent of the instructor. M W F 9. Mr. KAHN.

A continuation of Economics 321, concentrating mainly on public policies of enforcing, supplementing, or replacing competition, with specific studies of selected industries and recent legal cases.

TRANSPORTATION. (Business and Public Administration 180) Fall term. Credit three hours. Limited to seniors who have taken Economics 106 or the equivalent. M W F 10. Mr. HUTCHINS.

A study of American transportation from the point of view of carriers, shippers, and public authorities. The emphasis is on the economics and practices of rate making, especially of railroads. Lectures, cases, and discussions.

[*TRANSPORTATION*. (Business and Public Administration 181) Spring term. Credit three hours. Limited to seniors who have taken B. and P. A. 180. M W F 10. Mr. HUTCHINS. Not offered in 1953-54.]

ECONOMIC AND BUSINESS HISTORY

[*DEVELOPMENT OF THE AMERICAN ECONOMY AND BUSINESS ENTERPRISE*. (Business and Public Administration 120) Fall term. Credit three hours. Limited to seniors who have taken Economics 106. T Th S 10. Mr. HUTCHINS. Not offered in 1953-54.]

RECENT ECONOMIC AND BUSINESS CHANGES. (Business and Public Administration 121) Fall term. Credit three hours. Limited to seniors who have taken Economics 101. M W F 9. Mr. HUTCHINS.

A continuation of Business and Public Administration 120 covering the period since 1890, but that course is not a prerequisite. Dominant attention is centered on the rise of big business and on the resulting problems of monopoly, competition, discrimination, finance, management, and public policy. Characteristic types of business activity are discussed through the case method, and considerable attention is given to significant economic trends.

LABOR ECONOMICS

401. *LABOR CONDITIONS, ECONOMICS, AND PROBLEMS*. Fall term. Credit three hours. Prerequisite, Economics 106 or the equivalent. M W F 10. Mr. MONTGOMERY.

An introduction to labor economics and a survey of the more basic labor problems growing out of modern economic arrangements.

402. *TRADE UNIONISM AND COLLECTIVE BARGAINING*. Spring term. Credit three hours. Prerequisite, Economics 401 or consent of the instructor. M W F 10. Mr. MONTGOMERY.

A study of the origins, philosophic basis, aims, and policies of trade unions, of the economic implications of trade unionism in modern economic life, and of collective bargaining in selected industries.

411. *LEGAL AND CONSTITUTIONAL ASPECTS OF LABOR PROBLEMS*. Fall term. Credit two hours. Consult the instructor before registering. T 2-4. Mr. MONTGOMERY.

A study of the legal aspects of trade union objectives and methods and an ex-

amination of state-labor relationships. Among the topics treated: legal theories underlying labor law; statutory enactments affecting trade unions; injunctions, damage suits, criminal prosecutions, restrictions upon employers; conciliation, arbitration, mediation; and various types of labor legislation.

[412. *LEGAL AND CONSTITUTIONAL ASPECTS OF LABOR PROBLEMS*. Spring term. Credit two hours. Consult the instructor before registering. T 2-4. Mr. MONTGOMERY.

A continuation of Economics 411, with emphasis on social legislation and social insurance. Not offered in 1953-54.]

420. *SELECTED PROBLEMS IN LABOR ECONOMICS*. Spring term. Credit two hours. Consult instructor before registering. T 2-4. Mr. MONTGOMERY.

An undergraduate seminar in some of the problems of labor economics. Topics to be studied include approaches to, and conceptions of, the field of labor problems; collective and individual wage determination, wage-hour and labor-market structure, trends in the economic theory of wages, standards of remuneration and methods of wage payment; contemporary collective bargaining problems; quantitative measurements of labor phenomena; legal philosophy and labor relations; labor policies of business managements; international aspects of labor problems.

PUBLIC FINANCE

TAXATION. (Agricultural Economics 138) Fall term. Credit three hours. Open to upperclassmen who have taken Economics 106 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.

502. *FEDERAL PUBLIC FINANCE*. Spring term. Credit three hours. Prerequisite, Taxation (Agricultural Economics 138). M W F 11. Mr. KENDRICK.

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

INTERNATIONAL ECONOMICS

701-702. *INTERNATIONAL ECONOMIC DEVELOPMENT, THEORY, AND POLICY*. Throughout the year. Credit three hours each term. Prerequisite Economics 106. Economics 701, or consent of the instructor prerequisite to 702. T Th S 11. Mr. MORSE.

The first term covers developments from precapitalist origins to 1914, together with basic theory and analysis. Topics include the growth of trade, theory of trade, tariffs, commercial policy, foreign exchange, and the balance of payments. In the second term, major trends and policies from 1914 to the present are studied. Capital movements, exchange depreciation and control, trade regulation, and international stabilization and development schemes receive special attention.

801. *ECONOMICS OF THE FAR EAST*. Fall term. Credit three hours. Prerequisite, Economics 101 or the equivalent, or consent of the instructor. T Th S 10. Mr. ———.

An analytic study of the economic structure and development of the major Far Eastern countries, emphasizing the process and problems of industrialization, and including postwar problems of reconstruction, the role of the United States and other foreign powers, and the applicability of Western economic theory to Oriental conditions.

802. *ECONOMICS OF THE FAR EAST*. Spring term. Credit three hours. T Th S 10. Mr. ———.

Continuation of Economics 801. Students who have not taken Economics 801 but have adequate preparation in Economics and/or the Far East area will be admitted.

COMPARATIVE ECONOMIC SYSTEMS: SOVIET RUSSIA. (Industrial and Labor Relations 341) Fall term. Credit three hours. Prerequisite, Economics 106 or the equivalent, or consent of the instructor. Hours to be arranged. 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.

ECONOMIC THEORY

901. *INTERMEDIATE ECONOMIC THEORY*. Either term. Credit three hours. Not open to sophomores. Required in the junior or senior year of all students majoring in Economics. Prerequisite, Economics 106. M W F 2. Mr. ADAMS.

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.

903-04. *HISTORY OF ECONOMIC THOUGHT*. Throughout the year. Credit three hours a term. Not open to freshmen or sophomores. M W F 8. Mr. ADAMS.

A survey of the development of economic ideas from the Mercantilists to Alfred Marshall. Primary emphasis will be given to the Classical tradition. Extensive library readings and written reports based upon them will be required.

911. *ECONOMICS OF DISSENT*. Fall term. Credit two hours. Open to upperclassmen with consent of the instructor. Th 2-4. Mr. MONTGOMERY.

A study of the literature of social protest; of unorthodox or dissenting economic doctrines; and of the various types of economic organization that have been proposed or attempted, including the Utopias, Marxian Socialism, Collectivism, Anarchism, the Single Tax, Syndicalism, Guild Socialism, Fabian Socialism, and Communism.

912. *ECONOMICS OF DISSENT*. Spring term. Credit two hours. Open to upperclassmen with consent of the instructor. Th 2-4. Mr. MONTGOMERY.

A continuation of Economics 911, with emphasis upon the structural characteristics and the pricing and resource-allocation problems of different types of economic organization.

920. *FULL EMPLOYMENT AND FREE ENTERPRISE*. Spring term. Credit three hours. Open to seniors majoring in economics, and to others with the consent of the instructor. M W F 2. Mr. COPELAND.

A study of the relations of labor overdemand and of the forms of unemployment to optimum employment and to the system of capitalism and free private enter-

prise. A critical examination of recent federal policies to promote optimum employment and of various optimum employment plans.

GRADUATE SEMINARS

These are open to graduates and, with the consent of the instructor, to qualified seniors.

[275. *MONETARY AND BUSINESS CYCLE THEORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. REED. Not offered in 1953-54.]

SEMINAR IN ECONOMIC STATISTICS. (Industrial and Labor Relations 610) Fall term. Credit three hours. Hours to be arranged. Mr. ———.

375. *PUBLIC CONTROL OF BUSINESS*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. KAHN.

380. *TRANSPORTATION*. Fall term. Credit three hours. Hours to be arranged. Mr. HUTCHINS.

475. *LABOR ECONOMICS*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. MONTGOMERY.

575. *PUBLIC FINANCE*. Spring term. Credit three hours. Hours to be arranged. Mr. KENDRICK.

[675. *ECONOMIC HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. HUTCHINS. Not offered in 1953-54.]

775. *INTERNATIONAL ECONOMICS*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. MORSE.

975. *ECONOMIC THEORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. COPELAND.

980. *HISTORY OF ECONOMIC THOUGHT*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. ADAMS.

ENGLISH

Mr. F. E. MINEKA, *Chairman*; Messrs. M. H. ABRAMS, H. S. ADAMS, R. M. ADAMS, J. W. BICKNELL, LEONARD CASPER, R. L. CHAPMAN, G. F. CRONKHITE, PHILLIP DAMON, R. H. ELIAS, E. G. FOGEL, W. H. FRENCH, J. J. GINDIN, H. I. GOLDSTONE, JOHANN HANNESSON, J. B. HARCOURT, BAXTER HATHAWAY, G. H. HEALEY, C. W. JONES, W. R. KEAST, R. W. LANGBAUM, J. G. LINN, GLORIA MANDEVILLE, A. M. MIZENER, H. A. MYERS, DAVID NOVARR, J. D. OGDEN, BRUCE PARK, E. B. PARTRIDGE, W. M. SALE, JR., R. J. SCHOECK, J. A. SESSIONS, C. H. STERN, H. W. THOMPSON, P. M. ZALL.

For major work in English a student is required to complete: (1) English 111-112 or the equivalent; (2) English 251-252, normally to be taken in the sophomore year; (3) twenty-four hours of other courses in the Department of English, except that three hours of Literature 211-212 as a junior-year course, three hours of Literature 301-302 as a junior-year course, and three hours of Literature 401-

402 as a senior-year course may be offered toward that twenty-four hours; and (4) fifteen hours in related subjects. The work of the junior and senior years shall consist of at least four single-term courses in English, numbered between 300 and 399, and at least three single-term courses, numbered between 400 and 499. Selection of the twenty-four hours of English and the fifteen hours of related subjects, aimed at a reasonable distribution of courses within a unified field of interest, shall be undertaken in cooperation with the major adviser. Courses taken to satisfy college distribution requirements will not be accepted in satisfaction of the related-course requirement.

Courses numbered below 300 are introductory and are intended for underclassmen. All other courses are strictly limited to upperclassmen, except that students who have exempted any part of English 111-112 may in their fourth term enter one course numbered between 300 and 399. Students exempting English 112 may, in the second term of their freshman year, register in English 201, 203, 221, 222, or 251.

Seminars for Honors candidates are open to those admitted to the Honors program (see pp. 59-60).

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 program for the sophomore year.

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

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

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.

COURSES PRIMARILY FOR SOPHOMORES

201. PROSE AND COMPOSITION. Either term. Credit three hours. Prerequisite, English 111 and 112 or the equivalent. Fall term, M W F 9, 10. Spring term, M W F 9, 10. Mr. FRENCH and others.

Exposition with special attention to writing essays and reports; the paragraph; the outline; reading and analyzing expository prose; frequent practice in writing; personal conferences. Not open to those who have credit for English 203.

202. PROSE AND COMPOSITION. Spring term. Credit three hours. Prerequisite, English 201 or 203. Spring term, T Th S 9. Mr. HATHAWAY.

A continuation of English 201; writing essays and stories; study of recent prose; personal conferences. Not open to those with credit for English 204.

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 an hour to be arranged. Spring term, T Th 12 and an hour to be arranged. Mr. SESSIONS and others.

Practice in writing verse, narrative, and the personal essay.

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 an hour to be arranged. Mr. SESSIONS and others.

A continuation of English 203; practice in writing verse, narrative, and the personal essay. Not open to those who have credit for English 202.

*221. *INTRODUCTION TO POETRY*. Either term. Credit three hours. Open to freshmen. Fall term, M W F 10, Mr. HATHAWAY. Spring term, T Th S 9, Mr. OGDEN.

Selected English and American poems. A course intended to develop the understanding and enjoyment of poetry. May not be counted in satisfaction of the requirements for a major in English.

*222. *INTRODUCTION TO FICTION*. Either term. Credit three hours. Open to freshmen. Fall term, M W F 11, Mr. ELIAS. Spring term, M W F 11, Mr. SESSIONS.

A course intended to develop the understanding and enjoyment of the short story and novel. May not be counted in satisfaction of the requirements for a major in English.

251. *GREAT ENGLISH WRITERS*. Either term. Credit three hours. Fall term, T Th 11 and discussion sections to be arranged, Mr. ABRAMS and STAFF. Spring term, T Th S 12, Mr. HEALEY.

Studies in selected works of great English writers, Chaucer to the eighteenth century. Open to all students who have completed the requirement in English composition; those who have any intention of majoring in English should take this course and English 252 in the sophomore year.

252. *GREAT ENGLISH WRITERS*. Either term. Credit three hours. Prerequisite, English 251. Fall term, T Th S 12, Mr. HEALEY. Spring term, T Th 11 and discussion sections to be arranged, Mr. ABRAMS and STAFF.

Studies in selected works of great English and American writers of the nineteenth and twentieth centuries.

COURSES FOR UPPERCLASSMEN

309. *THE SIXTEENTH CENTURY*. Fall term. Credit three hours. M W F 9. Mr. PARTRIDGE.

Prose and poetry from More to Bacon.

310. *THE SEVENTEENTH CENTURY*. Spring term. Credit three hours. M W F 9. Mr. NOVARR.

The main traditions in poetry and prose from Donne to Dryden. The drama and the works of Milton are not included.

313. *THE EIGHTEENTH CENTURY*. Fall term. Credit three hours. T Th S 10. Mr. ABRAMS.

Major writers from Pope to William Blake; the relation of this literature to the thought and the other arts of the time.

317. *THE ROMANTIC PERIOD*. Fall term. Credit three hours. T Th S 9. Mr. BICKNELL.

The principal literary and intellectual tendencies in the epoch of the French Revolution. Poetry and prose of Burns, Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

322. *THE VICTORIAN PERIOD*. Spring term. Credit three hours. M W F 11. Mr. MINEKA.

Poetry and prose of such Victorian writers as Carlyle, Tennyson, Browning, Arnold, Ruskin, Newman, and Morris. Emphasis upon problems of reconstruction and reform following the scientific, industrial, and democratic revolutions.

325. *MODERN BRITISH LITERATURE*. Spring term. Credit three hours. M W F 2. Mr. BULLOUGH.

A critical study of English and American prose and verse in the twentieth century.

329-330. *AMERICAN LITERATURE*. Throughout the year. Credit three hours a term. Open to sophomores with instructor's consent. M W F 9. Fall term, Mr. MYERS. Spring term, Mr. ELIAS.

Fall term: Revolution to the Civil War. Spring term: 1865 to the present.

[336. *THE MODERN AMERICAN NOVEL*. Spring term. Credit three hours. M W F 10. Mr. SALE. (Will be offered in 1954-55.)]

338. *THE MODERN ENGLISH NOVEL*. Spring term. Credit three hours. M W F 10. Mr. SALE.

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

341. *REPRESENTATIVE ENGLISH DRAMAS*. Fall term. Credit three hours. T Th S 9. Mr. LINN.

Stress will be placed on the major periods of the English Drama.

349. *RECENT AMERICAN POETRY*. Fall term. Credit three hours. M W F 12. Mr. FRENCH.

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

[355. *AMERICAN FOLK-LITERATURE*. Fall term. Credit three hours. T Th S 10. Mr. THOMPSON. (Will be offered in 1954-55.)]

358. *BALLAD AND FOLKTALE*. Spring term. Credit three hours. T Th S 10. Mr. THOMPSON.

Study of Child's *English and Scottish Popular Ballads* (one-volume edition) and of an anthology of folktales (mostly European).

[365. *CHAUCE'S EARLY WORKS*. Fall term. Credit three hours. M W F 12. Mr. FRENCH. (Will be offered in 1954-55.)]

366. *CHAUCE'S CANTERBURY TALES*. Spring term. Credit three hours. M W F 12. Mr. FRENCH.

A primarily literary study; brief reports; reading in writings about the fourteenth century.

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

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.

373. *MILTON*. Fall term. Credit three hours. Prerequisite, English 251-252. T Th S 11. Mr. JONES.

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

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

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

385-386. *NARRATIVE WRITING*. Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor; ordinarily 202 or 204 will be prerequisite. T Th 11 and conferences to be arranged. Fall term, Mr. HATHAWAY; spring term, Mr. SESSIONS.

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. OGDEN. (Will be offered in 1954-55.)]

405-406. *OLD ENGLISH PROSE AND POETRY*. Throughout the year. Credit three hours a term. T Th S 11. Mr. FRENCH.

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.

416. *SEVENTEENTH-CENTURY POETRY*. Spring term. Credit three hours. M W F 9. Prerequisite, English 309 or 310 or three 300-level courses. Mr. KEAST.

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

418. *MASTERWORKS OF THE ROMANTIC PERIOD*. Spring term. Credit three hours. T Th S 10. Mr. ABRAMS. Prerequisite, English 313 or 317 or three 300-level courses.

A critical study of major romantic achievements in various forms: Wordsworth's *Prelude*, Byron's *Don Juan*, Shelley's *Prometheus Unbound*, Keats's *Odes*, Carlyle's *Sartor Resartus*, Emily Brontë's *Wuthering Heights*.

419. *TUDOR AND STUART DRAMA*. Fall term. Credit three hours. Prerequisite, English 309, 310, 341, or 369. T Th S 10. Mr. NOVARR.

Critical study of representative plays to demonstrate the main currents of drama from 1580 to 1642. Excludes the plays of Shakespeare.

421. *BROWNING, DICKENS, AND CARLYLE*. Fall term. Prerequisite, English 322 or three 300-level courses. Credit three hours. M W F 11. Mr. MINEKA.

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

439. *ENGLISH NOVELISTS*. Fall term. Credit three hours. Prerequisite, English

336 or 338 (formerly English 335, 337) and the consent of the instructor. M W F 12. Mr. SALE.

In 1953-54 this course will be concerned primarily with the novels of Joseph Conrad.

470. *SHAKESPEARE*. Spring term. Credit three hours. Prerequisite, 341, 369, or 370. M W F 11. Mr. MIZENER.

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

[476. *AMERICAN COLONIAL LITERATURE*. Spring term. Credit three hours. T Th S 9. Mr. CRONKHITE. (Will be offered in 1954-55.)]

478. *EMERSON, THOREAU, AND WHITMAN*. Spring term. Credit three hours. M W F 10. Mr. THOMPSON. Prerequisite, English 329, 330, or 336.

A critical study of three major American writers with emphasis upon their ideas and, in the case of Whitman, upon form.

[479. *POE, HAWTHORNE, AND MELVILLE*. Fall term. Credit three hours. Prerequisite, English 329-330. M W F 10. Mr. THOMPSON. (Will be offered in 1954-55.)]

481. *MARK TWAIN, HOWELLS, AND JAMES*. Fall term. Credit three hours. Prerequisite, English 329, 330, or 336. M W F 9. Mr. ELIAS.

A critical study of three major American writers with special attention to their techniques and their common endeavor to portray the American character. In 1953 the major emphasis will be on Henry James.

SEMINARS FOR HONORS CANDIDATES

Students may be candidates for Honors by gaining admission to Honors seminars in either literature or writing. The senior seminars are taken in addition to the twenty-four hours required of all majors. The Honors candidates in literature are required to take one Honors seminar in the spring term of the junior year, and one each term in their senior year. Honors candidates in writing are required to take the Honors seminar in writing each term in their senior year in addition to prerequisite courses. Comprehensive examinations for all candidates for Honors will be given at the end of the senior year.

Junior Seminars in Literature. Two seminars will be offered in the spring term. Applications for admission to these seminars should be filed at the office of the Department not later than November 10; the necessary forms may be obtained from the secretary of the Department. Applicants will be interviewed by Mr. Mizener before preregistration. Those accepted will become provisional candidates for the degree with Honors.

390. *CONVENTION AND THE INDIVIDUAL TALENT*. Spring term. Credit three hours. Prerequisite, acceptance as a provisional candidate for honors. M 2-4. Mr. ABRAMS.

Studies of the creative use, in major poems of various periods, of traditional forms, subjects, and poetic techniques.

392. *REPRESENTATION AND FORM*. Spring term. Credit three hours. Prerequisite, acceptance as a provisional candidate for Honors. W 2-4. Mr. ELIAS.

The problem of "rendering" in literature: some of the special problems it gives

rise to, and some of the techniques for dealing with these problems, studied in selected poems, plays, and prose narratives.

Senior Seminars in Literature. Two seminars will be offered, one in each term. Candidates will be selected from the junior seminars. Other students whose work in English has been of high quality may apply and will be considered if there are openings. Such students should apply not later than April 15 of their junior year.

491. *TRADITION AND EXPERIMENT.* Fall term. Credit three hours. T Th 2-4. Mr. MIZENER.

A study of the interplay of traditional and experimental techniques in the work of such twentieth-century writers as Joyce, Eliot, and Auden.

492. *THE INDIVIDUAL AND SOCIETY.* Spring term. Credit three hours. T Th 2-4. Mr. SALE.

A study of poems, plays, and novels by writers interested in the individual and society.

Senior Seminars in Writing. One seminar for advanced work in writing will be offered each term. Students who wish to be admitted to them should elect, as preparatory work, at least six hours of writing courses during their junior year. Application for admission to the writing seminars should be filed at the office of the Department not later than April 15; the necessary forms may be obtained from the secretary of the Department. Students who lack the prerequisites in writing courses but whose work in English has been of high quality may apply and will be considered if there are openings. Further questions about these seminars should be addressed to Mr. Hathaway.

495-496. *SEMINAR IN WRITING.* Throughout the year. Credit three hours each term. Prerequisite, provisional acceptance as a candidate for Honors. W 2-4. Fall term, Mr. HATHAWAY. Spring term, Mr. SESSIONS.

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

COURSES FOR GRADUATE STUDENTS

These are seminars normally open only to graduate students; exceptions may be made to admit undergraduates only with the consent of the instructor. Not all of these courses can be offered, but persons interested in particular courses should address inquiries to the Department of English. If enough students apply, a course will usually be given.

501. *BIBLIOGRAPHY AND METHOD.* Fall term. Credit three hours. Th 2-4. Mr. HEALEY. Recommended for all candidates for the doctorate.

503-504. *MIDDLE ENGLISH LITERATURE.* Fall and spring terms. Credit three hours. M 2-4. Mr. FRENCH.

[507-508. *ELIZABETHAN LITERATURE.* Fall and spring terms. Credit three hours. W 4-6. Mr. KEAST. Not given in 1953-54.]

510. *SEVENTEENTH-CENTURY LITERATURE.* Spring term. Credit three hours. W 2-4. Mr. NOVARR.

512. *SHAKESPEARE*. Spring term. Credit three hours. T 4-6. Mr. KEAST.
- [514. *EIGHTEENTH-CENTURY LITERATURE*. Spring term. Credit three hours. M 2-4. Mr. HEALEY. (Will be offered in 1954-55.)]
515. *THE ROMANTIC PERIOD*. Fall term. Credit three hours. T 2-4. Mr. ABRAMS.
- 535-536. *VICTORIAN LITERATURE*. Fall and spring terms. Credit three hours. W 2-4. Mr. MINEKA.
- 541-542. *AMERICAN LITERATURE*. Fall and spring terms. Credit three hours. T 2-4. Fall term, Mr. MYERS; spring term, Mr. ELIAS.
- [546. *PROSE FICTION*. Spring term. Credit three hours. Th 2-4. Mr. SALE.]
- 551-552. *DRAMATIC LITERATURE*. Fall and spring terms. Credit three hours. M 4-6. Mr. MYERS.
556. *TWENTIETH-CENTURY LITERATURE*. Spring term. Credit three hours. T 4-6. Mr. MIZENER.
- 557-558. *SEMINAR IN WRITING*. Fall and spring terms. Credit three hours. W 2-4. Mr. HATHAWAY.

FAR EASTERN STUDIES

Mr. KNIGHT BIGGERSTAFF, *Chairman*; Mr. JOHN M. ECHOLS, Miss GUS-SIE GASKILL, Messrs. CHARLES F. HOCKETT, GEORGE McT. KAHIN, MORRIS E. OPLER, N. ALLEN PATTILLO, B. F. RYAN, HAROLD E. SHADICK, LAURISTON SHARP.

The Far Eastern Studies major must demonstrate proficiency in a Far Eastern language and complete the following: Far Eastern Studies 201-202 and 951-952; twenty-one 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-one hours stipulated in the preceding paragraph. Applicants to the Honors program must have a cumulative grade average of 80 or above.

FAR EAST, GENERAL

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

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

202. *INTRODUCTION TO THE CONTEMPORARY FAR EAST: SOUTH-EAST ASIA AND INDIA*. Spring term. Credit three hours. M W F 9. Messrs. KAHIN, OPLER, SHARP, and others.

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

[*RECENT HISTORY OF THE FAR EAST*. Spring term. M W F 3. Mr. BIGGERSTAFF. (See History 164.) Not offered in 1953-54.]

GOVERNMENT AND POLITICS OF ASIA. Spring term. M W F 10. Mr. KAHIN. (See Government 314.)

FAR EASTERN POLICY OF THE UNITED STATES. Fall term. M W F 10. Mr. KAHIN. (See Government 417.)

ECONOMICS OF THE FAR EAST. T Th S 10. Mr. ———. (See Economics 801, 802.)

INTRODUCTION TO FAR EASTERN ART. W 3-5. Mr. PATTILLO. (See Fine Arts 601, 602.)

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.

951-952. *SEMINAR IN FAR EASTERN STUDIES*. Throughout the year. Credit two hours each term. Consent of the Department required for admission. T 2-4. STAFF.

This is the basic seminar for graduate students minoring in Far Eastern Studies, and it is also required of undergraduate Far Eastern Studies majors in their senior year. Students are taught the techniques of bibliography and library research and given practical experience in dealing with important Far Eastern problems. Topic for 1953-54: Chinese and Indian minorities in Southeast Asia.

CHINA

ELEMENTARY COLLOQUIAL CHINESE. (See Chinese 101-102.)

INTRODUCTION TO LITERARY CHINESE. (See Chinese 201-202.)

INTERMEDIATE COLLOQUIAL CHINESE. (See Chinese 203-204.)

THE LINGUISTIC STRUCTURE OF CHINESE. Spring term. Mr. HOCKETT. (See Chinese 232.)

[*CHINESE LITERATURE IN TRANSLATION: PHILOSOPHICAL AND HISTORICAL LITERATURE*. Fall term. M W F 10. Mr. SHADICK. (See Literature 321.) Not offered in 1953-54.]

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

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

[375-376. *SEMINAR IN CHINESE LITERATURE.* Mr. SHADICK. Not offered in 1953-54.]

HISTORY OF CHINESE CIVILIZATION. M W F 12. Mr. BIGGERSTAFF. (See History 161-162.)

MODERNIZATION OF CHINA. M 2-4. Mr. BIGGERSTAFF. (See History 811-812.)

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

INDIA

ELEMENTARY COLLOQUIAL HINDI. (See Hindi 101-102.)

SEMINAR: CULTURE AND CULTURE CHANGE IN INDIA. Fall term. T 4-6. Mr. ———. (See Sociology and Anthropology 683.)

SEMINAR: CULTURE AND CULTURE CHANGE IN CEYLON. Fall term. Mr. RYAN. (See Sociology and Anthropology 684.)

SEMINAR: CONTEMPORARY INDIA. F 4-6. Mr. ———. (See Sociology and Anthropology 695-696.)

SEMINAR: FIELD RESEARCH IN INDIA. Mr. OPLER. (See Sociology and Anthropology 697-698.)

SOUTHEAST ASIA

ELEMENTARY COLLOQUIAL INDONESIAN. Mr. ECHOLS. (See Indonesian 101-102.)

INDONESIAN: READING. Mr. ECHOLS. (See Indonesian 201-202.)

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

[*ELEMENTARY COLLOQUIAL THAI.* (See Thai 101-102.) Not offered in 1953-54.]

ELEMENTARY COLLOQUIAL VIETNAMESE. (See Vietnamese 101-102.)

CHINESE DIALECTS OF SOUTHEAST ASIA. Mr. HOCKETT. (See Chinese 231.)

601-602. *SOUTHEAST ASIA.* Throughout the year. Credit three hours each term. F 2-4. Limited to graduate students except with special permission of the staff. Messrs. SHARP, KAHIN, ECHOLS.

A graduate-level survey of the cultures and history of Southeast Asia covering the pre-European, colonial, and post-colonial periods, but with particular emphasis upon postwar developments and contemporary problems.

SEMINAR: CULTURE AND CULTURE CHANGE IN SOUTHEAST ASIA. Spring term. Th 4-6. Mr. SHARP. (See Sociology and Anthropology 685.)

SEMINAR: FIELD RESEARCH IN SOUTHEAST ASIA. Mr. HANKS. (See Sociology and Anthropology 693-694.)

975-976. **SOUTHEAST ASIA RESEARCH TRAINING SEMINARS.** Either term. Credit and hours to be arranged. Limited to graduate students. STAFF.

Grouped under this title are Mr. Kahin's seminar on Indonesia, Mr. Sharp's seminar on Thailand, and special seminars taught each year by visiting professors.

THE FINE ARTS

Mr. F. O. WAAGE, *Chairman*; Mr. D. L. FINLAYSON, Mr. N. A. PAT-
TILLO, Mr. ALAN R. SOLOMON.

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

1. **GENERAL COURSE.** *In this option the following courses must be completed:*
 - (1) *Aesthetics, nine hours, namely, Psychology 101 and Philosophy 230 and 481.*
 - (2) (a) *Music, nine hours, including Music 101-102.*
 (b) *Visual Arts, nine hours, including Fine Arts 101-102.*
 (c) *Literature, nine hours, including Literature 101-102 or 301-302.*
 - (3) *Twelve 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).*
2. **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 Psychology 101, Philosophy 230, and History 103-104 or the year course in either Ancient, Medieval, or Modern History. Students electing this option are encouraged, but not required, to elect courses in the practice of art given in the College of Architecture (see the Announcement of that College). A student, however, who, wishing to do graduate work in the practice of art, intends to qualify for admission to the Graduate School as a candidate for the M.F.A. degree, should elect thirty hours of such courses in the practice of art.*

GENERAL COURSES

*101-102. **INTRODUCTION TO ART: PAINTING AND SCULPTURE.** Throughout the year. Credit three hours a term. Fine Arts 101 is prerequisite to Fine Arts 102. (For a course covering the same material as Fine Arts 102 but without prerequisite, see Fine Arts 104.) Open to all students. M W F 12. Mr. WAAGE.

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

*104. **INTRODUCTION TO ART: PAINTING AND SCULPTURE FROM THE RENAISSANCE TO THE PRESENT.** (The material covered substantially

duplicates that of Fine Arts 102.) Spring term. Credit three hours. Open to all students except those who have had Fine Arts 101 or 102. T Th S 9. Mr. PATTILLO.

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

*111-112. *INTRODUCTION TO ART: ARCHITECTURE*. Throughout the year. Credit three hours a term. Open to all students. T Th S 11. 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.

PRIMITIVE AND PREHISTORIC

204. *PRIMITIVE ART: THE ART OF EARLY SOCIETIES*. Spring term. Credit three hours. Open to sophomores who have had Fine Arts 101-102 and to upperclassmen without prerequisite. M W F 10. Mr. WAAGE.

The shaping and use of art forms to satisfy the group needs of early cultures wherein art was an indispensable element of everyday life: Old Stone Age Europe, early Egypt, Africa, Australia, and the Americas (Mayas, Incas, etc.); with some consideration of the influence of these primitive and archaic forms on modern art.

ANCIENT AND MEDIEVAL

[301. *GREEK SCULPTURE*. Fall term. Credit three hours. Not open to freshmen. M W F 10. Mr. WAAGE. Not offered in 1953-54.]

302. *ART OF THE ROMAN EMPIRE*. Fall term. Credit three hours. Not open to freshmen. 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. ———.

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.

RENAISSANCE AND MODERN

505. *ITALIAN PAINTING*. Fall term. Credit three hours. Not open to freshmen. T Th S 9. Mr. PATTILLO.

The Renaissance painting of Italy, chiefly of the Florentine and Venetian Schools. Among the major artists whose lives and works will be studied are Fra Angelico, Masaccio, Piero della Francesca, Botticelli, Leonardo, Michelangelo, Raphael, Correggio, Giovanni Bellini, Giorgione, Titian, and Tintoretto.

[506. *RENAISSANCE AND MODERN SCULPTURE*. Spring term. Credit three hours. Not open to freshmen. T Th S 9. Mr. PATTILLO. Not offered in 1953-54.]

551. *ANALYSIS OF WORKS OF ART*. Fall term. Credit three hours. Not open to freshmen. M W F 9. Mr. SOLOMON.

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

554. *TWENTIETH-CENTURY PAINTING*. Spring term. Credit three hours. Not open to freshmen. M W F 9. Mr. SOLOMON.

Major tendencies in modern art from Cezanne to the present will be considered in the course. The lectures will cover such key figures as Cezanne, Matisse, Picasso, and Klee in great detail. The development will also be correlated with contemporary trends in sculpture and architecture.

FAR EASTERN

601-602. *INTRODUCTION TO FAR EASTERN ART*. Throughout the year. Credit three hours a term. Not open to freshmen. W 3-5 with an occasional additional afternoon or evening hour to be arranged. Mr. PATILLO.

The architecture, sculpture, and painting of Indian to the Mohammedan conquest, and the art of China and Japan from the ancient Chinese bronzes to the nineteenth century.

ARCHAEOLOGY

[801. *ARCHAEOLOGY*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. WAAGE. Not offered in 1953-54.]

[804. *NUMISMATICS: ANCIENT COINAGE*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. WAAGE. Not offered in 1953-54.]

SEMINARS

[939. *SEMINAR IN ART HISTORY: PRE-IMPRESSIONIST PAINTING*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. SOLOMON. Not offered in 1953-54. To be given in alternate years.

The major French painters of the middle of the nineteenth century, including Daumier, Courbet, Manet, and Degas.]

[940. *SEMINAR IN ART HISTORY: PICASSO AND RELATED MOVEMENTS*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. SOLOMON. Not offered in 1953-54. To be given in alternate years.

Aspects of the development of twentieth-century abstract painting, with the main emphasis on Picasso.]

941. *SEMINAR IN ART HISTORY: POST-EMPRESSIONIST PAINTING*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Th 2-4:30. Mr. SOLOMON.

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

942. *SEMINAR IN ART HISTORY: ANTI-RATIONAL TENDENCIES IN TWENTIETH-CENTURY ART*. Spring term. Credit three hours. Prerequisite, one of the following: Fine Arts 554, 939, 940, or 941; and consent of the instructor. Th 2-4:30. Mr. SOLOMON.

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

COURSES IN THE COLLEGE OF ARCHITECTURE

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

ROMANESQUE AND GOTHIC SCULPTURE. (Arch. 420) Fall term. Credit three hours. Not open to freshmen. M W F 9. Mr. FINLAYSON.

GOTHIC PAINTING. (Arch. 421) Spring term. Credit three hours. Not open to freshmen. M W F 2. Mr. FINLAYSON.

AMERICAN PAINTING. (Arch. 424) Fall term. Credit three hours. Open to upperclassmen. M W F 2. Mr. FINLAYSON.

SEVENTEENTH- AND EIGHTEENTH-CENTURY PAINTING. (Arch. 426) Fall term. Credit three hours. Not open to freshmen. M W F 11. Mr. FINLAYSON.

NINETEENTH-CENTURY PAINTING. (Arch. 427) Spring term. Credit three hours. Not open to freshmen. M W F 11. Mr. FINLAYSON.

PRACTICE OF ART

For courses in the practice of art which may be elected by students in the College of Arts and Sciences, see the Announcement of the College of Architecture; these courses may not be counted in the ninety required hours of Arts courses.

GEOLOGY AND GEOGRAPHY

Mr. W. S. COLE, *Chairman*; Messrs. A. L. ANDERSON, J. D. BURFOOT, Jr., C. C. FISHER, W. T. HOLSER, C. M. NEVIN, J. W. WELLS.

For a major in Geology the following courses must be completed: (1) in Geology, courses 101-102, 207, 208, 209, 301, 303, 401, 601, 602, 901 and one-hour informal study in one of the divisions of the Department in the second semester of the senior year; (2) in related subjects, Mathematics 133, 161 and 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 102 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 prerequisites.

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

The course comprises an introduction to the various branches of geologic science: mineralogic, lithologic, geomorphic, structural, glacial, historic, and economic. The purpose of the course is to provide 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. FISHER.

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

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

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

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

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

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

The purpose of the course is to provide a geologic background so that the engineer will be competent to adapt his work to conform with the limitations imposed by geologic conditions.

*115. *ELEMENTARY GEOLOGY*. Either term. Credit three hours. Intended for underclassmen in Agriculture, and those in Arts and Sciences who do not plan to major in geology. 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. NEVIN.

The purpose of the course is to present the fundamental principles of geology with emphasis on the physical aspects.

SECOND COURSES

201. *HISTORIC GEOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102 or Geology 115. Lectures, M W 9. Laboratory, W 2-4:30. Mr. WELLS.

A systematic study of the geologic history of the earth, with reference to the rock formations, from the earliest periods to the present: their nature and distribution, the orogenies, paleogeography, fossil remains, and other characteristics on which their identification and correlation depend. Special emphasis is placed on American geology. Field studies, in the laboratory period, will be made insofar as weather and other circumstances permit. This course is designed not only for geology majors but also for students desiring a broad view of the physical history of the earth and the development of life through the ages.

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

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

207-208. *MINERALOGY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 106. Fall term prerequisite to spring term. Lectures: fall term M W 10; spring term T Th 9. Laboratory, F 2-4:30. Mr. HOLSER.

Fall term: Fundamentals of crystal structure, with emphasis on symmetry; principles of crystal chemistry; relations of structure and chemistry to morphological, mechanical, optical, and other physical properties of crystals. Laboratory work includes demonstrations of these principles and relationships and their application in identification of minerals.

Spring term: Study of the common minerals by application of the fundamental concepts of the work of the fall term with emphasis on isomorphous substitution and modes of occurrence. Laboratory work stresses mineral identification and relationships.

209. *LITHOLOGY*. Spring term. Credit three hours. Prerequisites, Geology 101-102 and 207-208. Lecture, M 12. Laboratories, T Th 2-4:30. Mr. HOLSER.

The mineral composition, texture, classification, identification, modes of origin, and properties of igneous, sedimentary, metamorphic, and metalliferous rocks, studied without the use of the petrographic microscope.

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. NEVIN.

The purpose of the course is to classify and analyze geologic structures with reference to their nature and origin and in regard to their use in the interpretation of geologic problems.

303. *SEDIMENTATION*. Spring term. Credit three hours. Prerequisite, Geology 101-102. Registration limited. Intended 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. NEVIN.

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

321. *PETROLEUM GEOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102. For students who intend to enter the oil industry. Lectures, M W 9. Laboratory, W 2-4:30. Mr. NEVIN.

The origin, distribution, and geology of petroleum and natural gas.

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

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

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

030. *INFORMAL STUDY*. Mr. NEVIN. See italicized statement, p. 67.

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. FISHER.

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

403. *GLACIERS AND THE PLEISTOCENE EPOCH*. Spring term. Credit three hours. Prerequisite, Geology 101-102. Lectures, T Th 10. Laboratory, W 2-4:30. Mr. FISHER.

Living glaciers and the phenomena of the glacial period.

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. FISHER.

040. *INFORMAL STUDY*. Mr. FISHER. See italicized statement, p. 67.

MINERALOGY AND PETROLOGY

501. *OPTICAL MINERALOGY*. Fall term. Credit three hours. Prerequisite, Geology 207-208. Lecture, W 12. Laboratories, F 8-10:30 and S 10:30-1. McGraw 345. Mr. HOLSER.

Expansion of the theory of optical properties of crystals as developed in Geology 207. Application of the theory to the determination and study of minerals with the petrographic microscope. The common rock-forming minerals are studied in fragments and in thin sections.

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

A study of the mineral and chemical composition and textures of igneous, sedimentary, and metamorphic rocks; their classification and determination by means of the petrographic microscope.

[521. *SEDIMENTARY PETROGRAPHY*. Fall term. Credit three hours. Prerequisites, Geology 209 and 501. Lectures, M W 9. Laboratory, F 10:30-1. Mr. HOLSER. Not given in 1953-54.]

[575. *IGNEOUS PETROGENY*. Fall term. Credit three hours. Prerequisite, Geology 502. Lectures, M W 9. Laboratory, F 10:30-1. Mr. HOLSER. Alternate year course; not offered in 1953-54.]

577. *METAMORPHIC GEOLOGY*. Fall term. Credit three hours. Prerequisites, Geology 502 and 301; recommended, Geology 702. Lectures, M W 9. Laboratory, F 10:30-1. Mr. HOLSER. Alternate year course; offered in 1953-54.

For advanced students, majors in geology, and those students in other fields interested in rock transformations and in mineralogic, textural, and structural adjustments to varying conditions of temperature, pressure, and solutions. A general

survey of the field of metamorphic geology with especial emphasis on processes and criteria. Metamorphic differentiation, the facies classification of metamorphic rocks, and retrogressive metamorphism are among the subjects considered. Special suites illustrating these phenomena are used.

[581. *STRUCTURAL MINERALOGY*. Spring term. Credit three hours. Prerequisites, Geology 208, Physics 108. Required parallel, laboratory work on X-rays in Department of Physics. Credit one hour. See special circular of Department of Geology. Lectures, M W 11. Laboratory, F 10:30-1. Mr. HOLSER. Alternate year course; not offered in 1953-54.]

[583. *CHEMICAL MINERALOGY*. Spring term. Credit three hours. Prerequisite, Geology 208; recommended but not required: Geology 501 and Chemistry 408. Lectures, M W 11. Laboratory, F 10:30-1. Mr. HOLSER. Alternate year course; not offered in 1953-54.]

591-592. *SEMINAR IN MINERALOGY AND PETROLOGY*. Throughout the year. Credit one hour a term. Prerequisite, permission of instructor. W 4:45. Mr. HOLSER and Mr. BURFOOT.

Literature, special topics, advanced methods. For all interested students; attendance expected of majors and minors in mineralogy and petrology.

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

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

050. *INFORMAL STUDY*. Mr. HOLSER. See italicized statement, p. 00.

PALEONTOLOGY AND STRATIGRAPHY

601-602. *INVERTEBRATE PALEONTOLOGY*. Throughout the year. Credit three hours a term. Prerequisite, Geology 101-102 and, if possible, invertebrate zoology. Intended 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, Th 2-4:30; spring term, W 2-4:30. Mr. COLE, Mr. WELLS.

Fall term: Paleobiology and classification of important fossil invertebrate organisms. Spring term: key fossils of the geologic periods. Certain laboratory periods will be devoted to the collection and determination of fossil assemblages from selected horizons of the Paleozoic formations of central New York.

605-606. *STRATIGRAPHY*. Throughout the year. Credit three hours a term. Prerequisites, Geology 101-102 and first term of 601-602. Intended for students majoring in geology, T Th 9, W 10. Mr. COLE, Mr. 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.

675. *MICROPALEONTOLOGY*. Spring term. Credit two hours. Prerequisite, consent of the instructor; preparation should include Geology 101-102, 201, 601-602, and 605. Not open to underclassmen. Intended for students who are majoring

in geology and graduates, especially those who are planning careers in the geology of petroleum deposits. W 9 and hours to be arranged. Mr. COLE.

Study of the microfossils, chiefly Foraminifera, in their relation to the correlation of strata, as used in the development of oil fields. The course is designed for advanced students in paleontology.

681. *STRATIGRAPHY OF NEW YORK STATE*. Spring term. Credit two hours. Prerequisites, Geology 101-102, 601-602, 605, or consent of the instructor. Intended for upperclassmen and graduates in geology and others with the necessary training. Lectures in winter months, all-day and week-end field trips in spring months. T Th 12. Mr. WELLS. Alternate year course; offered in 1953-54.

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. Mr. COLE, Mr. WELLS.

The purpose of the course is to provide for direction in the study of particular problems in paleontology and stratigraphy, adapted to the needs of the individual student.

060. *INFORMAL STUDY*. Mr. COLE, Mr. WELLS. See italicized statement, p. 00.

ECONOMIC GEOLOGY

701-702. *GENERAL ECONOMIC GEOLOGY*. Throughout the year. Credit three hours a term. Prerequisites, Geology 101-102, or 113, and 208, or consent of the instructor. Intended for geology majors, and for chemistry, chemical engineering, and civil engineering students interested in industrial source materials. Lectures, T Th 11. Laboratory, F 2-4:30. Mr. ANDERSON.

Nature, mode of occurrence, distribution, and utilization of the more important mineral deposits. The work of the fall term concerns nonmetalliferous deposits; in the spring term, the metalliferous deposits. Field trips are included as a part of the laboratory work. The purpose of the course is to give the student a geologic background knowledge of the properties, occurrence, etc., of the minerals and rocks of value to man.

712. *METALLURGICAL RAW MATERIALS*. Fall term. Credit three hours. For second-year students in metallurgical engineering. Lectures, M W F 10. Mr. ANDERSON.

The properties, occurrence, associations, distribution, and economic aspects of the commercially important ore, refractory, and fluxing materials that enter metallurgical operations.

[721. *ORE MICROSCOPY*. Fall term. Credit two hours. Prerequisite, Geology 207-208. Th 2-4:30, S 8-10:30. Mr. ANDERSON. Alternate year course; not offered in 1953-54.]

[732. *MINING GEOLOGY*. Spring term. Credit three hours. Prerequisites, Geology 701-702. M W F 8. Mr. ANDERSON. Alternate year course; not offered in 1953-54.]

775-776. *MINERAL DEPOSITS*. A two-term course. Credit three hours a term. Prerequisites, Geology 701-702. Lectures, M W F 8. Mr. ANDERSON. Alternate year course; offered in 1953-54.

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 ECONOMIC GEOLOGY*. Throughout the year. Credit one hour a term. Registration by invitation of the instructor. Intended primarily for majors and minors in economic geology. T 4:45. Mr. ANDERSON.

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

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

Work designed to meet the needs and training of the student. May include research in economic geology or guided study of advanced or special problems in economic geology.

070. *INFORMAL STUDY*. Mr. ANDERSON. See italicized statement, p. 67.

FIELD COURSES

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

Instruction in the fundamental methods used in geologic mapping, together with practical work in the field. For students majoring in geology. Special circular from the Department on request.

[912. *GEOLOGIC INTERPRETATION OF AERIAL PHOTOGRAPHS*. Fall term. Credit three hours. Prerequisite, Geology 301. Intended for majors in geology. Lecture, M 12. Two laboratories by arrangement. Mr. WELLS. Alternate year course; not offered in 1953-54.]

GOVERNMENT

Mr. MARIO EINAUDI, *Chairman*; Messrs. HERBERT W. BRIGGS, ROBERT E. CUSHMAN, ARCHIE T. DOTSON, GEORGE McT. KAHIN, H. MARK ROELOFS, CLINTON ROSSITER.

For a major in Government the following courses must be completed: (1) Government 101 and either Government 102 or 104; (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, Far Eastern Studies, History, Philosophy, Sociology and Anthropology, Business and Public Administration, Industrial and Labor Relations, and Regional Planning. Of the hours in related subjects, at least nine must be in History.

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 and 104, and will usually be expected to complete satisfactorily thirty additional hours of course work in the Department, including Government 620-621 and Government 622. For the prerequisites and descriptions of these courses, see below.

Students seeking admission to the Department's Honors Program should file applications on forms obtainable from the departmental secretary not later than November 1 of their junior year. Applications should be submitted only by students having grades of 85 or better in at least one half of all courses completed or who can present evidence of exceptional promise.

A comprehensive examination for Honors will be given to students admitted to the program at the end of their senior year.

Students of the class of 1954 who wish to be candidates for Honors in Government should consult the Chairman.

Students registered in the combined Arts-Law, or Arts-Business and Public Administration courses with a major in Government will be required to take (1) Government 101 and either Government 102 or 104; (2) fifteen additional hours in the Department; (3) in related subjects, twelve hours.

AMERICAN GOVERNMENT AND INSTITUTIONS

*101. *AMERICAN NATIONAL GOVERNMENT.* Fall term. Credit three hours. Open to all students, although primarily intended for freshmen. Lectures, T Th 2. Discussion sections: Th 3, F 10, 11, 2, 3, S 10, 11. Mr. CUSHMAN and STAFF.

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

*102. *STATE AND LOCAL GOVERNMENT.* Spring term. Credit three hours. Open to all students, although primarily intended for freshmen. Lectures, T Th 2. Discussion sections: Th 3, F 2, 3. Mr. DOTSON.

American state and local governments, their historical development, organization, powers, and practical working.

[216. *THE AMERICAN PRESIDENCY.* Spring term. Credit three hours. Open to upperclassmen. Prerequisite, Government 101. M W F 11. Mr. ROSSITER. Not offered in 1953-54.]

[218. *AMERICAN POLITICAL PARTIES.* Spring term. Credit three hours. Open to sophomores and upperclassmen. Prerequisite, Government 101. M W F 2. Mr. ROSSITER. Not offered in 1953-54.]

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 American public administration. An elementary examination of key concepts in organization, administrative procedure, and human relations in cooperative activity. An extensive study of the national administrative establishment, including the Executive Office of the President, the departmental system, the regulatory commissions, the government corporations, and the civil service.

234. *THE ADMINISTRATIVE PROCESS*. Spring term. Credit three hours. Open to sophomores and upperclassmen. Prerequisite, Government 231 or consent of instructor. T Th S 9. Mr. DOTSON.

An examination of the administrative process in legal terms. An investigation of elements of administrative law, the powers, procedures, and liabilities of administrative agencies. Case materials employed throughout the course.

235. *AMERICAN POLITICAL AND CONSTITUTIONAL THEORY*. Fall term. Credit three hours. Open to upperclassmen. Prerequisite, Government 101 or History 151-152. T Th S 9. Mr. ROELOFS.

Survey of the development of American political and constitutional thought, with emphasis on the interaction of history and ideas. The following schools and problems are studied at length: Puritanism, pre-Revolutionary democratic thought, the American Revolution, constitutionalism and federalism, Jeffersonian democracy, Jacksonian democracy, intellectual democracy, neo-federalism, slavery, the nature of the union, collectivism v. individualism, the welfare state, American conservatism.

[236. *PRINCIPLES AND PROBLEMS OF AMERICAN DEMOCRACY*. Spring term. Credit three hours. Open to upperclassmen. Prerequisites, Government 235 and consent of instructor. Mr. ROSSITER. Not offered in 1953-54.]

237. *PUBLIC ADMINISTRATION AND PUBLIC POLICY*. Fall term. Credit three hours. Open to sophomores and upperclassmen. Prerequisite, Government 231 or consent of instructor. M W F 2. Mr. DOTSON.

A study of the role of the administrator in legislation. An examination of the processes, problems, and effects of executive influence in the formulation of public policy. An effort at redefinition of democratic responsibility in the light of modern administrative requirements.

241. *CONSTITUTIONAL LAW: THE AMERICAN FEDERAL SYSTEM*. Fall term. Credit three hours. Open to qualified juniors and seniors with consent of instructor. Prerequisite, Government 101. T Th S 11. Mr. CUSHMAN.

Judicial interpretation of the Constitution; the nature of the judicial review; separation of government powers; relations between state and national governments; construction of national powers.

242. *CONSTITUTIONAL LAW: FUNDAMENTAL RIGHTS AND IMMUNITIES*. Spring term. Credit three hours. Open to qualified juniors and seniors with consent of instructor. Prerequisite, Government 101. T Th S 11. Mr. CUSHMAN.

Privileges and immunities of citizenship; protection of civil and political rights; the obligation of contracts; due process of law and the equal protection of the laws.

275-276. *SEMINAR IN CONSTITUTIONAL PROBLEMS*. Throughout the year. Credit two hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. CUSHMAN.

285. *SEMINAR IN PROBLEMS OF PUBLIC ADMINISTRATION*. Fall term. Credit two hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. DOTSON.

[295-296. *SEMINAR IN AMERICAN POLITICAL THEORY AND INSTITUTIONS*. Throughout the year. Credit three hours a term. Open to graduate stu-

dents and qualified seniors. Hours to be arranged. Mr. ROSSITER. Not offered in 1953-54.]

050. *INFORMAL STUDY*. Mr. ROSSITER. See italicized statement, page 73.

070. *INFORMAL STUDY*. Mr. DOTSON. See italicized statement, page 73.

090. *INFORMAL STUDY*. Mr. CUSHMAN. See italicized statement, page 73.

COMPARATIVE GOVERNMENT AND POLITICAL THEORY

*104. *COMPARATIVE GOVERNMENT*. Spring term. Credit three hours. Open to all students, although primarily intended for freshmen. Lectures, T Th 2. Discussion sections, Th 3, F 10, 11, 2, 3, S 10, 11. Mr. EINAUDI.

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

311. *CONSTITUTIONAL GOVERNMENT IN EUROPE*. Fall term. Credit three hours. Prerequisite, Government 104. T Th 2-3:30. Mr. EINAUDI.

An analysis of the major problems of constitutional government in continental Europe. The aftermath of totalitarianism. Forms and realities of constitutionalism. Extraconstitutional forces and their relationship to institutions.

[313. *GOVERNMENT AND POLITICS OF GREAT BRITAIN AND THE COMMONWEALTH*. Fall term. Credit three hours. Prerequisite, Government 104. M W F 10. Mr. ROELOFS. Not offered in 1953-54.]

314. *GOVERNMENT AND POLITICS OF ASIA*. Spring term. Credit three hours. Open to sophomores and upperclassmen. M W F 10. Mr. KAHIN.

Description and analysis of political life and the structure and functioning of government in the principal countries of Asia, with attention being given to the nature of the social and economic environments which condition them.

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, T 2, 3:30, W 2, 3:30, Th 2, 3:30. Mr. EINAUDI.

Political thought from Machiavelli to Rousseau.

322. *CONTEMPORARY POLITICAL THOUGHT*. Spring term. Credit three hours. Prerequisite, Government 321 or consent of instructor. Lectures, T Th 10. Discussion sections, T 2, 3:30, W 2, 3:30, Th 2, 3:30. Mr. EINAUDI.

A course largely devoted to the study of Marxism.

324. *THEORY OF THE DEMOCRATIC STATE*. Spring term. Credit three hours. Open to sophomores with consent of instructor, and to upperclassmen. M W F 10. Mr. ROELOFS.

An analysis of Western democratic theory. Some emphasis will be placed on the origins of modern democratic ideas in the works of such men as Aristotle, Aquinas, Luther, Adam Smith, and Paine, but the chief emphasis will be on the development of these ideas by modern English and American writers such as Green, Lindsay, Barker, Royce, Corwin, Dewey, and Becker.

[331. *PUBLIC CONTROL OF ECONOMIC LIFE*. Fall term. Credit three hours. Open to upperclassmen. T Th 2-3:30. Mr. EINAUDI. Not offered in 1953-54.]

[375-376. *SEMINAR IN POLITICAL THEORY*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. EINAUDI. Not offered in 1953-54.]

385-386. *SEMINAR IN COMPARATIVE CONSTITUTIONAL LAW*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. EINAUDI.

030. *INFORMAL STUDY*. Mr. ROELOFS. See italicized statement, p. 73.

060. *INFORMAL STUDY*. Mr. EINAUDI. See italicized statement, p. 73.

INTERNATIONAL RELATIONS

411. *INTERNATIONAL POLITICS*. Fall term. Credit three hours. Open to sophomores and upperclassmen. M W F 9. Mr. BRIGGS.

A systematic study of patterns of international politics; the relevance and character of national power; the purposes, motivations and methods of power politics; ethics, law, public opinion, and power as restraints on power; the changing face of nationalism; structural changes in the balance of power; the art of diplomacy and problems of power and peace in the mid-twentieth century.

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 FAR EASTERN POLICY OF THE UNITED STATES*. Fall term. Credit three hours. Open to sophomores and upperclassmen. M W F 10. Mr. KAHIN.

An analysis of the relations of the United States with China, Japan, Korea, and Southeast Asia during the nineteenth and twentieth centuries; the relationship of American policy to the policies of the European powers in the area. (Approximately one-third of this course deals with the period since 1945.)

441-442. *INTERNATIONAL LAW*. Throughout the year. Credit three hours a term. Open to qualified upperclassmen. M W F 11. Mr. BRIGGS.

A systematic study of the nature, development, and judicial application of the principles of international law. Cases, readings, and discussions.

475-476. *SEMINAR IN INTERNATIONAL LAW AND INTERNATIONAL ORGANIZATION*. Throughout the year. Credit two hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. BRIGGS.

040. *INFORMAL STUDY*. Mr. KAHIN. See italicized statement, p. 73.

080. *INFORMAL STUDY*. Mr. BRIGGS. See italicized statement, p. 73.

HONORS PROGRAM

620-621. *THE FIELDS OF GOVERNMENT*. Throughout the year, in spring-term-fall-term sequence. Credit six hours a term. Prerequisites, Government 101,

104, and admission to the Honors program. Admission limited to second-term juniors. Groups of no more than three students meeting for one-half term on each of the four following fields: (A) The Forms of Government; (B) The Application of Government: the administrative process, the legal process; (C) Political Theory; and (D) International Relations and Organization.

622. *UNDERGRADUATE THESIS*. Spring term. Credit six hours. Prerequisite, Government 620-621.

Independent research project on a selected topic executed under the distant guidance of a member of the Department.

HISTORY

Mr. PAUL W. GATES, *Chairman*; Messrs. SIGMUND BEALE, KNIGHT BIGGERSTAFF, E. W. FOX, HENRY GUERLAC, M. L. W. LAISTNER, F. G. MARCHAM, C. P. NETTELS, CARL STEPHENSON, FRITZ STERN, MARC SZEFTTEL.

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 level; (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.

The Department of History offers a three-term sequence of instruction leading to the A.B. degree with Honors in History. The purpose of the program is to enable students seriously interested in History to work with greater independence, yet with suitable guidance, along lines of their special interests. Instruction in small discussion groups rather than by lecture methods will be emphasized.

The Honors program begins with a proseminar in the spring term (History 614, credit three hours) which is open to juniors with high academic standing. Wide reading in historical classics and weekly discussions of historical methods and materials constitute the work of the course. For admission, apply to Mr. Beale.

In his senior year, the Honors candidate will register for Honors guidance in History 615-616; throughout the year; credit three hours a term. Candidates may also elect seminar instruction or its equivalent, providing three additional hours each term. The year will be devoted to the preparation of an Honors essay, which must be submitted by April 15, and to extensive reading which is planned to integrate the formal training in history and related disciplines. A comprehensive examination will be given on May 15.

*101-102. *ANCIENT HISTORY*. Throughout the year. Credit three hours a term. M W F 9. Mr. LAISTNER.

The work of the first term will include: (1) a brief survey of Stone and Bronze Age cultures in Europe and the Near East and of the early civilizations of Mesopotamia, Egypt, Asia Minor, and the Eastern Aegean; (2) a fuller treatment of the political, economic, and cultural history of the Greek world to 146 B.C. The second term will be devoted to the early history of the Rome and other Italian communities; the emergence of Rome as the chief power, first in Italy and then in the Western Mediterranean; and, finally, the development and culture of the Roman Empire to the death of Constantine.

*103-104. *DEVELOPMENT OF WESTERN CIVILIZATION*. Throughout the year. Credit three hours a term. History 103 or consent of the instructor is prerequisite to History 104. Open to freshmen and sophomores who have not taken History 101-102, 105-106, or 107-108. M W F 10. Mr. FOX and assistants.

This is a broad introductory survey of European history and of Europe's place in world affairs from the time of the ancient Hebrews and Greeks to the present, emphasizing the chief intellectual, political, and economic developments that have contributed to the formation of our Western civilization. It is designed to provide a systematic introduction to the study of history at the college level and to the relation of historical methods and materials both to other academic subjects and to contemporary problems. A lecture course with weekly section meetings.

*105-106. *AN INTRODUCTION TO WESTERN CIVILIZATION*. Throughout the year. Credit three hours a term. History 105 is a prerequisite to History 106. Open to freshmen and sophomores who have not taken History 101-102, 103-104, or 107-108. T Th S 9. Mr. STERN and assistants.

An introductory study of European history since the rise of Christianity, with emphasis on the period after 1400. History is broadly interpreted and the work will comprise, in nearly equal measure, the political and economic developments and the major philosophical traditions. Much of the reading will be in sources including selections from St. Augustine, St. Thomas, Luther, Calvin, Machiavelli, Hobbes, Locke, Newton, Hegel, Marx, and Freud. Readings will be discussed in small weekly sections, while the historical continuity will be provided in the lectures and in textbooks. The course is planned as an introduction to advanced study in history and the humanities.

*107-108. *ENGLISH HISTORY FROM ANGLO-SAXON TIMES TO THE PRESENT*. Throughout the year. Credit three hours a term. Students who have had History 103-104 or 105-106 must secure the consent of the instructor. T Th S 8. Mr. MARCHAM and assistants.

This introductory course traces the growth of government, economic life, religion, the arts, and society among the English people. It illustrates in the history of one nation some of the principal developments of Western civilization since Roman times, such as feudalism, the Catholic Church, the nation-state, the 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.

147. *HISTORY OF RUSSIA TO 1917*. Fall term. Credit three hours. T Th S 10. Mr. SZEFTTEL.

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 RUSSIAN REVOLUTION AND THE SOVIET PERIOD*. Spring term. Credit three hours. T Th S 10. Mr. SZEFTTEL.

Causes of the Revolution and its development. Problems of economic, social, political, and cultural life from October, 1917, to the present.

151. *AMERICAN HISTORY, 1607-1861*. Fall term. Credit three hours. M W F 9, Mr. GATES. M W F 11, Mr. NETTELS.

152. *AMERICAN HISTORY, 1861 TO THE PRESENT*. Spring term. Credit three hours. M W F 9, Mr. GATES. M W F 11, Mr. NETTELS.

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 Chinese history since the beginning of significant Western influence.

[164. *RECENT HISTORY OF THE FAR EAST*. Spring term. Credit three hours. M W F 3. Mr. BIGGERSTAFF. Not offered in 1953-54.]

The history of international rivalry in the Pacific with particular emphasis upon the expansion and fall of Japan.

165-166. *SCIENCE IN WESTERN CIVILIZATION*. Throughout the year. Credit three hours a term. History 165 or consent of the instructor is prerequisite to History 166. Primarily for engineers and science majors, but open to other qualified upperclassmen. M W F 11. Mr. BEALE.

A survey of the development of science in its relation to European and American civilization.

211. *GREEK HISTORY, 500-323 B.C.* Fall term. Credit three hours. Prerequisite, History 101 or the equivalent. M W F 11. Mr. LAISTNER.

[212. *THE HELLENISTIC AGE*. Spring term. Credit three hours. Prerequisite History 101 and 102 or a satisfactory equivalent. M W F 11. Mr. LAISTNER. Not offered in 1953-54.]

[213. *THE ROMAN REPUBLIC, 133-30 B.C.* Fall term. Credit three hours. Prerequisite, History 101 and 102 or a satisfactory equivalent. M W F 11. Mr. LAISTNER. Not offered in 1953-54.]

214. *THE ROMAN EMPIRE, 30 B.C.-180 A.D.* Spring term. Credit three hours. Prerequisite, History 101 and 102 or a satisfactory equivalent. M W F 11. Mr. LAISTNER.

309-310. *MEDIEVAL SOCIETY AND LEARNING*. Throughout the year. Credit three hours each term. The first term normally prerequisite to the second. Students should consult the instructor before registering. M W F 10. Mr. STEPHENSON.

Discussion of special topics regarding the economic, social, and intellectual development of western Europe during the Middle Ages.

321-322. *EUROPE IN THE FIFTEENTH AND SIXTEENTH CENTURIES*. Throughout the year. Credit three hours a term. Prerequisite, a six-hour history sequence numbered below History 142, or consent of the instructor. T Th S 9. Mr. BEALE.

A study of European politics and culture in the age of the Renaissance and the Reformation. The course work will consist of lectures, extensive reading in the sources (in translation), discussion, and written reports.

401-402. *EUROPE IN THE NINETEENTH AND TWENTIETH CENTURIES*. Throughout the year. Credit three hours a term. T Th S 11.

History 401 and 402 are an intermediate level sequence of nineteenth- and twentieth-century European history that is designed primarily for sophomores and juniors who have had History 104 or 106.

Fall semester, Mr. FOX. Emphasizes the impact of the industrial revolution (in England) and the political revolution (in France) on the economic, social, and political development of the continent, with special emphasis on France and Germany.

Spring semester, Mr. STERN. Stresses the problems of industrial society and political democracy before 1914, the origins and consequences of the first World War, the challenge to democracy and the rise of totalitarianism.

[425. *HISTORY OF MODERN GERMANY, 1815 TO 1890*. Credit three hours. T Th S 10. Mr. STERN. To be offered in 1954-1955.]

426. *HISTORY OF MODERN GERMANY, 1890 TO THE PRESENT*. Fall term. Credit three hours. Prerequisite, History 142 or consent of the instructor. T Th S 10. Mr. STERN.

German history from Bismarck's dismissal to the establishment of the Bonn Republic; the cultural developments of modern Germany, the struggles of the Weimar Republic, and the rise of Hitler will receive particular attention. The work of the course will consist of lectures, class discussion, and the preparation of extensive written work by students.

[431. *THE EUROPEAN REVOLUTION, 1789-1848*. Fall term. Prerequisite, History 104 or consent of the instructor. A reading knowledge of French is required. W F 2-3:30. Mr. FOX. Not offered in 1953-54.]

432. *EVOLUTION OF THE FRENCH REPUBLIC*. Spring term. Credit three hours. Prerequisite, History 104 or consent of the instructor. A reading knowledge of French is required. W F 2-3:30. Mr. FOX.

Beginning with a review of the Charter of 1815 and its operation during the Restoration and July Monarchy and emphasizing the periods of the Second Empire and the Third Republic. A discussion course conducted at an advanced level.

455-456. *INTELLECTUAL HISTORY OF MODERN RUSSIA*. Throughout the year. Credit three hours a term. Prerequisite, History 147-148 or consent of the instructor. T Th 2-3:30. Mr. SZEFTTEL.

[457. *RUSSIAN HISTORIOGRAPHY*. Fall term. Credit three hours. Prerequisite, History 147-148 or consent of the instructor. T Th 2-3:30. Mr. SZEFTTEL. Not offered in 1953-54.]

[458. *KIEV RUSSIA AND MOSCOVY*. Spring term. Credit three hours. Prerequisite, History 147-148 or consent of the instructor. T Th 2-3:30. Mr. SZEFTTEL. Not offered in 1953-54.]

511. *ENGLISH CONSTITUTIONAL HISTORY TO 1485*. Fall term. Credit three hours. Students should consult the instructor before registering. M W F 2. Mr. STEPHENSON.

The growth of English institutions during the Middle Ages as shown by study of the pertinent sources.

512. *ENGLISH CONSTITUTIONAL HISTORY SINCE 1485*. Spring term. Credit three hours. Prerequisite, History 107 and 108, or History 511, or consent of the instructor. T Th S 11. Mr. MARCHAM.

The nature and causes of the principal changes in the government of Great Britain and her Empire.

515. *HISTORY OF ENGLAND UNDER THE TUDORS AND STUARTS*. Fall term. Credit three hours. Prerequisite, History 107-108 or consent of the instructor. T Th S 11. Mr. MARCHAM.

[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 11. Mr. MARCHAM. Not offered in 1953-54.]

[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 11. Mr. MARCHAM. Not offered in 1953-54.]

622. *HISTORIOGRAPHY AND THE HISTORICAL METHOD*. Spring term. Credit three hours. Restricted to graduate students, who should consult the instructor before registering. Hours to be arranged. Mr. STEPHENSON.

A specialized course designed to introduce problems of historical research as well as the work of outstanding historians.

711. *AMERICAN COLONIAL HISTORY TO 1763*. Fall term. Credit three hours. For upperclassmen and graduates. T Th 12 and an hour to be arranged. Mr. NETTELS.

The founding of the colonies, the growth of self-government, economic development, early American culture, Britain's imperial policies, the Anglo-French conflict in America.

712. *THE AGE OF WASHINGTON, 1763-1800*. Spring term. Credit three hours. For upperclassmen and graduates. T Th 12 and an hour to be arranged. Mr. NETTELS.

The struggle for American independence, the making of the Constitution, the founding of the federal government, and the shaping of national policies.

[717. *AMERICAN BIOGRAPHY*. Fall term. Credit three hours. For upperclassmen and graduates. T Th 12 and an hour to be arranged. Mr. NETTELS. Not offered in 1953-54.]

[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 1953-54.]

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.

811. *MODERNIZATION OF CHINA: 1842-1911*. Fall term. Credit two hours. Prerequisite, consent of the instructor. Conducted as a seminar. M 3-5. Mr. BIGGERSTAFF.

Topical study of the impact of Western civilization upon traditional China.

812. *MODERNIZATION OF CHINA: SINCE 1911*. Spring term. Credit two

hours. Prerequisite, consent of the instructor. Conducted as a seminar. M 2-4. Mr. BIGGERSTAFF.

Topical study of changes in China since the Revolution of 1911.

[911. *ORIGINS OF MODERN SCIENCE*. Fall term. Credit three hours. Prerequisite, History 165-166 or consent of instructor. Hours to be arranged. Mr. GUERLAC. Not offered in 1953-54.]

[916. *THE CENTURY OF THE ENLIGHTENMENT*. Spring term. Credit three hours. M W F 9. Mr. GUERLAC. Not offered in 1953-54.]

GRADUATE SEMINARS

[275-276. *SEMINAR IN GREEK AND ROMAN HISTORIOGRAPHY*. Throughout the year. Credit three hours a term. T 2-4. Mr. LAISTNER. Not offered in 1953-54.]

277-278. *SEMINAR IN ROMAN HISTORICAL INSCRIPTIONS*. Throughout the year. T 2-4. Mr. LAISTNER.

481-482. *SEMINAR IN MODERN EUROPEAN HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. FOX.

483-484. *SEMINAR IN THE CULTURAL HISTORY OF MODERN EUROPE*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. STERN.

495-496. *SEMINAR IN RUSSIAN AREA STUDIES*. Throughout the year. Credit and hours to be arranged. Open to seniors and graduate students. Prerequisite, consent of Mr. SZEFTTEL. Messrs. CLARK, FAIRBANKS, NABOKOV, and others.

575-576. *SEMINAR IN TUDOR AND STUART HISTORY*. Throughout the year. Credit three hours a term. Open to a limited number of undergraduates and graduates. Hours to be arranged. Mr. MARCHAM.

775-776. *SEMINAR IN AMERICAN HISTORY*. One or two terms during the year. Credit three hours a term. Hours to be arranged. Mr. NETTELS.

781-782. *SEMINAR IN AMERICAN HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. GATES.

875-876. *SEMINAR IN MODERN CHINESE HISTORY*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. BIGGERSTAFF.

[975-976. *SEMINAR IN THE HISTORY OF SCIENCE*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. GUERLAC. Not offered in 1953-54.]

LITERATURE

WILLIAM M. SALE, JR., *Chairman*; Messrs. M. H. ABRAMS, H. D. ALBRIGHT, HARRY CAPLAN, JEAN COLLIGNON, JAMES HUTTON, C. W. JONES, W. R. KEAST, GORDON M. KIRKWOOD, VICTOR LANGE, A. M. MIZENER, H. A. MYERS, V. NABOKOV, H. E. SHADICK, FRIEDRICH SOLMSEN.

The aim of major study in the Interdepartmental Courses in Literature is three-fold: to give the student (a) a sense of the continuity of human thought and experience through year courses in literature and related subjects that span the ancient and the modern world; (b) a knowledge of the relevancy to the modern world of the literature, culture, and art of the classical world, of the medieval world, or of the Orient; and (c) a knowledge of one of the periods in modern history when ideas and inspirations have found expression almost simultaneously in the culture and art of several nations. These aims may be satisfied in part by courses that trace the development in the literature of various countries of one of the major literary forms or of critical theory. A fuller description of aims and requirements, including typical programs, may be obtained from the Chairman.

Required courses (24 hours): (a) Literature 101-102, 303-304; (b) 6 hours in either classical, medieval, or Chinese literature; and (c) 6 hours in the literature either of the Renaissance, the Age of Reason, the Romantic Period, or the Nineteenth Century. At least 6 hours of the courses in literature must be in a foreign language.

Related courses (24 hours): Four year courses (or combinations of term courses) in history, Far Eastern studies, philosophy, government, literature, music, fine arts, architecture, so chosen as to supplement in each case one of the required courses.

Courses satisfying the distribution requirements of the College may be used in satisfying required or related courses.

101-102. INTRODUCTION TO LITERATURE. Throughout the year. Credit three hours a term. First term prerequisite to second. For sophomores and upperclassmen. Prospective majors in literature should ensure a place in the course by applying to the Chairman before or during the first three days of preregistration. M W F 9, 10, 12, 2; T Th S 9, 10, 11. Mr. SALE and others.

A study of narrative prose, drama, and poetry selected from the literature of the world. The purpose of the course is to set forth the particular contribution made by literature to an understanding of human values.

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 12; T Th S 9, 10 in the fall term but only for those who had 101 in the spring term of 1953.

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.

207. FOUNDATIONS OF WESTERN THOUGHT. Fall term. Credit three hours. For sophomores and upperclassmen. T Th S 11. Mr. SOLMSEN.

A study of the beliefs and ideas—religious, moral, social, and scientific—which 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 will be considered. Attention will be given to the influence of these ideas on later thought and their relation to present-day problems. Reading of representative material in translation. Lectures and discussion.

208. *EARLY CHRISTIAN LITERATURE AND ITS HELLENIC BACKGROUND*. Spring term. Credit three hours. For sophomores and upperclassmen. T Th S 11. Mr. SOLMSEN.

An introduction to the movements of religious thought and belief between Plato and St. Augustine. The religious atmosphere before the rise of Christianity; Oriental cults in the Greek world; the writings of the New Testament; early developments of Christian thought and literature.

211-212. *SURVEY OF MEDIEVAL LITERATURE*. Throughout the year. Credit three hours a term. First term prerequisite to the second. For sophomores and upperclassmen. T Th S 9. Mr. JONES.

European literature from the fourth to the fifteenth century which exemplifies the emergence of modern imagery and form, studied in English translations. Topical lectures, discussion, and reports. First term: Christian Latin, Celtic, and Teutonic writings; Arthurian and Nibelung stories, lyrics, liturgy, and drama. Second term: Romance literature: troubadour lyrics, chansons, romances, fabliaux, ballads; Dante's *Comedy* and other writings, Boccaccio, Villon.

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.

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. MYERS. Spring term, Mr. ALBRIGHT.

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. First term prerequisite to second. T Th S 10. Fall term, Mr. KEAST. Spring term, Mr. MIZENER.

Fall term: reading of such representative authors as Boccaccio, Chaucer, Malory, Da Vinci, Erasmus, Machiavelli, Rabelais, Montaigne, Shakespeare, Bacon, and Donne. Spring term: reading of such representative authors as Pope, Rousseau, Byron, Stendhal, Trollope, Henry Adams, and Shaw. All foreign works will be read in English translations.

309-310. *THE DEVELOPMENT OF THE EUROPEAN NOVEL*. Throughout the year. Credit three hours a term. M W F 2. Mr. LANGE.

A study of the main representatives of fiction, with special emphasis upon the history of ideas and the related evolution of the forms of fiction. All foreign works will be read in English translation.

311-312. *MASTERS OF EUROPEAN FICTION*. Throughout the year. Credit three hours a term. M W F 12. Mr. NABOKOV.

Selected English, Russian, French, and German novels and short stories of the nineteenth and twentieth centuries will be read. Special attention will be paid to individual genius and questions of structure. All foreign works will be read in English translation.

[321. *CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION*. Not offered in 1953-54.]

322. *CHINESE IMAGINATIVE LITERATURE IN TRANSLATION*. Spring term. Credit three hours. M W F 10. Mr. SHADICK.

Poetry, classical prose, fiction, drama, and the new writing of the twentieth century.

[*MASTERS OF GERMAN LITERATURE*. (See German 301-302.)]

[*GERMANY: ITS CHARACTER AND INSTITUTIONS*. (See German 303.)]

325-326. *RUSSIAN LITERATURE IN TRANSLATION*. Throughout the year. Credit three hours a term. M W F 11. Mr. NABOKOV.

A survey of Russian prose and poetry, with particular emphasis on the nineteenth century.

[329-330. *CONTEMPORARY TENDENCIES IN FRENCH AND EUROPEAN LITERATURES*. Not offered in 1953-54.]

331-332. *THE CLASSICAL SPIRIT IN FRANCE AND ENGLAND*. Throughout the year. Credit three hours a term. M W F 9. Mr. COLLIGNON.

First term: the growth of the French classical school (Descartes, Pascal, Corneille, Molière, Racine, Boileau, Madame de Lafayette) and its influence on English literature (Dryden, Restoration drama, Pope). Second term: the influence of English thinkers on eighteenth-century French literature and the decline of the classical spirit (Montesquieu, Diderot, Voltaire, Rousseau, Marivaux, Laclos). All foreign works will be read in English translations.

340. *EDDA AND SAGA*. Spring term. Credit three hours. T Th S 11. Mr. HANNESON.

A survey of medieval Icelandic poetry, prose fiction, and historical narrative. Readings in translation from the Elder Edda, the mythological and historical works of Snorri Sturluson, the Sagas of Icelanders, and the Mythical-Heroic Sagas.

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. KEAST.

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

412. *CLASSIC MYTHS*. Spring term. Credit three hours. T Th S 9. Mr. KIRKWOOD.

A study of the principal cycles of Greek mythology—for example, the myths of the Gods, the Trojan Cycle, the Argive and Theban Cycles—and of their representation in art and literature. Anthropological aspects of the myths and their background in prehistory will be considered. Lectures will be illustrated from the collection of lantern slides in the possession of the Department of Classics.

MATHEMATICS

Mr. R. J. WALKER, *Chairman*; Messrs. AGNEW, FUCHS, Mrs. GAL, Messrs. HAMILTON, HUNT, HURWITZ, KAC, KAMEL, KIEFER, OLUM, POLLARD, ROSSER, SHAPIRO, WOLFOWITZ, YOOD.

For a major in Mathematics, the following courses must be completed: (1) in Mathematics, at least fifteen hours of courses numbered 194 or above, including at least one of the following full-year courses, 371-372, 401-402, 403-404, 501-502; (2) in related subjects, at least fifteen hours to be selected from approved courses in Astronomy, Chemistry, Economics, Education, French, Geology, German, Italian, Philosophy, Physics, and Russian.

Students who wish to take the Honors program in Mathematics must include in their program both Mathematics 501-502 and Mathematics 371-372 or the equivalent in other advanced courses. In addition they must take at least two semesters of the Honors seminar and pass a comprehensive examination in Mathematics.

Students planning to teach mathematics 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 teaching of physical science or general science. The Department of Mathematics recommends, as minimum preparation for teaching the subject, Mathematics 161, 162, and six additional hours selected from the following list: 163, 201, 241, 242, 341, 401, 403, 501. Students planning to teach primarily mathematics should meet the requirements for a major in the subject.

Students wishing to take any of the courses numbered above 163 are invited to confer, before registering, with the instructor concerned.

Of Courses 121 to 163, not more than six hours may be taken simultaneously without the special permission of the Department.

*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. M W F 10, T Th S 9. Mr. HURWITZ.

This course is 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. The course will

not serve the purpose of a review course to improve faulty preparation in elementary mathematics.

*133. *PLANE TRIGONOMETRY*. Either term. Credit three hours except for students offering Trigonometry for entrance. Prerequisites, Plane Geometry and Intermediate Algebra. M W F 2, T Th S 9.

*161. *ANALYTIC GEOMETRY AND CALCULUS*. Either term. Credit three hours. Prerequisites, Trigonometry and Intermediate Algebra. Hours to be arranged.

Plane analytic geometry through conics. Differentiation and integration of powers, with applications to rates, maxima, volumes, pressures, etc. This course considers all the basic ideas of calculus and can serve as a terminal course for students interested in minimum acquaintance with the subject.

*162. *ANALYTIC GEOMETRY AND CALCULUS*. Either term. Credit three hours. Prerequisite, Mathematics 161. Hours to be arranged.

Differentiation and integration of algebraic, trigonometric, logarithmic, and exponential functions, with applications. Related topics, including polar coordinates, parametric equations, and vectors. Mathematics 161 and 162 provide a reasonably complete introduction to calculus.

163. *ANALYTIC GEOMETRY AND CALCULUS*. Either term. Credit three hours. Prerequisite, Mathematics 162. Lectures: fall term, M W 8, 10, 11, 12. Spring term, M W 8. One recitation a week to be arranged.

Infinite series, solid analytic geometry, partial derivatives, and multiple integrals.

*192. *CALCULUS*. Spring term. Credit three hours. Prerequisite, consent of the teacher. Hours to be arranged.

A substitute for Mathematics 162, intended for students with exceptional ability and interest in mathematics.

193. *CALCULUS*. Fall term. Credit three hours. Prerequisite, Mathematics 192 or consent of the teacher. M W F 12. Mr. YOOD.

Continuation of Mathematics 192 and a substitute for Mathematics 163.

194. *CALCULUS*. Spring term. Credit three hours. Prerequisite, Mathematics 193 or consent of the teacher. M W F 12. Mr. YOOD.

Continuation of Mathematics 193.

201. *ELEMENTARY DIFFERENTIAL EQUATIONS*. Either term. Credit three hours. Prerequisite, Mathematics 163. Fall term, M W F 8, T Th S 11. Spring term, M W F 12, 2, T Th S 10.

Solution of ordinary differential equations by analytic and numerical methods.

241-242. *SURVEY OF MATHEMATICS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 162 or consent of the teacher. First term prerequisite to second. M W F 9. Mrs. GAL.

Primarily for undergraduates. Review of elementary mathematics from a more advanced viewpoint. Introduction to the general character of higher mathematics. Particularly intended for prospective teachers and those with a cultural interest in mathematics.

283-284. *HONORS SEMINAR*. Throughout the year. Credit three hours. Pre-

requisite, provisional acceptance as a candidate for honors. Hours to be arranged. Messrs. AGNEW and POLLARD.

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.

341. *ELEMENTARY THEORY OF NUMBERS*. Fall term. Credit three hours. Prerequisite, Mathematics 162. M W F 10. Mr. SHAPIRO.

Primarily for undergraduates. A study of properties of divisibility, linear and quadratic congruences, primitive roots, quadratic residues, and other topics.

371-372. *INTRODUCTION TO MODERN ALGEBRA*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 163. First term prerequisite to second. T Th S 9. Mr. ———.

Primarily for undergraduates. Topics in modern algebraic theories, such as the number system, groups, fields, matrices, and Galois Theory.

373-374. *MODERN ALGEBRA*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 163. First term prerequisite to second. T Th S 10. Mr. OLUM.

For graduate students and qualified undergraduates. An introductory course in abstract algebra, serving as a basis for further work in algebra and geometry.

383-384. *ADVANCED MATHEMATICAL LOGIC*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 382. First term prerequisite to second. Hours to be arranged. Mrs. GAL.

For graduate students and qualified undergraduates. The consistency and completeness of the predicate calculus. Set theory. The axiom of choice and the continuum hypothesis. Gödel's incompleteness theorem.

401-402. *PROJECTIVE GEOMETRY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 162. First term prerequisite to second. T Th S 8. Mr. ———.

Primarily for undergraduates. A first course in projective geometry, including both synthetic and analytic methods.

411. *ELEMENTARY TOPOLOGY*. Spring term. Credit three hours. Prerequisite, Mathematics 163. M W F 10. Mr. SHAPIRO.

Primarily for undergraduates. The combinatorics of curves and surfaces. The Jordan curve theorem. Fixed point theorems.

451-452. *ALGEBRAIC GEOMETRY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 374. First term prerequisite to second. Hours to be arranged. Mr. HAMILTON.

For graduate students and qualified undergraduates. A study by purely algebraic methods of algebraic geometry over fields of arbitrary characteristic. Intersection theory, theory of curves, abelian varieties, Jacobian and Picard varieties. If time permits, a proof of the Riemann hypothesis for function fields will be given.

501-502. *ADVANCED CALCULUS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 163. First term prerequisite to second. M W F 11. Mr. KAMEL.

For graduate students and qualified undergraduates. A careful study of limits,

continuity, derivatives, and Riemann integrals. Functions of several variables. Multiple and line integrals. The course is designed to furnish necessary preparation for advanced work in analysis and applied mathematics. Emphasis is placed on the logical development of the calculus, rather than on a wide range of formal applications.

505. *FOUNDATIONS OF ANALYSIS*. Fall term. Credit three hours. Prerequisite, Mathematics 501 or the equivalent. M W F 11. Mr. HUNT.

For graduate students and qualified undergraduates. A study of the elementary set-theoretic, algebraic, and topological notions necessary for the development of the real numbers and the function spaces of analysis.

506. *MEASURE AND INTEGRATION*. Spring term. Credit three hours. Prerequisite, Mathematics 505. M W F 11. Mr. HUNT.

For graduate students and qualified undergraduates. Lebesgue measure and integration. Stieltjes integrals. Fourier series.

517-518. *FUNCTIONAL ANALYSIS AND APPLICATIONS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 506. First term prerequisite to second. Hours to be arranged. Messrs. POLLARD and YOOD.

For graduate students and qualified undergraduates. Banach spaces, Banach algebras, and related topics in the theory of abstract spaces. The theory will be applied to other mathematical topics such as harmonic analysis on groups.

531-532. *COMPLEX VARIABLES*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 502. M W F 9. Mr. KAC.

For graduate students and qualified undergraduates. Among the topics considered will be the complex number system; the elementary functions, complex differentiation and integration; Cauchy's theorem; Taylor's series; singularities; conformal mapping; Riemann surfaces; differential and integral equations. Applications will be made to physical problems.

549. *SEQUENCES AND SERIES*. Spring term. Credit three hours. Prerequisite, Mathematics 163. T Th S 11. Mr. HURWITZ.

Primarily for undergraduates. Tests for convergence and divergence; algebraic and analytic properties of series; summable series; applications.

605. *NUMERICAL AND GRAPHICAL METHODS*. Fall term. Credit three hours. Prerequisite, Mathematics 201. M W F 9. Mr. WALKER.

Primarily for undergraduates. Processes useful in solving problems of engineering, physics, chemistry, etc. Nomograms, interpolation, numerical integration, Fourier series, numerical solution of algebraic and transcendental equations and of ordinary and partial differential equations.

606. *NUMERICAL METHODS*. Spring term. Credit three hours. Prerequisite, Mathematics 605 or consent of the teacher. M W F 9. Mr. WALKER.

Primarily for undergraduates. Solution of partial differential equations, conformal mapping, matrix inversion and eigenvalue problems, estimation of the accuracy of numerical methods, coding for automatic computing machines.

611-612. *HIGHER CALCULUS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 201. First term prerequisite to second. T Th S 10, M W F 8.

Primarily for undergraduates. 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. The second term will be accepted as prerequisite to Complex Variables.

621-622. *MATHEMATICAL METHODS IN PHYSICS*. Throughout the year. Credit four hours a term. Prerequisites, Mathematics 201 and at least two years of general physics. First term prerequisite to second. T W Th F 12. Mr. FUCHS.

For graduate students and qualified undergraduates. Lectures and problem work designed to give the students a working knowledge of the principal mathematical methods used in advanced physics.

641-642. *PARTIAL DIFFERENTIAL EQUATIONS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 612. First term prerequisite to second. M W F 9. Mr. AGNEW.

For graduate students and qualified undergraduates. A survey of differential equations arising in engineering and physics, and mathematical devices required for their solution. Emphasis is on a wide range of application rather than a rigorous development.

711-712. *ELEMENTARY MATHEMATICAL STATISTICS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 163. First term prerequisite to second. T Th S 11. Mr. KIEFER.

Primarily for undergraduates. An introduction to the elements of theoretical statistics, in particular to statistical inference.

721. *PROBABILITY*. Fall term. Credit three hours. Prerequisite, Mathematics 502, or 612, or 622 or consent of the teacher. M W F 12. Mr. WOLFOWITZ.

For graduate students and qualified undergraduates. 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 teacher. M W F 12. Mr. WOLFOWITZ.

For graduate students and qualified undergraduates. 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.

This course is intended to furnish a rigorous introduction to mathematical statistics. It is not to be confused with Mathematics 711-712.

731-732. *ANALYSIS OF VARIANCE AND DESIGN OF EXPERIMENTS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 722 or consent of the teacher. First term prerequisite to second. M W F 2. Mr. KIEFER.

For graduate students and qualified undergraduates. Estimation of regression coefficients. Development of the theory of multiple classification in the analysis of variance. The general linear hypothesis. Power of the tests. Analysis of covariance. The theory of experimental design.

741. *STATISTICAL ESTIMATION AND TESTING HYPOTHESES*. Fall

term. Credit three hours. Prerequisite, Mathematics 722, or consent of the teacher. T Th 2-3:15. Mr. WOLFOWITZ.

For graduate students and qualified undergraduates. The Neyman-Pearson Theory of testing hypotheses. General theories of point and interval estimation. Recent developments.

742. *STATISTICAL DECISION FUNCTIONS*. Spring term. Credit three hours. Prerequisite, Mathematics 741, or consent of the teacher. T Th 2-3:15. Mr. WOLFOWITZ.

For graduate students and qualified undergraduates. The Wald theory of decision functions. Existence theorems, complete class theorems. Connections with the theory of games. Recent results.

READING, RESEARCH, and INFORMAL STUDY

For properly qualified students, members of the Department will direct reading and research not necessarily associated with any course.

031. *READING IN ALGEBRA*.

041. *READING IN GEOMETRY*.

051. *READING IN ANALYSIS*.

061. *READING IN APPLIED MATHEMATICS*.

071. *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. VICTOR LANGE, *Chairman*

Division of Modern Languages, Mr. J. M. COWAN, *Chairman*

Department of Romance Literature, Mr. MORRIS BISHOP, *Chairman*

CHINESE

Messrs. C. F. HOCKETT, H. E. SHADICK, and STAFF.

(For a major involving Chinese studies, see *Department of Far Eastern Studies*.)

*101-102. *ELEMENTARY COLLOQUIAL CHINESE*. Throughout the year. Credit six hours a term. T Th 9 and M T W Th S 8.

*103. *ELEMENTARY COLLOQUIAL CHINESE*. Fall term. Credit three hours. Open only to students with credit for Chinese 102 who have failed the Proficiency Examination. Hours to be arranged.

*201. *INTRODUCTION TO LITERARY CHINESE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination or Chinese 103. M W F 11.

202. *INTERMEDIATE LITERARY CHINESE*. Spring term. Credit three hours. Prerequisite, Chinese 201. M W F 11.

*203. *INTERMEDIATE COLLOQUIAL CHINESE*. Fall term. Credit four hours. Prerequisite, a satisfactory Proficiency Examination or Chinese 103. T Th S 11 and two laboratory hours to be arranged.

204. *INTERMEDIATE COLLOQUIAL CHINESE*. Spring term. Credit four hours. Prerequisite, Chinese 203. T Th S 11 and two laboratory hours to be arranged.

231. *CHINESE DIALECTS OF SOUTHEAST ASIA*. Either term. May be repeated. Credit and hours as arranged. Prerequisite, consent of the instructor. Mr. HOCKETT and assistant.

Introduction to one of the important south Chinese dialects found in the South-east Asian area.

232. *THE LINGUISTIC STRUCTURE OF CHINESE*. Spring term 1954 and alternate years. Credit three hours. Prerequisite, proficiency in Chinese or Linguistics 201. Hours to be arranged. Mr. HOCKETT.

The placement of Peiping Chinese among modern Chinese dialects; a study of the sounds, forms, and structure of Peiping Chinese; nature of the Chinese writing system in relation to the language; sociological and psychological aspects of Chinese linguistic structure. Lectures, discussion, and exercises.

[321. *CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION*. See Literature 321, page 86. Not offered in 1953-54.]

322. *CHINESE IMAGINATIVE LITERATURE IN TRANSLATION*. See Literature 322, page 86.

351-352. *READINGS IN CHINESE LITERATURE: CLASSICAL AND MODERN*. Throughout the year. Credit three hours a term. Prerequisite, Chinese 202 and 204.

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 Proficiency Examination. Hours to be arranged.

FRENCH

Messrs. M. G. BISHOP, J. COLLIGNON, R. A. HALL, JR., B. L. RIDE-OUT, R. C. WEINGARTNER, and STAFF.

Courses numbered below 300 are offered by the Division of Modern Languages and those numbered 300 and higher are offered by the Department of Romance Literature. All courses above 199 presuppose proficiency in French.

Students desiring to major in French may choose between two programs: (1) French Literature; (2) French Linguistics.

For a major in French Literature, consult Mr. BISHOP. The student must complete (1) twenty-one hours of courses numbered from 301 to 399; in this requirement Literature 329-330 and 331-332 may be counted, if the instructor attests that the reading and writing have been done, where possible, in French; (2) in related subjects, eighteen hours to be selected from Languages, Literatures, Euro-

pean History, Fine Arts, History of Music, History of Philosophy, and Dramatic Production.

For a major in French Linguistics, consult Mr. HALL. The following must be completed: (1) Linguistics 201-202; (2) French 204, 232, 233, 241, 242; (3) French Literature 301-302; (4) at least twelve hours in related subjects; (5) a comprehensive examination at the end of the senior year. For Honors in French Linguistics, the above five major requirements must be completed, except that requirement (4) shall consist of French 251-252 and 253-254. Honors candidates must have completed Linguistics 201-202 by the end of the sophomore year.

*101. *ELEMENTARY COURSE.* Either term. Credit six hours. Students who have previously studied any French must take the Proficiency Examination before registering for this course. Fall term, drill, M T W Th F S 8, 9, 10, 11, or 12 and lecture, M W 8, 10, or W F 12 or T Th 8. Spring term, drill, M T W Th F S 8, 9, 10, or 11 and 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 not completed French 101 (except those currently enrolled in French 101) must take the Proficiency Examination before registering for this course. Either term, drill, M T W Th F S 8, 9, 10, 11, or 12; and lecture: fall term, M W 11 or T Th 9 or 2; spring term, M W 8, 10, W F 12, or T Th 8.

*103. *ELEMENTARY COURSE.* Either term. Credit three hours. Open only to students with credit for French 102 who have failed the Proficiency Examination. M W F 8 or 2.

*201. *INTERMEDIATE READING COURSE.* Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or French 103. M W F 10, T Th S 10 or 12.

Reading of modern French texts, with emphasis upon the development of vocabulary, knowledge of idioms, and facility in reading. Class discussion of each day's readings.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION.* Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination or French 103. Fall term, M W F 12 or 2, T Th S 10. Spring term, M W F 12 or 2, T Th S 8 or 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 9.

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. 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. Discussion, oral and written drill.

232. *THE LINGUISTIC STRUCTURE OF FRENCH*. Spring term 1954 and alternate years. Credit three hours. Prerequisite, proficiency in French and Linguistics 201. M W F 2. Mr. HALL.

Descriptive study and analysis of French linguistic structure. French phonetics and phonemics: the sounds of French with special attention to contrast with English sounds; syllable structure; stress and intonation. The forms and sequences of forms of the language, studied from the point of view of speech and of its written representation. The results of linguistic analysis contrasted with traditional grammatical description. Lectures, discussion, and exercises.

233. *OLD FRENCH TEXTS*. Fall term 1953 and alternate years. Prerequisite, proficiency in French. M W F 2. Mr. HALL.

[242-242. *HISTORY OF THE FRENCH LANGUAGE*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in French. M W F 2. Mr. HALL. Offered in alternate years. Not offered in 1953-54.]

251-252. *HONORS WORK IN FRENCH LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the junior year. Course 251 is normally prerequisite to course 252; in exceptional cases it may be taken concurrently with course 252 in the spring term. Hours to be arranged. Mr. HALL.

Selected readings in general linguistics and in the structure and history of French, with oral and written reports.

253-254. *HONORS THESIS IN FRENCH LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the senior year. Mr. HALL.

The preparation of a thesis in French linguistics.

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

*301-302. *SURVEY OF FRENCH LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, French 201, or four years of entrance French, or consent of the instructor. The course may be entered in the second term. M W F 11. Mr. BISHOP.

Lectures in French and classroom discussions on French literature from the medieval period to the present day. The ability to read French readily and to understand and speak French with some ease is expected of the students.

311-312. *LITERATURE OF THE SIXTEENTH CENTURY*. Throughout the year. Credit two hours a term. Prerequisite, French 301 or its equivalent. The course may be entered in the second term. T Th 12. Mr. COLLIGNON.

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

[313-314. *LITERATURE OF THE SEVENTEENTH CENTURY*. Not offered in 1953-54.]

[315-316. *LITERATURE OF THE EIGHTEENTH CENTURY*. Not offered in 1953-54.]

[317-318. *LITERATURE OF THE NINETEENTH CENTURY*. Not offered in 1953-54.]

321-322. *LITERATURE OF THE TWENTIETH CENTURY*. Throughout the year. Credit three hours a term. Prerequisite, French 302 or its equivalent. The course may be entered in the second term. M W F 12. Mr. COLLIGNON.

Lectures in French and classroom discussions. The dominant ideas of the twentieth century and their expression in literature; the precursors, the literature of two wars and the *entre-deux-guerres*, the tendencies of our own time.

331-332. *THE CLASSICAL SPIRIT IN FRANCE AND ENGLAND*. Throughout the year. Credit three hours a term. M W F 9. Mr. COLLIGNON.

For description see under Literature. The course may be counted for credit toward a major in French Literature, on condition that the student do the appropriate reading in French and that he write his reports in French.

[351. *FRENCH FOR TEACHERS*. Not offered in 1953-54.]

375-376. *MODERN FRENCH SEMINAR*. Primarily for graduates. Throughout the year. Credit two hours a term. Hours to be arranged. Mr. BISHOP.

An introduction to the methods and materials of research in French literature, by means of collective study of a problem in French literary history.

010. *INFORMAL STUDY*. May be undertaken by qualified juniors and seniors, whether in the form of extra reading and reports in connection with an established course, or by a study of special topics. The Department of Romance Literature should be consulted.

GERMAN

Messrs. J. M. COWAN, E. KAHLER, V. LANGE, W. G. MOULTON, R. NOTHMAN, W. F. OECHLER, J. F. WHITE, and STAFF.

Courses numbered below 300 are offered by the Division of Modern Languages. Those numbered 300 and higher are offered by the Department of German Literature. All courses above 199 except 301-302, 303 presuppose proficiency in German.

Students desiring to major in German may choose among three programs of study: (1) German Literature; (2) German Linguistics; (3) German Studies.

For a major in German Literature consult Mr. LANGE. The following courses must be completed: (1) at least twenty-one hours of advanced courses in German Literature, including 305-306, or 301-302; (2) in related subjects, at least fifteen hours selected from the literatures, the Division of Modern Languages, the Classics, Ancient and European History, Philosophy. The student should consult his adviser for the planning of a coherent program.

For a major in German Studies consult Mr. LANGE. The following courses must be completed: (1) German 241; (2) German 303, 305-306 or 301-302, 332, 365-366; (3) in related subjects, History 425-426; Government 104; (4) at least twelve hours selected from the following: German 204, 232; Philosophy 579, 580; Government 411; Sociology 411; such courses in the Literatures as are approved after consultation with the adviser.

Candidates for the Honors programs in German Literature or German Studies

will complete the requirements for the major in these fields and, in addition, take the prescribed Honors work 565-566 in the junior year and 575-576 in the senior year. The candidate for Honors will also take a comprehensive examination at the end of the last term of the senior year covering the whole field of major concentration.

For a major in German Linguistics consult Mr. WHITE. The following must be completed: (1) Linguistics 201-202; (2) German 202, 204, 232, 241, 242; (3) German Literature 305-306; (4) at least twelve hours in related subjects; (5) a comprehensive examination at the end of the senior year.

For Honors in German Linguistics, the above five major requirements must be completed, except that requirement (4) shall consist of German 251-252 and 253-254. Honors candidates must have completed Linguistics 201-202 by the end of the sophomore year.

*101. *ELEMENTARY COURSE*. Either term. Credit six hours. Students who have previously studied any German must take the Proficiency Examination before registering for this course. Fall term, drill, M T W Th F S 8, 9, 10, 11, or 12 and lecture, M W 9 or 11, or W F 2, or T Th 11 or 2. Spring term, drill M T W Th F S 8, 9, or 11 and lecture, T Th 12 or W F 2.

*102. *ELEMENTARY COURSE*. Either term. Credit six hours. Prerequisite, German 101 or its equivalent. Students who have not completed German 101 (except those currently enrolled in German 101) must take the Proficiency Examination before registering for this course. Fall term, drill, M T W Th F S 8 or 9 and lecture, T Th 12. Spring term, drill, M T W Th F S 8, 9, 10, 11, or 12 and lecture, M W 10 or T Th 9, 11, or 2.

*103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for German 102 who have failed the Proficiency Examination. T Th S 10.

*105. *SCIENTIFIC READING*. Fall term. Credit three hours. Prerequisite, German 102, or proficiency in German. M W F 2. Mr. WHITE.

*201. *INTERMEDIATE READING COURSE*. Either term. Credit three hours. Prerequisite, proficiency in German. Fall term, M W F 10, Mr. NOTHMAN. Spring term, M W F 9, Mr. WHITE.

*202. *INTERMEDIATE READING COURSE*. Spring term. Credit three hours. Prerequisite, German 201 or consent of the instructor. M W F 10. Mr. NOTHMAN.

*203-304. *COMPOSITION AND CONVERSATION*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in German. Course 203 is prerequisite to 204. T Th S 12. Mr. NOTHMAN.

[232. *LINGUISTIC STRUCTURE OF GERMAN*. Spring term 1955 and alternate years. Credit three hours. Prerequisites, proficiency in German and Linguistics 201. Hours to be arranged. Mr. MOULTON. Not offered in 1953-54.]

241. *HISTORY OF THE GERMAN LANGUAGE*. Fall term 1953 and alternate years. Credit three hours. Prerequisites, Linguistics 201-202 (or concurrent registration therein) and proficiency in German. Hours to be arranged. Mr. WHITE.

The relationship of German to other Germanic and Indo-European languages. The development of High German from the earliest texts to modern times. The rise of the standard language; dialects. Analysis of changes in sounds and forms. Lectures, discussion, reading, and analysis of texts.

242. *MIDDLE HIGH GERMAN*. Spring term 1954 and alternate years. Credit three hours. Prerequisite, German 241 or its equivalent. Hours to be arranged. Mr. WHITE.

Reading, discussion, and analysis of the language of Middle High German texts.

251-252. *HONORS WORK IN GERMAN 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. Hours to be arranged. Mr. WHITE.

Selected readings in general linguistics and in the structure and history of German, with oral and written reports.

253-254. *HONORS THESIS IN GERMAN LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the senior year. Mr. WHITE.

The preparation of a thesis in German Linguistics.

[281-282. *GOTHIC AND COMPARATIVE GERMANIC LINGUISTICS*. Throughout the year 1954-55 and alternate years. Credit three hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. MOULTON. Not offered in 1953-54.]

283-284. *OLD SAXON AND OLD HIGH GERMAN*. Throughout the year 1953-54 and alternate years. Credit three hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. ———.

Analysis of the language of the Low German *Heliand* and of the earliest High German documents.

290. *SEMINAR IN GERMANIC LINGUISTICS*. Offered in accordance with student needs. Hours and credits to be arranged. Mr. ———.

[301-302. *MASTERS OF GERMAN LITERATURE*. Throughout the year 1954-55 and alternate years. Credit three hours a term. Open to all students. A knowledge of German is not required. Lectures and reading in English. M W F 12. Mr. LANGE. Not offered in 1953-54.]

[*303. *GERMANY: ITS CHARACTER AND INSTITUTIONS*. Fall term 1954 and alternate years. Credit three hours. Lectures and reading in English. A knowledge of German is not required. M W F 12. Mr. KAHLER. Not offered in 1953-54.]

*305-306. *SURVEY OF GERMAN LITERATURE*. Throughout the year. Credit three hours a term. Either term may be taken independently of the other. M W F 11. Mr. OECHLER.

A systematic survey of the development of German literature from the origins to the beginning of the twentieth century. Representative works will be read in German. Lectures and supplementary reading in German and English.

[309. *MIDDLE HIGH GERMAN LITERATURE*. Fall term 1954 and alternate years. Credit three hours. Hours to be arranged. Mr. OECHLER. Not offered in 1953-54.]

310. *GERMAN REFORMATION AND BAROQUE*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. OECHLER.

A study of the literature of the sixteenth and seventeenth centuries in Germany.

[316. *GERMAN PROSE FICTION FROM GOETHE TO THOMAS MANN*. Fall term. Credit three hours. M W F 9. The STAFF. Not offered in 1953-54.]

[325. *GERMAN DRAMA OF THE NINETEENTH CENTURY*. Spring term. Credit three hours. Hours to be arranged. Mr. OECHLER. Not offered in 1953-54.]

332. *MODERN GERMAN LITERATURE*, 1870-1953. Fall term. Credit three hours. M W F 12. Mr. KAHLER.

345. *LESSING AND THE PERIOD OF ENLIGHTENMENT*. Spring term. Credit three hours. Hours to be arranged. Mr. OECHLER.

350. *SCHILLER*. Fall term. Credit three hours. M W F 2. Mr. KAHLER.

365-366. *GOETHE*. Throughout the year 1953-54 and alternate years. Credit three hours a term. M W F 3. Mr. LANGE.

[420. *GERMAN ROMANTICISM*. Spring term. Credit three hours. M W F 12. The STAFF. Not offered in 1953-54.]

[470. *PROSEMINAR IN GERMAN LITERATURE*. Spring term. Credit two hours. One meeting a week at a time to be arranged. Mr. LANGE. Offered in alternate years. Not offered in 1953-54. Introduction to bibliographical, historical, and critical methods.]

475-476. *SEMINAR IN GERMAN LITERATURE*. Throughout the year. Credit three hours a term. One meeting a week at a time to be arranged. Fall term: Subject to be arranged, Mr. KAHLER. Spring term: *Kunstanschauungen des achtzehnten Jahrhunderts*, Mr. LANGE.

565-566. *HONORS WORK IN GERMAN LITERATURE AND GERMAN STUDIES*. Throughout the year. Credit three hours a term. Hours to be arranged. The STAFF.

Open only to candidates for Honors in the junior year. The course will consist of special readings and reports in the field of concentration.

575-576. *HONORS WORK IN GERMAN LITERATURE AND GERMAN STUDIES*. Throughout the year. Credit three hours a term. Hours to be arranged. The STAFF.

Open only to candidates for Honors in the senior year. The course will consist of the preparation of a senior thesis of suitable length on an approved subject in the field of concentration and of the preparation for the comprehensive examinations to be given to the Honors candidates at the end of their final term.

080. *INFORMAL STUDY*. Open to qualified juniors and seniors. Mr. OECHLER.

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

HINDI

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. M T W Th F S 9 and T Th 10.

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, proficiency 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, proficiency in Indonesian; for 204, course 203. Hours to be arranged. Mr. ECHOLS.

ITALIAN

Messrs. MORRIS BISHOP, R. A. HALL, JR., and STAFF.

In certain circumstances, a major may be attained in Italian Literature. The Department of Romance Literature should be consulted.

*101. *ELEMENTARY COURSE*. Either term. Credit six hours. Fall term, T Th 10 and M T W Th F S 8, 9, or 11. Spring term, T Th 12 and M T W Th F S 8.

*102. *ELEMENTARY COURSE*. Spring term. Credit six hours. Prerequisite, Italian 101. T Th 10 and M T W Th F S 9 or 11.

*103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for Italian 102 who have failed the Proficiency Examination. Hours to be arranged.

*201. *INTERMEDIATE READING COURSE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination or Italian 103. Hours to be arranged.

Reading of modern Italian texts with emphasis upon the development of vocabulary, knowledge of idioms, and facility in reading. Class discussion of each day's readings.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination or Italian 103. Hours to be arranged.

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. Credit three hours. Prerequisite, Italian 203. Hours to be arranged.

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 214. 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. *DANTE*. Not offered in 1953-54.]

*307-308. *SURVEY OF ITALIAN LITERATURE*. Throughout the year. Credit, three hours a term. Prerequisite, proficiency in Italian. Hours to be arranged. Mr. HALL.

A literary and historical study of the great monuments of Italian literature from the earliest times to the present.

[315-316. *LITERATURE OF THE TWENTIETH CENTURY*. Not offered in 1953-54.]

010. *INFORMAL STUDY*. May be undertaken by qualified juniors and seniors, whether in the form of extra reading and reports in connection with an established course, or by a study of special topics. The Department of Romance Literature should be consulted.

LINGUISTICS

Messrs. F. B. AGARD, J. M. COWAN, G. H. FAIRBANKS, R. A. HALL, JR., C. F. HOCKETT, W. G. MOULTON.

201-202. *INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE*. Throughout the year. Credit three hours a term. M W F 9. Mr. AGARD.

A basic introductory course designed to acquaint the student with the methods of systematic observation of language phenomena (linguistics). This course is required for all majors in French, German, Spanish, or Russian linguistics; it is also a prerequisite, or a concurrent requirement, for Linguistic Analysis 203-204.

203-204. *LINGUISTIC ANALYSIS*. Throughout the year. Credit three hours a term. Prerequisite, Linguistics 201. M W F 10. Mr. HOCKETT.

A training course in the techniques of observation and analysis of descriptive linguistics. Fall term: phonetics and phonemics. Spring term: morphology and syntax.

[205. *FIELD METHODS*. Fall term. Credit three hours. Prerequisite, Linguistics 204. Hours to be arranged; four class or laboratory hours a week may be required. Mr. HOCKETT. Not offered in 1953-54.]

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. The course will require no mathematical training of the students beyond arithmetical computation; the necessary mathematical operations for acoustical analysis will be developed for the students by the instructor.

[281-282. *THE COMPARATIVE STUDY OF THE ROMANCE LANGUAGES*. Throughout the year. Credit three hours a term. Prerequisite, Linguistics 201-202, taken previously or concurrently. Hours to be arranged. Mr. HALL. Not offered in 1953-54.]

[283. *ELEMENTARY SANSKRIT*. Fall term 1954 and alternate years. Credit three hours. Prerequisite, advanced standing. Hours to be arranged. Mr. FAIRBANKS. Not offered in 1953-54.]

[284. *COMPARATIVE METHODOLOGY*. Spring term 1955 and alternate years. Credit three hours. Prerequisite, Linguistics 201-202 or equivalent. Hours to be arranged. Mr. FAIRBANKS. Not offered in 1953-54.]

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 and STAFF.

*101-102. *ELEMENTARY COURSE IN BRAZILIAN PORTUGUESE*. Throughout the year. Credit six hours a term. T Th 2 and M T W Th F S 11.

*103. *ELEMENTARY COURSE IN BRAZILIAN PORTUGUESE*. Spring term. Credit three hours. Open only to students with credit for Portuguese 102 and who have failed the Proficiency Examination. Hours to be arranged.

*201. *INTERMEDIATE READING COURSE*. Spring term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination or Portuguese 103. Hours to be arranged.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination or Portuguese 103. Hours to be arranged.

RUSSIAN

Messrs. G. H. FAIRBANKS, V. NABOKOV, and STAFF.

For a major in Russian Linguistics, consult Mr. FAIRBANKS. The following must be completed: (1) Linguistics 201-202; (2) Russian 201, 202, 203, 204, 232, 241; (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. For Honors in Russian Linguistics, the above five major requirements must be completed, except that requirement (4) shall consist of Russian 251-252 and 253-254. Honors candidates must have completed Linguistics 201-202 by the end of the sophomore year.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Drill, M T W Th F S 9, 10, or 12 and lecture, T Th 11.

*103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for Russian 102 who have failed the Proficiency Examination. Hours to be arranged.

*201. *INTERMEDIATE READING COURSE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination or Russian 103. M W F 10.

202. *INTERMEDIATE READING COURSE*. Spring term. Credit three hours. Prerequisite, Russian 201. M W F 10.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, Russian 201 or concurrent registration in Russian 201. T Th S 11 and two hours to be arranged.

204. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Spring term.

Credit three hours. Prerequisite, Russian 202 or concurrent registration in Russian 202. T Th S 11 and two hours to be arranged.

223. *ADVANCED COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, Russian 204. Hours to be arranged.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Russian 223. Hours to be arranged.

225. *ADVANCED READING*. Either term. Credit three hours. Prerequisite, Russian 202. Hours to be arranged.

232. *THE LINGUISTIC STRUCTURE OF RUSSIAN*. Spring term 1954 and alternate years. Credit three hours. Prerequisite, proficiency in Russian and Linguistics 201. M W F 2. Mr. ———.

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

241. *HISTORY OF THE RUSSIAN LANGUAGE*. Fall term 1953 and alternate years. Credit three hours. Prerequisite, proficiency in Russian. M W F 2. Mr. ———.

The study of the divisions of the Russian language chronologically and geographically; the relationships of the Russian language, the Slavic group, the Indo-European group; the changes in the sounds and forms of the Russian language; vocabulary group; vocabulary borrowings from Eastern and Western languages.

251-252. *HONORS WORK IN RUSSIAN LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the junior year. Course 251 is normally prerequisite to course 252; in exceptional cases it may be taken concurrently with course 252 in the spring. Hours to be arranged. Mr. FAIRBANKS.

Selected readings in general linguistics and in the structure and history of Russian, with oral and written reports.

253-254. *HONORS THESIS IN RUSSIAN LINGUISTICS*. Throughout the year. Credit three hours a term. To be taken in the senior year. Mr. FAIRBANKS.

The preparation of a thesis in Russian Linguistics.

[281. *OLD BULGARIAN*. Fall term 1954 and alternate years. Credit three hours. Prerequisite, proficiency in Russian and Linguistics 201. Hours to be arranged. Mr. FAIRBANKS. Not offered in 1953-54.]

[282. *OLD RUSSIAN*. Spring term 1955 and alternate years. Credit three hours. Prerequisite, proficiency in Russian and Linguistics 201. Hours to be arranged. Mr. FAIRBANKS. Not offered in 1953-54.]

[283-284. *COMPARATIVE SLAVIC LINGUISTICS*. Throughout the year in alternate years. Credit three hours a term. Prerequisite, Russian 241. Hours to be arranged. Mr. FAIRBANKS.]

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

315-316. *PUSHKIN*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in Russian. Hours to be arranged. Mr. NABOKOV.

[317-318. *THE MODERNIST MOVEMENT IN RUSSIAN LITERATURE*

FROM ITS SOURCE TO OUR TIME: POETRY AND PROSE. Throughout the year. Credit three hours a term. Prerequisite, proficiency in Russian. Hours to be arranged. Mr. NABOKOV. Not offered in 1953-54.]

SPANISH

Messrs. F. B. AGARD, G. I. DALE, D. F. SOLA, and STAFF.

Courses numbered below 300 are offered by the Division of Modern Languages and those numbered 300 and higher are offered by the Department of Romance Literature. All courses above 199 presuppose proficiency in Spanish.

Students desiring to major in Spanish may choose between two programs: (1) Spanish Literature, (2) Spanish Linguistics.

For a major in Spanish Literature, consult Mr. DALE. The student must complete (1) twenty-one hours of courses numbered from 301 to 399; (2) in related subjects, eighteen hours to be selected from Languages and Literatures, European History, Fine Arts, Music History, History of Philosophy, and Dramatic Production.

For a major in Spanish Linguistics, consult Mr. AGARD. The following must be completed: (1) Linguistics 201 and 202; (2) Spanish 204, 224, 232, 241, and 242; (3) Spanish Literature 301-302 or 303-304; (4) at least twelve hours in related subjects; (5) a comprehensive examination at the end of the senior year.

For Honors in Spanish Linguistics, the above five major requirements must be completed, except that requirement (4) shall consist of Spanish 251-252 and 253-254. Honors candidates must have completed Linguistics 201-202 by the end of the sophomore year.

*101. *ELEMENTARY COURSE.* Either term. Credit six hours. Students who have previously studied any Spanish must take the Proficiency Examination before registering for this course. Fall term, drill, M T W Th F S 8, 9, 10, 11, or 12 and lecture, M W 8 or T Th 8 or 12. Spring term, drill, M T W Th F S 8 or 12 and lecture, M W 9 or T Th 10.

*102. *ELEMENTARY COURSE.* Either term. Credit six hours. Prerequisite, Spanish 101 or its equivalent. Students who have not completed Spanish 101 (except those currently enrolled in Spanish 101) must take the Proficiency Examination before registering for this course. Fall term, drill, M T W Th F S 8, 9, 11, or 12 and lecture, W F 12 or T Th 10. Spring term, drill, M T W Th F S 8, 9, 10, or 11 and lecture, M W 11 or W F 12 or T Th 12.

*103. *ELEMENTARY COURSE.* Either term. Credit three hours. Open only to students with credit for Spanish 102 who have failed the Proficiency Examination. T Th S 9.

*201. *INTERMEDIATE READING COURSE.* Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Spanish 103. T Th S 9.

Reading of modern Spanish texts, with emphasis upon the development of vocabulary, knowledge of idioms, and facility in reading. Class discussion, mainly in Spanish, of daily readings.

*203. *INTERMEDIATE COMPOSITION AND CONVERSATION.* Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Spanish 103. M W F 9 or 11, T Th S 11.

Guided conversation, grammar review, and oral and written composition. Emphasis is on increasing student's oral and written command of Spanish.

204. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, Spanish 203. M W F 2.

Continuation of the work of Spanish 203, with special attention to accurate and idiomatic expression in Spanish, both oral and written.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Spanish 204. T Th S 11.

Continuation of the work of Spanish 204, with discussion directed toward Latin American culture and institutions.

232. *THE LINGUISTIC STRUCTURE OF SPANISH*. Spring term. Credit three hours. Prerequisite, proficiency in Spanish and Linguistics 201. M W F 2. Mr. AGARD.

Descriptive study and analysis of Spanish linguistics structure. Spanish phonetics and phonemics: the sounds of Spanish with special attention to contrast with English sounds; syllable structure, stress, and intonation. The forms and sequences of forms of the language, studied from the point of view of speech and of its written representation. The results of linguistic analysis contrasted with traditional grammatical description. Lectures, discussion, and exercises.

[241-242. *THE HISTORY OF THE SPANISH LANGUAGE*. Throughout the year, in alternate years. Credit three hours a term. Prerequisite, proficiency in Spanish. M W F 2. Mr. AGARD. Not offered in 1953-54.]

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. 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*. Not offered in 1953-54.]

*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. The course may be entered in the second term. M W F 11. First term, Mr. MARVULL; second term, Mr. DALE.

Lectures in Spanish and classroom discussions on Spanish-American literature from the Colonial period to the present.

[311-312. *CERVANTES*. Not offered in 1953-54.]

[319-320. *THE NINETEENTH-CENTURY SPANISH NOVEL*. Not offered in 1953-54.]

321-322. *THE CONTEMPORARY SPANISH-AMERICAN NOVEL*. Throughout the year. (In 1953-54 only the second term will be offered.) Credit three hours a term. Prerequisite, Spanish 304 or its equivalent. The course may be entered in the second term. T Th S 11. Mr. DALE.

Lectures in Spanish and classroom discussions. Representative novels by Mexican and South American writers will be read and critically studied.

381-382. *LOPE DE VEGA*. Throughout the year. (In 1953-54 only the second term will be offered.) Credit two hours a term. Th 2:15. Mr. DALE.

For graduates and qualified undergraduates. A critical study of the dramatic art of Lope De Vega.

[385-386. *THE PICARESQUE NOVEL*. Not offered in 1953-54.]

010. *INFORMAL STUDY*. May be undertaken by qualified juniors or seniors, whether in the form of extra reading and reports in connection with an established course, or by a study of special topics. The Department of Romance Literature should be consulted.

THAI (SIAMESE)

[*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged. Not offered in 1953-54.]

VIETNAMESE (ANNAMESE)

Messrs. W. W. GAGE and H. S. THONG.

*101-102. *ELEMENTARY COURSE*. Throughout the year. Credit six hours a term. Hours to be arranged. Will be offered if warranted by student enrollment.

MUSIC

Mr. JOHN KIRKPATRICK, *Chairman*; Messrs. WILLIAM AUSTIN, WILLIAM CAMPBELL, KEITH FALKNER, DONALD J. GROUT, ROBERT HULL, HUNTER JOHNSON, ROBERT PALMER.

For a major in Music, the following must be completed: (1) (a) Music 101-102 (for 102, either 108 or 110 may be substituted); (b) Music 201-202, 203-204, 301-302, and six hours from Music 303 through 312; (c) three hours in Music 401-402, four terms in Music 320, and Music 211 (unless proficiency in conducting is demonstrated); (2) in related subjects, a minimum of fifteen hours to be chosen with the approval of the adviser; (3) at least two years' membership and participation in either 406, 408, 410, or 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.

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.

A large collection of recorded music and scores is housed in the Music Building at 320 Wait Avenue, where a number of phonograph listening rooms are available. These facilities may be used by any member of the student body at hours to be announced each term.

Choral and instrumental ensembles are trained and directed by members of the departmental staff each term, and all students who are interested are invited to join these groups. These ensembles include the Sage Chapel Choir, the Cornell A Cappella Chorus, the Bands, the Orchestra, and Chamber Music Groups. Announcements of tryouts will be made at the beginning of each term. For rehearsal hours, see the hours listed for Music 406 through 412.

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 involves serious study of a literature.

MUSIC THEORY

[*103. *INTRODUCTION TO MUSIC THEORY.* Credit three hours a term. Fall term. M through F 9. Spring term, M through F 10. Mr. CAMPBELL. Not offered in 1953-54.]

[*104. *INTRODUCTION TO MUSIC THEORY.* Spring term. Credit three hours. Prerequisite, Music 103, or consent of the instructor. M through F 9. Mr. CAMPBELL. Not offered in 1953-54.]

*105-106. *THEORY I: THE FUNDAMENTALS OF MUSIC.* Throughout the year. Credit three hours a term. First term prerequisite to second. M through F 9. Mr. JOHNSON.

Designed for music majors and qualified general students. A knowledge of the rudiments of music and some ability to play an instrument are required. Includes the content of 103-104 on a higher level and elementary 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 Th 2. Mr. JOHNSON.

A study of harmonic principles of the period of common practice (1700-1900). The materials and techniques of the period will be practiced through writing, hearing, analysis, playing, and composition in the simpler homophonic forms. Advanced dictation, sight-singing, and keyboard harmony.

203-204. *THEORY III: COUNTERPOINT.* Throughout the year. Credit three hours a term. Prerequisite, Music 201-202, or the equivalent. First term prerequisite to second. M W F 12. Mr. PALMER.

The general principles of counterpoint will be studied by examining the contrapuntal practice of the Baroque period as exemplified chiefly in the works of J. S. Bach. There will be analysis and composition in the polyphonic forms of the period.

[205-206. (formerly 209-210). *THEORY IV: COMPOSITION IN TWENTIETH-CENTURY STYLE.* Throughout the year. Credit two hours a term. Hours to be arranged. Prerequisite, Music 203-204 (which may be taken concurrently with Music 205-206). Mr. JOHNSON. Not offered in 1953-54.]

207-208. *ORCHESTRATION*. Throughout the year. Credit two hours a term. Prerequisites, Music 101-102 and 105-106 or the equivalents. First term prerequisite to second. M W 2. Mr. JOHNSON.

A study of the instruments of the orchestra and their use in representative works from 1700 to the present. Scoring for various instrumental groups, including large orchestra.

211. *CONDUCTING*. Fall term. Credit two hours. Prerequisites, Music 101-102 and 105-106 or the equivalents. W 2-3:50. Mr. HULL.

The fundamentals of score reading and conducting. Qualified students will be given the opportunity to practice with university musical organizations.

277-278. *ANALYTIC TECHNIQUE*. Throughout the year. Credit three hours a term. Prerequisite, Music 203-204 or the equivalent. (Music 203-304 may be taken concurrently.) M W 9-11. Mr. PALMER.

This course is 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. The course will include in the first term studies of the relation of music and liturgy during the Middle Ages.

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

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

[025-026. *INFORMAL STUDY*. Credit hours to be arranged. Mr. CAMPBELL. Not offered in 1953-54.]

027-028. *INFORMAL STUDY*. Credit hours to be arranged. Mr. JOHNSON.

351-352. *HONORS WORK IN MUSIC*. Credit three hours a term. Open only to Honors candidates in their senior year. Mr. KIRKPATRICK and members of the Department.

MUSIC HISTORY

*101-102. *THE ART OF MUSIC*. Credit three hours a term. Open to all students, first term prerequisite to the second, or consent of the instructor. Fall term, T Th 11 and recitation sections to be arranged. Spring term, T Th S 11. First term, Mr. AUSTIN. Second term, Mr. KIRKPATRICK and members of the Department.

An approach to the understanding and rational enjoyment of the art of music, offered especially for students who have had little or no technical training in the subject. Students who are considering music as a possible major field should register for this course in their freshman year. The first term covers a study of the elements of music, media of musical expression, and musical forms. The second term covers a study of the work of representative composers in relation to their social and artistic environment. Most of the outside work in this course consists of attending concerts and studying phonograph records.

[*108. *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 1953-54.]

[*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 1953-54.]

301-302. *HISTORY OF MUSIC*. Throughout the year. Credit three hours a term. Prerequisites, Music 101-102 and Music 201-202; the latter may be taken concurrently with Music 301-302. T Th S 9. Mr. GROUT.

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. *MUSIC OF THE RENAISSANCE*. Throughout the year. Credit three hours a term. Prerequisites, Music 201-202 and 301-302. First term prerequisite to second. T Th S 11. Mr. GROUT.

Forms, schools, and composers of the period 1450-1600, and their place in the history of the time.

[305-306. *MUSIC OF THE BAROQUE PERIOD*. Throughout the year. Credit three hours a term. Prerequisites, Music 201-202 and 301-302. T Th S 8. Mr. AUSTIN. Not offered in 1953-54.]

[307-308. *MUSIC OF THE CLASSICAL PERIOD*. Throughout the year. Credit three hours a term. Prerequisites, Music 201-202 and 301-302. M W F 10. Mr. GROUT. Not offered in 1953-54.]

[311-312. *CONTEMPORARY MUSIC*. Throughout the year. Credit three hours a term. Prerequisites, Music 301-302 and Music 203-204; the latter may be taken concurrently with Music 311-312. M W F 11. Mr. PALMER. Not offered in 1953-54.]

320. *COLLEGIUM MUSICUM*. Throughout the year. Credit one hour for two terms; students should register formally only in the spring term. Prerequisite, consent of the instructor. Required of all music majors for at least two years, usually in the junior and senior years. T 2-3:40. Mr. HULL, assisted by members of the Department.

A study of selected works from all periods in the history of music through analysis, editing, conducting, and performing. The techniques and objectives will be the same each year, but the materials covered will not be the same in any three successive years.

031. *INFORMAL STUDY*. Credit hours to be arranged. Mr. AUSTIN.

033-034. *INFORMAL STUDY*. Credit hours to be arranged. Mr. GROUT.

041-042. *INFORMAL STUDY*. Credit hours to be arranged. Mr. KIRKPATRICK.

043-044. *INFORMAL STUDY*. Credit hours to be arranged. Mr. FALKNER.

APPLIED MUSIC

*401-402. *INDIVIDUAL INSTRUCTION IN VOICE, ORGAN, PIANO, STRING, WOODWIND, AND BRASS INSTRUMENTS*. Throughout the year. Consent of the instructor required.

Basic fees for one half-hour lesson weekly during one term (carrying no credit): \$60 for voice with Mr. FALKNER, and for piano with Mr. KIRKPATRICK; \$40 for organ with Mr. AUSTIN, for violin or viola with Mr. HULL, for woodwind or brass instruments with Mr. CAMPBELL, and for piano with graduate assistants.

Basic fees for a practice schedule of six hours weekly during one term: \$30 for the use of a pipe organ in Bailey Hall, Sage Chapel, or Barnes Hall; \$10 for a practice room with piano; \$5 for a practice room without piano. For double the time, these basic fees are doubled.

For credit: one hour lesson weekly (or two half-hours) and a double practice schedule carry three hours' credit for the year, provided that the student shall have earned double that number of credits in music courses other than those in the 400 category. The basic fees involved are then multiplied by one and a half (lesson fees: \$90 instead of \$120; \$60 instead of \$80; practice fees: \$45, \$15, and \$7.50). A student may register for this course in successive years.

MUSICAL ORGANIZATIONS AND ENSEMBLES

Throughout the year. Credit one hour a term. Students desiring credit for work in these courses should register informally with the Music Department in the fall term and register formally in the College for the appropriate course in the spring term. 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.

*406. *THE SAGE CHAPEL CHOIR.* T 7:15-8:15 p.m. and Th 7:30-9 p.m. Mr. GROUT.

*408. *THE CORNELL A CAPPELLA CHORUS.* M W F 4:15-5:45 p.m. Mr. HULL.

*410. *UNIVERSITY ORCHESTRA.* W 7:30-10 p.m., full orchestra; T 4:30-5:30 p.m., winds only; and Th 4:30-5:30 p.m., strings only. Mr. HULL.

*412. *UNIVERSITY CONCERT BAND.* Th 7:30-9:30 p.m. and F 4:30-6 p.m. Mr. CAMPBELL.

COURSES PRIMARILY FOR GRADUATES

275-276. *SEMINAR IN COMPOSITION.* Throughout the year. Credit two hours a term. Open to seniors by permission. Hours to be arranged. Mr. PALMER.

The work is 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 or German and an elementary knowledge of music theory and general music history. Open to seniors by permission. M 10-12. First term, Mr. AUSTIN. Second term, Mr. GROUT.

The basic materials and techniques of musicological research.

377-378. *SEMINAR IN MUSICOLOGY.* Throughout the year. Credit two hours a term. W 10-12. Mr. GROUT.

This course is 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.

PHILOSOPHY

Mr. ———, *Chairman*; Messrs. MAX BLACK, S. M. BROWN, JR., E. A. BURTT, NORMAN MALCOLM, HAROLD R. SMART, GREGORY VLASTOS.

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, one additional six-hour sequence in 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. An integrated program of studies must be selected, subject to the approval of the adviser. Informal study is open to qualified majors.

Students, with a major in Philosophy, entering the Cornell Law School or Medical College at the end of the junior year, are required to complete fifteen hours of Philosophy, including Philosophy 301-302, and one additional six-hour sequence in courses numbered above 200.

Students who wish to graduate with Honors in Philosophy should consult the Chairman at the beginning of the 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. An Honors candidate must take Philosophy 600 in his junior year and at least six further hours of courses numbered above 400 before graduation. He will be required to write a senior thesis and pass a comprehensive examination at the end of his senior year.

*101. *PHILOSOPHICAL CLASSICS*. Either term. Credit three hours. Open to freshmen. Fall term, M W F 8; T Th S 8, 9, and 12. Spring term, M W F 11, and 12; T Th S 9 and 12. Messrs. BROWN, BURTT, MALCOLM, SMART, and VLASTOS.

A careful study of three Socratic dialogues, Plato's *Republic*, and J. S. Mill's *Utilitarianism* and *On Liberty*. In studying Plato and Mill, special attention is paid to the philosophy of democracy.

*102. *PHILOSOPHICAL CLASSICS: SECOND COURSE*. Either term. Credit three hours. Prerequisite, Philosophy 101. Fall term, T Th S 9. Spring term, M W F 8; T Th S 9, and 12. Messrs. BROWN, MALCOLM, and SMART.

In classical texts of somewhat greater difficulty than those examined in Philosophy 101, the student is offered a choice between two sets of selected readings; Descartes, Berkeley, and Hume, with an emphasis upon the problems in theory of knowledge; or Hobbes, Locke, and Hume, with an emphasis upon the problems in ethical and social values.

*103. *ELEMENTARY LOGIC*. Either term. Credit three hours. Open to freshmen. Fall term, M W F 9 and 3; T Th S 10 and 11. Spring term, M W F 10, 3; T Th S 10, and 11. Mr. BLACK.

This course is intended for students who do not expect to take further work in logic or related subjects. (Majors are advised to enroll in Philosophy 323, with the instructor's consent.) The object is to provide a nontechnical introduction to the problems that arise in the attempt to reason soundly. Problems of deductive and inductive logic are discussed and special attention is given to the analysis of logical fallacies. Lectures, discussion, and exercises.

202. *ELEMENTARY SEMANTICS*. Either term. Credit three hours. Open to sophomores and upperclassmen. Fall term M W F 3. Spring term, T Th S 12. 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. Lectures and discussion.

221-222. *ETHICS*. Throughout the year. Credit three hours a term. First term prerequisite to the second. Open to sophomores and upperclassmen. M W F 11. Fall term, Mr. BROWN.

Fall term: basic moral ideas of Western civilization as interpreted by its major philosophers; Greek and Christian ethics; the rise of modern liberalism, contemporary issues. Spring term: the meaning and tests of value judgments; the structure, conditions, and ends of a moral community; application to current social problems.

230. *AESTHETICS: PHILOSOPHY OF ART*. Fall term. Credit three hours. Open to students majoring in philosophy or in fine arts, and to others by consent of the instructor. T Th S 11. Mr. SMART.

A critical study of outstanding theories of art, ancient, modern, and contemporary.

COURSES FOR UPPERCLASSMEN AND GRADUATES

301-302. *HISTORY OF PHILOSOPHY*. Throughout the year. Credit three hours a term. Open to juniors and seniors, and others with the consent of the instructor. T Th S 9. Mr. VLASTOS.

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

[312. *PHILOSOPHY IN CONTEMPORARY THOUGHT*. Fall term. Credit three hours. Prerequisite, six hours of philosophy or consent of the instructor. M W F 10. Mr. MURPHY. Not given in 1953-54.]

313. *AMERICAN PHILOSOPHY*. Fall term. Credit three hours. Open to juniors and seniors. M W F 10. Mr. BROWN.

The development of American thought from Jonathan Edwards to the present. Puritanism, the Enlightenment, transcendentalism, evolutionary science and religion, the philosophies of Royce, James, and Dewey.

321. *HISTORY OF RELIGIONS*. Fall term. Credit three hours. Open to juniors and seniors, and to sophomores by consent of the instructor. M W F 12. Instructor to be announced.

A general survey of the development of ritual, practice, and belief in selected primitive religions and the religions of the Far East, of India, and of the West.

322. *PHILOSOPHY OF RELIGION*. Spring term. Credit three hours. Open to juniors and seniors, and to sophomores by consent of the instructor. M W F 12. Mr. BURTT.

A study of the major types of religious belief in the modern world in relation to their philosophical background and to the moral and social problems of today.

323. *DEDUCTIVE LOGIC*. Fall term. Credit three hours. Prerequisite, Philosophy 103 or consent of the instructor. T Th 2 and one hour to be arranged. Mr. BLACK.

A study of current methods and problems of formal logic, with discussion of relevant philosophical issues; algebra of classes, propositional calculus, calculus of functions, the logical paradoxes, and the theory of types.

[324. *INDUCTIVE LOGIC*. Credit three hours. Prerequisite, Philosophy 323 or consent of the instructor. Mr. BLACK. Not given in 1953-54.]

[325. *ANCIENT AND MEDIEVAL POLITICAL PHILOSOPHY*. Fall term. Credit three hours. Prerequisite, Philosophy 221-222 or 301, or consent of the instructor. Mr. VLASTOS. Not given in 1953-54.]

326. *MODERN POLITICAL PHILOSOPHY*. Spring term. Credit three hours. Prerequisite, Philosophy 221-222 or 302, or consent of the instructor. T Th S 11. Mr. VLASTOS.

An analysis of the philosophical and ethical assumptions of Hobbes, Locke, Hume, Rousseau, Hegel, and Marx, and of recent fascist, soviet, and liberal thought.

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.

424. *PHILOSOPHY OF SCIENCE*. Spring term. Credit three hours. Prerequisite, Philosophy 323 or consent of the instructor. M W 2 and one hour to be arranged. Mr. BLACK.

A critical analysis of scientific methodology with detailed study of such topics as causality, theories, fictions, measurement.

425. *ETHICAL THEORY*. Spring term. Credit three hours. Prerequisite, Philosophy 221-222, or 301-302, or consent of the instructor. T Th S 9.

Topic for 1953-54: Christian Ethics.

[427. *RECENT PHILOSOPHY 1890-1940*. Spring term. Credit three hours. Open to philosophy majors, graduate students, and others with the consent of the instructor. Not given in 1953-54.]

[431. *SEVENTEENTH-CENTURY RATIONALISM*. Fall term. Credit three hours. Prerequisite, Philosophy 102, or 302, or consent of the instructor. Not given in 1953-54.]

434. *MOVEMENTS OF THOUGHT IN THE NINETEENTH CENTURY*. Spring term. Credit three hours. Open to juniors, seniors, and graduates. T Th S 11. Mr. SMART.

An attempt to trace, define, and clarify the interrelations of some of the leading ideas in nineteenth-century literature and art, science, and philosophy.

[481. *AESTHETICS: ADVANCED COURSE*. Spring term. Credit three hours. Mr. SMART. Not given in 1953-54.]

An intensive study of selected problems in the field.]

485. *PHILOSOPHY OF RELIGION: ADVANCED COURSE*. Credit three hours. Prerequisite, Philosophy 322, or consent of the instructor. T Th S 12.

An intensive study of selected problems in the field, with critical comparison of basic ideas in Judaism, Christianity, and Oriental religions.

SYMBOLIC LOGIC. (See Mathematics 382.)

575. *PLATO.* Fall term. Credit three hours. M 3-5. Mr. VLASTOS.

[576. *ARISTOTLE.* Spring term. Credit three hours. Mr. VLASTOS. Not given in 1953-54.]

580. *MODERN PHILOSOPHERS.* Spring term. Credit three hours. Th 2-4. Mr. BURTT.

Topic for 1954: Spinoza. An intensive examination of his *Ethics*, with a less detailed study of his other main writings.

[581-582. *SEMANTICS AND LOGIC.* Throughout the year. Credit three hours a term. T 4-6. Mr. BLACK. Not given in 1953-54.]

[584. *SEMINAR IN POLITICAL PHILOSOPHY.* Fall term. Credit three hours. Mr. VLASTOS. Not given in 1953-54.]

585-586. *ADVANCED ETHICS AND VALUE THEORY.* Throughout the year. Credit three hours each term. Open to graduates and seniors by consent of the instructor. W 3-5. Mr. BROWN.

[588. *METAPHYSICS.* Spring term. Credit three hours. Th 2-4. Mr. BURTT. Not given in 1953-54.]

[590. *SEMINAR IN GREEK PHILOSOPHY.* Credit three hours. Mr. VLASTOS. Not given in 1953-54.]

[592. *SEMINAR IN MODERN PHILOSOPHY.* Not given in 1953-54.]

[594. *SEMINAR IN PHILOSOPHICAL ANALYSIS.* Spring term. Credit three hours. Mr. MALCOLM. Not given in 1953-54.]

595. *SEMINAR IN SEMANTICS AND LOGIC.* Spring term. Credit three hours. Mr. BLACK.

600. *HONORS WORK IN PHILOSOPHY.* Spring term. Credit three hours. Pre-requisite, provisional acceptance as a candidate for Honors. Hours to be arranged.

For juniors and seniors. Study of selected texts and problems under the personal supervision of members of the Staff. Required of all students expecting to graduate with Honors in Philosophy.

039. *INFORMAL STUDY.* Members of the Department.

PHYSICS

Mr. L. P. SMITH, *Chairman*; Messrs. L. L. BARNES, H. A. BETHE, G. COCCONI, D. R. CORSON, (T. R. CUYKENDALL, Engineering Physics), J. W. DEWIRE, C. W. GARTLEIN, G. E. GRANTHAM, K. I. GREISEN, P. L. HARTMAN, J. A. KRUMHANS�, B. D. McDANIEL, F. L. MOORE, P. MORRISON, H. F. NEWHALL, L. G. PARRATT, (H. S. SACK, Engineering Physics), E. E. SALPETER, N. SCHWARTZ, (B. SIEGEL, Engineering Physics), A. SILVERMAN, G. C. SPRAGUE, R. L. SPROULL, D. H. TOMBOULIAN, R. R. WILSON, and W. M. WOODWARD.

For a major in Physics, the following courses must be completed: (1) in Physics, twenty-four hours of courses numbered above 116 (excluding courses 200 and 214), which shall include at least three hours of Physics 210 or its equivalent and nine hours selected from classroom credit in Physics 215-299; (2) in related subjects, Mathematics 201 and twelve hours in one of the following groups: (a) Chemistry, (b) Astronomy, (c) Biological Science (six hours of this must not be an introductory course), (d) Philosophy (History 165 and 166, or 911-912 may be substituted for six hours of Philosophy), (e) Geology (six hours of this must not be an introductory course).

Qualified students may register for informal study. Undergraduates should register for course 020; graduate students should register in course 350 or 990.

***103. GENERAL PHYSICS.** Fall term. Credit three hours. Demonstration lectures, M F 9 or 11. One laboratory period and one quiz section as arranged.

Courses 103-104 are not intended as preparatory for more advanced courses in Physics except Physics 200, although admission to other courses following Physics 103-104 can be obtained by special permission. It is recommended that students majoring in mathematics or in a physical science elect Physics 107-108 instead of Physics 103-104. Mr. MOORE and assistants.

***104. GENERAL PHYSICS.** Spring term. A continuation of Physics 103. Prerequisite, Physics 103 or entrance physics and consent of the instructor. Hours and staff as in Physics 103.

***107. INTRODUCTORY PHYSICS.** Fall term. Credit four hours. Demonstration lecture. W 11. Three recitations and one laboratory period a week, as arranged. Prerequisite, calculus or concurrent registration in Mathematics 161. Mr. MOORE, Mr. SCHWARTZ, and assistants.

Mechanics, heat, and sound. Primarily for students majoring in science.

***108. INTRODUCTORY PHYSICS.** Spring term. Credit four hours. A continuation of Physics 107. Prerequisite, Physics 107 or 103 and consent of the instructor, and calculus or concurrent registration in Mathematics 162. Hours and staff as in Physics 107.

Electricity, optics, and modern physics.

Note: Physics 115, 116, 117, and 118 form a sequence in a two-year continuous course in General Physics required of all students of engineering who are candidates for the degree of B.Ch.E., B.C.E., B.E.E., B.Eng.Phys., and B.M.E. Demonstrations, theory, experiments, and problem drill. One lecture, two recitations, and one laboratory period a week, as assigned. Consult instructor in charge for available recitation and laboratory periods other than the ones described below.

115. MECHANICS. Fall term. Credit three hours. Prerequisite, calculus or simultaneous registration in Mathematics 161. Entrance Physics is desirable but not required. Lecture, Th 9 or 11. Recitations, M F 9. Laboratory, M 2-4:30. Mr. GRANTHAM and assistants.

Kinetics, statics, elasticity, liquids, and mechanics of gases. The laboratory work consists of measurements related to the above topics.

116. HEAT, SOUND, AND GEOMETRICAL OPTICS. Spring term. Credit

three hours. Prerequisites, Physics 115, calculus, or simultaneous registration in Mathematics 162. Lecture, Th 9 or 11. Recitations, M F 9. Laboratory, M 2-4:30. Mr. GRANTHAM and assistants.

Temperature, calorimetry, change of state, heat transfer, thermal properties of matter, elementary thermodynamics, wave motion, vibrating bodies, acoustical phenomena, geometrical optics, reflection, refraction, mirrors, and lenses. The laboratory work consists of measurements related to the above topics.

117. *ELECTRICITY AND MAGNETISM*. Fall term. Credit three hours. Prerequisites, Physics 115, 116, calculus, or simultaneous registration in Mathematics 163. Lecture, T 8 or 11. Recitations, T Th 10. Laboratory, M 2-4:30. Mr. TOMBOULIAN, Mr. NEWHALL, and assistants.

Introductory study of the fundamental laws of electric and magnetic fields and their applications to elementary circuit problems. Electrostatic fields and potential; steady currents, induced emfs, inductance, dielectrics, capacitance, and simple transients. The laboratory work consists of basic measurements in direct current circuits.

118. *PHYSICAL OPTICS AND ATOMIC PHYSICS*. Spring term. Credit three hours. Prerequisite, Physics 117. Lecture, T 8 or 11. Recitations, T Th 10. Laboratory, M 2-4:30. Mr. TOMBOULIAN, Mr. NEWHALL, and assistants.

Properties of electromagnetic waves and their application to optical phenomena; interference, diffraction, and polarization. Selected topics in atomic and nuclear physics: spectra, electron emission, processes, radioactivity, and nuclear reactions. The laboratory work consists of basic experiments in physical electronics and physical optics.

200. *PHYSICS FOR STUDENTS OF BIOLOGY*. Either term. Credit three hours. Prerequisite, six semester hours of college work in each of the following: physics, chemistry, and biological science. Students having grades below 70 in Physics 103 and 104 are not encouraged to elect this course. Lectures, T Th 12. Laboratory, T or Th 2-4. Mr. BARNES. Will not be given in spring term, 1954.

Lectures, demonstrations, and laboratory experiments dealing with such topics in molecular physics, electricity and magnetism, electromagnetic radiation, and nuclear physics as are related to the study of biology.

203. *ADVANCED GENERAL PHYSICS*. Fall term. Credit three hours. Prerequisites, Physics 107 and 108, or consent of instructor, and Mathematics 162 (or in parallel). M W F 9. Mr. KRUMHANSL.

Mechanics, probability, wave motion, and sound.

204. *ADVANCED GENERAL PHYSICS*. Spring term. Credit three hours. Prerequisites, Physics 203 and Mathematics 163 (or in parallel). M W F 9. Mr. GREISEN.

Electricity, magnetism, optics, and atomic physics.

205. *ADVANCED GENERAL PHYSICS LABORATORY*. Fall term. Credit two hours. Prerequisite, Physics 203 (or concurrent registration). M W 1:40-4:30. Mr. KRUMHANSL.

Laboratory experiments in subject matter of Physics 203.

206. *ADVANCED GENERAL PHYSICS LABORATORY*. Spring term. Credit

two hours. Prerequisite, Physics 204 (or in parallel). M W 1:40-4:30. Mr. GREISEN.

Laboratory experiments on subject matter of Physics 204.

208. *PHYSICAL MECHANICS AND PROPERTIES OF MATTER*. Spring term. Credit three hours. Prerequisites, Physics 115 and Mathematics 161 and 162. Primarily for candidates for the degree of Bachelor of Engineering Physics. M W F 11. Mr. HARTMAN.

Elements of kinematics; Newton's law; conservation laws; D'Alembert's principle; application to selected problems; hydrostatics; elementary fluid dynamics; viscosity.

210. *ADVANCED LABORATORY*. Either term. Credit three hours a term. Prerequisites, Physics 205 and 206 or the equivalent. Laboratory, T W or Th F 1:40-4:30. Messrs. PARRATT, CORSON, CUYKENDALL, GREISEN, HARTMAN, SILVERMAN, SPROULL, and WOODWARD.

About forty 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 five to ten experiments, selected to meet his individual needs. Stress is laid on independent work on the part of the student. Required for physics majors.

214. *ATOM, NUCLEAR, AND ELECTRON PHYSICS*. Spring term. Credit three hours. Two lectures and one recitation. Prerequisites, Physics 118 and Mathematics 607 or the equivalents. Primarily for students in electrical engineering. Lectures M W 10 and one recitation hour to be arranged. Mr. SPROULL.

Elements of nuclear and atomic structure, fundamentals of quantum theory, basic kinetic theory of atoms and electrons; electronic processes with special reference to the electrical properties of metals, semiconductors, and insulators and general electron emission processes; elements of nuclear processes.

215. *PHYSICAL OPTICS*. Fall term. Credit three or five hours. Prerequisites, Physics 206 or the equivalent and calculus. Lectures, M W F 9. Laboratory, Th F 1:40-4:30; also T W 1:40-4:30 if a second section is warranted. Mr. HARTMAN.

Huygens and Fermat's principles with applications to geometrical optics, velocity of light, Fraunhofer and Fresnel diffraction, polarization of light, double refraction, optical activity, electromagnetic characteristics, dispersion, absorption, and reflection.

225. *ELECTRICITY AND MAGNETISM*. Fall term. Credit three hours. Prerequisite, Physics 117 or 204. Lectures, T Th S 9 or 11, and an optional problem period to be arranged. Mr. CORSON.

Electrostatic and electromagnetic fields, polarization of dielectrics and magnetic media, displacement current, plane electromagnetic waves, the Poynting vector.

236. *ELECTRICITY AND MAGNETISM*. Spring term. Credit three hours. Prerequisites, Physics 225 and differential equations. Lectures, M W F 11. Mr. COCCONI.

Circuit theory from the standpoint of electromagnetic fields. Validity and limitation of circuit concepts. Steady and alternating currents in circuits and networks, distributed parameters, introductory high-frequency topics, high-energy machines.

242. *ANALYTICAL MECHANICS*. Spring term. Credit three hours. Prerequisites, Physics 203 or 208 and Mathematics 201, or their equivalents. T Th S 9. Mr. WOODWARD.

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

243. *ATOMIC AND MOLECULAR PHYSICS*. Fall term. Credit three hours. Prerequisite, Physics 225, or consent of the instructor. M W F 10. Mr. DEWIRE.

The fundamental particles; statistical physics; the concepts of quantum mechanics; atomic structure and spectra; the periodic table; molecular structure and the chemical bond.

254. *ELECTRONIC PROPERTIES OF SOLIDS AND LIQUIDS*. Spring term. Credit three hours. Prerequisite, Physics 243. M W F 9. Mr. SACK.

Lattice structure; specific heat; lattice energy; elastic properties; electric conduction; thermoelectric effects; contact potential; barrier effect; lattice defects; dielectric; magnetic and optical properties.

258. *MECHANICS OF CONTINUA*. Spring term. Credit three hours. Prerequisite, partial differential equations or consent of the instructor. Hours to be arranged. Mr. SACK.

Equations of state for gases, liquids, solids. Stress-strain relations for continuous media and equations of motion. Special topics in statics of elastic media. Waves and oscillations in continuous media. Topics in flow, and nonlinear phenomena in gases and fluids.

020. *INFORMAL STUDY IN PHYSICS*. Either term. Credit one to three hours a term. Hours to be arranged. Reading or laboratory work in any branch of physics under the direction of a member of the staff. Permission of the staff member under whose direction the work is to be done must be obtained before registration.

350. *INFORMAL GRADUATE LABORATORY*. Either term. Credit one to three hours a term. T W or Th F 1:40-4:30. Associated with the Physics 380 Laboratory. Primarily for graduate students who do not have the prerequisites for Physics 380. Mr. PARRATT and STAFF.

380. *ADVANCED LABORATORY*. Either term. Credit three hours a term. Prerequisite, Physics 210 or the equivalent. Laboratory, T W or Th F 1:40-4:30. Messrs. PARRATT, CORSON, CUYKENDALL, GREISEN, HARTMAN, SILVERMAN, SPOULL, and WOODWARD.

About sixty 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 five to ten experiments, selected to meet his individual needs. Stress is laid on independent work on the part of the student. Two terms are ordinarily required for first-year graduate physics students.

390. *RESEARCH*. Either term. Credit three hours a term. Prerequisite, two terms of Physics 380 or the equivalent. Hours to be arranged. Practice in the techniques, methods, and interpretation of research. May be taken under the direction of any member of the staff or in association with the Physics 380 laboratory. Permission

of the staff member under whose direction the work is to be done must be obtained before registration.

475. *THEORETICAL MECHANICS*. Fall term. Credit three hours. Prerequisite, Physics 242 or its equivalent. T Th S 11. Mr. MORRISON.

476. *ELECTRODYNAMICS*. Spring term. Credit four hours. Prerequisite, Physics 225 or its equivalent. T Th S 11. Mr. MORRISON.

477. *STATISTICAL MECHANICS AND KINETIC THEORY*. Fall term. Credit three hours. Prerequisites, Physics 475 and (or in parallel) Physics 485. T Th S 9. Mr. MORRISON.

485. *INTRODUCTORY QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisites, Physics 475 and 476. T Th S 12. Mr. BETHE.

486. *APPLICATIONS OF QUANTUM MECHANICS*. Spring term. Credit three hours. Prerequisite, Physics 485. T Th S 12. Mr. BETHE.

491. *ADVANCED QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisite, Physics 486. Mr. SALPETER. Given upon sufficient demand.

[588. *X-RAYS*. Spring term. Credit three hours. Prerequisite, Physics 243 or its equivalent. M W F 11. Mr. PARRATT. Not offered in 1953-54.]

675. *SOLID STATE PHYSICS*. Fall term. Credit three hours. Prerequisites, intermediate atomic physics, electricity and mechanics, or consent of instructor. M W F 11. Mr. KRUMHANSL.

676. *ADVANCED SOLID STATE PHYSICS*. Spring term. Credit three hours. Prerequisites, Physics 475, 476, 485, 675 or consent of instructor. T Th S 9. Mr. KRUMHANSL.

775. *INTRODUCTORY NUCLEAR PHYSICS*. Fall term. Credit three hours. Prerequisite, Physics 243 or its equivalent. M W F 9. Mr. CORSON.

776. *NUCLEAR AND PARTICLE PHYSICS*. Spring term. Credit two hours. Prerequisites, Physics 485 and 775, or consent of the instructor. M F 11. Mr. WILSON.

782. *THEORY OF NUCLEI*. Spring term. Credit two hours. Prerequisites, Physics 485 and 775 or their equivalents. M F 9. Mr. SALPETER.

784. *COSMIC RAYS*. Spring term. Credit three hours. Prerequisite, consent of instructor. T Th S 9. Mr. COCCONI or Mr. GREISEN.

[786. *THEORY OF HIGH-ENERGY PHENOMENA*. Spring term. Credit two hours. Prerequisite, Physics 486 or the equivalent. M F 9. Not offered in 1953-54.]

990. *INFORMAL STUDY IN PHYSICS*. Either term. Credit one to three hours a term. Hours to be arranged. Special study in some branch of physics, either theoretical or experimental, under the direction of a member of the staff. Permission of the staff member under whose direction the work is to be done must be obtained before registration.

PSYCHOLOGY

Mr. T. A. RYAN, *Chairman*; Messrs. U. BRONFENBRENNER, R. DALTON, F. S. FREEMAN, J. J. GIBSON, J. E. HOCHBERG, W. W. LAMBERT, H. S. LIDDELL, R. B. MacLEOD, Mrs. P. C. SMITH, Mr. A. L. WINSOR.

For a major in Psychology, the following courses must be satisfactorily completed: (1) in Psychology, twenty-seven hours, including Psychology 101 and 112; at least three of the twenty-seven hours to be in a basic laboratory course (207, 216, 221) and at least three further hours to be in the general experimental field (207, 216, 221, 223, 224); (2) Statistics, ILR 210, or equivalent, and Physiology 303 or Human Development 201, or equivalent; (3) nine hours in a single related field approved by the major adviser. The following fields are recommended; Education, Mathematics, Physics, Philosophy, Sociology and Anthropology, Statistics, and Zoology.

Major students are advised to secure a broad background in the physical, the biological, and the social sciences and in philosophy.

Candidates for the degree of Bachelor of Arts with Honors in Psychology are required to take a series of two Honors seminars (Psychology 491 and 492) and a six-hour thesis course (Psychology 499) as part of their departmental requirements.

For the class of 1954 only, the seminar and course requirements will be reduced to one seminar (Psychology 492) and the thesis course (Psychology 499), both of which will be offered in the academic year 1953-54. Preregistration should occur in spring term, 1953, after acceptance of application, forms for which are obtainable in the Department office.

For the class of 1955, the seminar, Psychology 491, will be offered in the spring term, 1954. Preregistration should be made in the fall term, 1953, after acceptance of application.

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 two 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 for adequately prepared students. Under this program a student may obtain a major in either department. Prerequisites for the concentration include Sociology and Anthropology 101 and 103; Psychology 101 plus three further hours of psychology. Any student interested in the concentration should consult his major adviser as early as possible in his college career.

Culture and Personality (Sociology and Anthropology 412) will be credited toward the twenty-seven hours required for the major in Psychology.

ELEMENTARY COURSES

*101. *INTRODUCTION TO PSYCHOLOGY*. Either term. Credit three hours. Open to freshmen. Fall term: lectures, T Th 9; recitation, M 10, 2, Th 2, F 10, 12, S 10; lectures, T Th 11; recitation M 9, 12, F 12, 2, S 9 or 10; lectures, W F 10; recitation, M 10, 11, T 12, 3 or S 9 or 11; or lectures W F 11; recitation, M 9, 10, 11, T 12, 2, or S 11. Spring term: lectures W F 10; recitation M 9, 2, T 10, 11, S 10 or 11; or lectures M W 2; recitation Th 12, 2, F 12, 2, S 10 or 11.

An introduction to the scientific study of behavior and experience, covering such

topics as perception, motivation, emotion, learning, thinking, personality, and individual differences. This course is prerequisite to further work in the Department.

*102. *FIELDS OF PSYCHOLOGY*. Spring term. Credit three hours. Prerequisite, Psychology 101. T Th S 11. Mr. HOCHBERG.

A survey of methods, problems, and selected research findings in such fields as physiological, comparative, child, educational, abnormal, social, and applied psychology.

103. *EDUCATIONAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisite, Psychology 101, or 202, or Rural Education 10. M W F 11. Mr. FREEMAN.

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. 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. *PSYCHOLOGICAL BASIS OF SOCIAL BEHAVIOR*. Fall term. Credit three hours. Prerequisite, Psychology 101. M W F 12. Mr. GIBSON.

An introduction to the psychological study of social behavior, designed primarily for students who do not plan to do further work in social psychology.

*112. *MODERN PSYCHOLOGY IN HISTORICAL PERSPECTIVE*. Either term. Credit three hours. Prerequisite, Psychology 101. Fall term: M W F 12, Mr. HOCHBERG. Spring term: M W F 9, Mr. MacLEOD.

A systematic survey of present-day problems, methods, and points of view, considered in the perspective of their historical development. Required of all majors in psychology and recommended for students who propose to do advanced work in psychology.

202. *HUMAN STRUCTURE AND DEVELOPMENT*. Spring term. Credit three hours. Prerequisites, Zoology 201 or equivalent. T Th 10, recitations to be arranged. Mr. BRONFENBRENNER.

The aim of this course is to give the student an understanding of structure, function, and development of the growing human being as the result of interplay between biological, psychological, and social factors. Course material is drawn from the pertinent biological and social sciences. This forms the second half of a full year's course, the first half of which is listed as Zoology 201.

INTERMEDIATE COURSES

207. *EXPERIMENTAL PSYCHOLOGY: PERCEPTION*. Fall term. Credit three hours. Prerequisites, Psychology 101, elementary statistics, and three further hours of psychology, preferably Psychology 112. Lectures, M W 10. 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 correlations, of space, motion, objects, and events, and the relations of perceiving to everyday behaving and thinking.

216. *EXPERIMENTAL PSYCHOLOGY: LEARNING*. Fall term. Credit three hours. Prerequisites, Psychology 101, elementary statistics, and three further hours of psychology, preferably Psychology 112. Lectures, W F 9. Laboratory, T 2-4. Mr. ———.

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. *EXPERIMENTAL PSYCHOLOGY: MOTIVATION*. Spring term. Credit three hours. Prerequisites, Psychology 101, elementary statistics, and three further hours of psychology, preferably Psychology 112. Lectures, 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*. Fall term. Credit three hours. Prerequisites, Psychology 101 and three further hours of psychology, preferably Psychology 112, or consent of instructor. T Th S 10. Mr. ———.

Lectures and demonstrations on the physiological mechanisms of behavior with particular emphasis upon sensory processes, learning, and emotion.

224. *PSYCHOBIOLOGY*. Spring term. Credit three hours. Prerequisites, Psychology 101, Physiology 303 or equivalent, and three further hours of psychology, preferably Psychology 112. 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 problems of human behavior.

323. *SOCIAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, 6 hours of psychology and 6 hours of sociology and anthropology, or consent of instructor. M W F 12. Mr. LAMBERT.

A comprehensive analysis of the problems and theories of social psychology, including such topics as communication, language, propaganda, social attitudes and prejudice, roles, rivalry and competition, leadership and the psychology of groups.

This course constitutes the first half of a full-year course in social psychology, the second half of which is listed as Sociology and Anthropology 324.

331. *METHODS OF INDUSTRIAL SELECTION AND PLACEMENT*. Fall term. Credit three hours. Prerequisites, Psychology 101 and elementary statistics. M W F 9. Mrs. SMITH.

Techniques of developing and evaluating selection and placement procedures, including such topics as development of criteria of industrial performance, analysis of reliability, methods of item analysis, validation of interviews, tests, and personal history data. It is desirable, but not required, that Psychology 351 or Rural Education 255 be taken before this course.

332. *WORK, FATIGUE, AND EFFICIENCY*. Spring term. Credit three hours. Prerequisite, Psychology 101. M W F 11. Mr. RYAN.

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*. Spring term. Credit three hours. Prerequisites, Psychology 101 and elementary statistics. M W F 9. Mrs. SMITH.

Methods of measuring the effects of advertising on consumer opinion and behavior. Psychological marketing survey methods and typical results. General problems of consumer motivation. Offered in alternate years. Will be offered in 1953-54.

351. *PSYCHOLOGICAL TESTS: I*. Fall term. Credit three hours. Prerequisites, Psychology 101 or equivalent, and elementary statistics, or consent of instructor. T Th S 9. 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. Demonstrations in administering and interpreting individual scales.

352. *PSYCHOLOGICAL TESTS: II*. Spring term. Credit three hours. Prerequisite, Psychology 351 and consent of instructor. T Th S 9. Mr. FREEMAN.

Basic psychological principles in the construction and use of personality rating scales, personality inventories, projective techniques, and situational tests. Demonstrations.

375. *STATISTICAL METHODS IN PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, Psychology 101 and elementary statistics. 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.

ADVANCED COURSES

401. *EMOTION*. Spring term. Credit three hours. Prerequisite, nine hours of psychology. M W F 9. Mr. ———.

An analysis of the contemporary theories of emotion in light of current psychological and physiological research.

405. *MAIN CONCEPTS OF ABNORMAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisite, nine hours of psychology or consent of the instructor. T Th S 12. Mr. LIDDELL.

Examination of basic concepts from biology, psychology, and sociology currently employed in the analysis and interpretation of abnormal behavior.

[410. *INDIVIDUAL DIFFERENCES*. Spring term. Credit three hours. Prerequisite, Psychology 351. T Th 2-3:15. Mr. FREEMAN. Not offered in 1953-54.]

411. *PROCEDURES IN CLINICAL CHILD PSYCHOLOGY*. Spring term. Credit three hours. Prerequisite, Psychology 351 and consent of instructor. Primarily for seniors and graduate students. M 4-6, and conferences to be arranged. Mr. FREEMAN.

Procedures and instruments used with clinical cases involving problems of learning and of behavioral adjustment.

CULTURE AND PERSONALITY. (See Sociology and Anthropology 412.)

422. *COMPARATIVE PSYCHOLOGY.* Spring term. Credit three hours. Prerequisite, six hours of psychology and consent of instructor. Lectures, M W 10. Laboratory, F 2-4. Mr. MONTGOMERY.

A survey of animal psychology. Representative topics: innate behavior, motivation, learning, social behavior, and abnormal behavior.

426. *EXPERIMENTAL PSYCHOPATHOLOGY.* Spring term. Credit three hours. Prerequisites, Psychology 101, and nine further hours of psychology, preferably including Psychology 405, and consent of instructor. Lectures W 2-4:30, Th 2; laboratory hours 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.* Fall term. Credit three hours. Prerequisites, Psychology 101 and three additional hours in psychology, preferably 112. M W F 2. 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. The course is designed for students of philosophy, language, and literature as well as for students of psychology.

[455. *ADVANCED INDUSTRIAL PSYCHOLOGY.* Fall term. Credit two hours. Prerequisites, Psychology 331 and 332. Primarily for majors planning to work in industry. W F 12. Mrs. SMITH.

Interviewing methods, morale surveys, job analysis, selection of supervisory and executive personnel, employee counseling, training techniques for workers, supervisors, and executives, record keeping and analysis. Not offered in 1953-54.]

456. *RESEARCH METHODS IN INDUSTRIAL PSYCHOLOGY.* Spring term. Credit three hours. Prerequisites, Psychology 331, 332, and consent of instructor. M 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, analysis of reliability and validity of test and interview methods, studies of morale, learning, methods, fatigue, and job analysis programs.

476. *TECHNIQUE OF EXPERIMENTATION.* Spring term. Credit three hours. Prerequisite, senior standing and consent of instructor. T 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.

485. *CONTEMPORARY PSYCHOLOGICAL THEORY.* Fall term. Credit three hours. Prerequisites, Psychology 101, 112, and at least three further hours of psychology. Open to all qualified students and strongly recommended as a senior

course for those who plan to do graduate work in psychology. M W F 11. Mr. HOCHBERG.

A survey of the main theoretical trends—behavioristic, Gestaltist, Freudian, etc.—in contemporary psychology, with a detailed examination of representative problems as they are approached from these different points of view. Together with Psychology 112 this course provides an orientation in the history of psychology and systematic psychology.

050. *INFORMAL STUDY*. Either term. Credit one, two, or three hours. The STAFF.

SEMINARS FOR HONORS CANDIDATES

491. *HONORS SEMINAR*. Spring term. Credit three hours. Time to be arranged.

492. *HONORS SEMINAR*. Fall term. Credit three hours. Time to be arranged.

499. *HONORS THESIS*. Spring term. Credit six hours. Time to be arranged, with Staff members directing the thesis.

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.

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.

543. *CLINICAL METHODS: PRACTICE IN PSYCHOLOGICAL TESTING*. Either term. Credit three hours. All students must have consent of the instructor.

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. LAURISTON SHARP, *Chairman*; Messrs. M. L. BARRON, P. M. BLAU, L. S. COTTRELL, JR., J. P. DEAN, A. R. HOLMBERG, N. KAPLAN, W. W. LAMBERT, A. H. LEIGHTON, M. E. OPLER, R. N. RAPOPORT, M. ROSENBERG, B. F. RYAN, G. F. STREIB, E. A. SUCHMAN, A. J. VIDICH, R. M. WILLIAMS, JR.

For a major in Sociology and Anthropology, the following courses must be completed: (1) twenty-four hours in Sociology and Anthropology in addition to Sociology and Anthropology 101 or 103; (2) twenty-one hours in related subjects to be chosen with the approval of the adviser. All students majoring in this department must satisfactorily complete Industrial and Labor Relations 210 (Statistics).

Students intending to pursue advanced work in Sociology and Anthropology, or desiring information concerning particular sequences of courses leading to graduate study or to careers within these fields, should consult a special bulletin issued by the Department.

In cooperation with the Department of Psychology, a concentration in Social Psychology is available for adequately prepared students. Under this program a student may obtain a major in either department. Prerequisites for the concentration include Sociology and Anthropology 101 and 103; Psychology 101 and 102. Students interested in the concentration should consult their major adviser as early as possible in their college career.

Informal study under a specific Faculty member will be offered to a limited number of upperclass majors only. The purpose of such study is to permit a student to secure specialized instruction not covered by existing courses.

Candidates for the degree of Bachelor of Arts with Honors in Sociology and Anthropology are required to take a series of three Honors seminars as part of their departmental requirements.

Honors candidates from the class of 1954 may preregister with Mr. Lambert for Sociology and Anthropology 403-404, which will be offered in the academic year 1953-54. Sociology and Anthropology 402 will be offered in the spring term, 1954, for Honors candidates who are juniors at that time. Preregistration should occur in the fall term with consent of Mr. Lambert, of the Honors committee.

Honors candidates must have a general average of at least 80, and a departmental average of 85, for entrance into the program. A student's eligibility for candidacy in the Honors program will be determined early in the first semester of the junior year. Students may apply for eligibility by filling out the form obtainable in the departmental office. Honors candidates will prepare and defend a thesis and will take a general comprehensive examination at the end of the senior year.

GENERAL COURSES

***101. INTRODUCTION TO THE STUDY OF SOCIETY.** Either term. Credit three hours. Open to all students although primarily intended for freshmen. May not be taken for credit by those who have credit for Rural Sociology 1. M W F 8, 9, 10, 12, or 2; T Th S 10, 11. Evening preliminary examinations. Mr. STREIB and STAFF.

An introduction to the study of societies as interrelated systems; selected major problems of contemporary American society as seen in the context of our own social system; social factors in personality formation.

*103. *MAN AND CULTURE: AN INTRODUCTION TO ANTHROPOLOGY*. Fall term. Credit three hours. Open to freshmen and sophomores, upperclassmen admitted only by permission of the instructor. M W F 9. Mr. SHARP.

A broad survey of the field of anthropology. Major emphasis on social anthropology. Topics include organization of cultural systems, culture change, and problems of cultural integration.

*104. *CONTEMPORARY SOCIAL PROBLEMS*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or 103, or consent of the instructor. Open to freshmen. T Th S 11. Mr. BARRON.

Major social problems of modern urban society viewed in terms of the factors underlying social disorganization and individual maladjustment.

010 to 090. *INFORMAL STUDY*. Throughout the year. Credit and hours to be arranged. See statement above. Members of the Department STAFF.

RESEARCH METHODS AND THEORY

201-202. *METHODS OF RESEARCH IN THE BEHAVIORAL SCIENCES*. Throughout the year. Credit three hours a term. First term prerequisite to the second. Open to upperclass majors and graduate students. T Th 10 and a two-hour laboratory period to be arranged. Mr. DEAN and STAFF.

Basic scientific methods used in current research upon human behavior. Course will include survey method, unstructured interviewing, participant field observation, content analysis, controlled and semicontrolled experiments and the analysis of documents. Lectures, demonstrations, case materials, laboratory and field sessions.

231. *SOCIAL THEORY AS APPLIED TO RESEARCH*. Fall term. Credit three hours. Open to upperclassmen and graduate students. M W F 12. Mr. BLAU.

The role of theory in empirical research and the significance of empirical data for the development of systematic theory. The level of abstraction and systematization, the scope, precision, and predictability of scientific propositions. Critical evaluation of the theoretical framework and research methods employed in a variety of sociological studies.

242. *FUNCTIONAL ANALYSIS OF SOCIAL STRUCTURES*. Spring term. Credit three hours. Open to upperclassmen and graduate students. T Th S 10. Mr. BLAU.

The principles of functional analysis and their application to quantitative as well as qualitative social research. The development of a system of interrelated concepts of social structure and function in sociology and anthropology. Case studies in functional analysis of social structures, including the examination of economic, religious and political institutions, formal and informal organization, socially patterned emotions, deviancy, and social change.

273. *SEMINAR IN RESEARCH METHODS: ANTHROPOLOGICAL RESEARCH*. Fall term. Credit two hours. Open to upperclass majors and graduate

students. Prerequisite, consent of instructor. Hours to be arranged. Mr. HOLMBERG.

The collection and analysis of anthropological data.

275-276. *SEMINAR IN RESEARCH METHODS: UNSTRUCTURED INTERVIEWING*. 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 term. Hours to be arranged. Messrs. DEAN, BRONFENBRENNER, and WHYTE.

Training and instruction will be given in the problems involved in collecting data in the field by means of unstructured interviewing techniques.

277-278. *SEMINAR IN RESEARCH METHODS: ANALYSIS OF SURVEY DATA*. 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. Hours to be arranged. Mr. DEAN.

For students who want training and experience in analyzing questionnaire data collected by the department's field research project.

279. *SEMINAR IN RESEARCH METHODS: MEASUREMENT IN THE SOCIAL SCIENCES*. Fall term. Credit two hours. Prerequisite, consent of instructor. W 4-6. Mr. McCREARY.

Metrical systems; latent structure analysis; discriminant analysis; statistical analysis of illness records.

875. *THEORY OF CULTURE AND SOCIAL ORGANIZATION*. Fall term. Credit three hours. Open to seniors and graduate students with the consent of the instructor. T Th S 11. Mr. ———.

Analysis of convergence in modern sociological thought. Includes consideration of sociological elements of major recent theories in related fields. The works of a number of the more important modern social scientists will be analyzed in developing a consistent theoretical framework.

SOCIAL RELATIONS

303. *STRUCTURE AND FUNCTION OF BUREAUCRATIC ORGANIZATIONS*. Fall term. Credit three hours. No prerequisites. Not open to freshmen. T Th S 11. Mr. BLAU.

The twofold objective of this course is to familiarize the student with administrative behavior and with sociological methods of analyzing administrative organizations. Bureaucratic development in different types of organizations, such as corporations, factories, and unions as well as government agencies, will be examined. The implications of bureaucratic structure for the members of an organization, for the public it deals with, and for the democratic society in which it prevails will be discussed.

[304. *THE ANALYSIS OF SMALL GROUPS*. Spring term. Credit three hours. Prerequisite, one course in Sociology and Anthropology. T Th S 11. Mr. BLAU. Not offered in 1953-54.]

310. *THE FAMILY*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or 103, or consent of instructor. Not open to freshmen. M W F 9. Mr. STREIB.

Analysis of the family as a social institution in terms of its structure, major functions, and relations to other institutions. The family in various cultures. The family and social change.

311. *PUBLIC OPINION*. Fall term. Credit three hours. No prerequisites. Not open to freshmen. M W F 11. Mr. ROSENBERG.

The nature and control of public opinion, including opinion formation and change propaganda, pressure groups, mass movements, and media of communication. A study of the methods and techniques of public opinion and attitude analysis.

312. *MASS COMMUNICATION MEDIA*. Spring term. Credit three hours. No prerequisites. Not open to freshmen. M W F 11. Mr. ROSENBERG.

This course deals with the nature of the mass media of communication—news-papers, radio, movies, magazines, books, and comics—and their effects upon public opinions and attitudes. It will analyze the structure and control, audience, content, effects, and social functions of the mass media.

[314. *COLLECTIVE BEHAVIOR AND SOCIAL MOVEMENTS*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or consent of instructor. Not open to freshmen. Mr. STREIB. Not offered in 1953-54.]

320. *POLITICAL SOCIOLOGY*. Fall term. Credit three hours. Prerequisites, Sociology and Anthropology 101 or 103, or consent of the instructor. Not open to freshmen. T Th S 10. Mr. ROSENBERG.

This course deals with the study of political institutions as sociological phenomena. Politics as a democratic and functional instrument will be examined. The relation between power and politics, as well as forms of political power, will be analyzed. Sources of political apathy and bureaucracy as an organizational phenomenon will be discussed.

324. *SOCIAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisites, six hours in Psychology and six hours in Sociology and Anthropology, Psychology 323, or consent of instructor. M W F 12. Messrs. LAMBERT and BLAU.

A comprehensive analysis of the problems and theories of social psychology, including such topics as communication, language, propaganda, social attitudes and prejudice, roles, rivalry and competition, leadership and the psychology of groups.

HUMAN RELATIONS. (See Industrial and Labor Relations 220.)

HUMAN RELATIONS IN INDUSTRY. (See Industrial and Labor Relations 320.)

375. *SEMINAR: SOCIAL PSYCHOLOGY*. Spring term. Credit two hours. Prerequisite, Sociology and Anthropology 324 and consent of instructor. Hours to be arranged. Messrs. COTTRELL and LAMBERT.

[376. *SEMINAR: PROPAGANDA*. Spring term. Credit two hours. Mr. SUCHMAN. Not offered in 1953-54.]

[385. *SEMINAR: GROUP RELATIONS*. Spring term. Credit two hours. Prerequisite, consent of instructor. Mr. WILLIAMS. Not offered in 1953-54.]

AMERICAN SOCIETY

431. *STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—I*.

Fall term. Credit three hours. Not open to freshmen. T Th S 9. Mr. WILLIAMS. Institutional structure and social organization of the United States.

432. *STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—II*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 431 or consent of instructor. Not open to freshmen. T Th S 9. Mr. WILLIAMS.

Analysis of the functional interrelations of groups and institutions in American society.

433. *SOCIAL STRATIFICATION*. Spring term. Credit three hours. Open to upperclassmen and graduate students. M W F 9. Mr. ROSENBERG.

An analysis of theory and research in social stratification, dealing with the bases of hierarchical ranking in American society. The nature of class, caste, status, and power will be discussed.

[435. *AMERICAN COMMUNITIES*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or 103 or consent of instructor. Mr. STREIB. Not offered in 1953-54.]

[477. *SEMINAR: THE URBAN COMMUNITY*. Spring term. Credit two hours a term. Prerequisite, consent of the instructor. Mr. DEAN. Not offered in 1953-54.]

SOCIAL PROBLEMS AND PLANNING

[510. *POPULATION PROBLEMS*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or 103, or consent of instructor. Mr. BARRON. Not offered in 1953-54.]

520. *PROBLEMS IN MINORITY GROUP RELATIONS*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or 103, or consent of instructor. Not open to freshmen. T Th S 10. Mr. BARRON.

The old-world background of American minorities and patterns of immigration; critical analysis of minorities' contributions to American culture. Relations of ethnic institutions and American legislation to adjustment and assimilation. Problems of second-generation Americans.

[530. *DELINQUENCY AND CRIME*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or 103, or consent of instructor. T Th S 10. Not offered in 1953-54.]

[550. *SOCIAL PLANNING*. Spring term. Credit three hours. Open to upperclassmen and graduate students. Not offered in 1953-54.]

[585. *SEMINAR: PROBLEMS OF OLD AGE*. Fall term. Credit two hours. Prerequisite, consent of instructor. Mr. BARRON. Not offered in 1953-54.]

CULTURAL ANTHROPOLOGY

411. *CULTURAL ANTHROPOLOGY*. Fall term. Credit three hours. Open to upperclassmen and graduate students. M W F 12. Mr. SHARP.

Problems in the comparative study of cultures; the component parts of culture and their interrelations; analysis of processes involved in the impact of cultures on each other and in change.

412. *CULTURE AND PERSONALITY*. Spring term. Credit three hours. Prerequisites, three hours in Psychology and three hours in Sociology and Anthropology or consent of instructor. M W F 11. Messrs. HOLMBERG, LAMBERT, and BRONFENBRENNER.

A study of facts and theories of personality development in our own and other cultures, approached from the perspectives of psychology and of comparative cultural anthropology.

603. *NATIVE CULTURES OF THE NEW WORLD: NORTH AMERICA*. Fall term. Credit three hours. M W F 2. Mr. SMITH.

A survey of the culture areas from the Eskimo to Mexico. Topics include the peopling of North America, linguistic classification, cultural development, functional and historical analyses of selected groups.

604. *NATIVE CULTURES OF THE NEW WORLD: MIDDLE AND SOUTH AMERICA*. Spring term. Credit three hours. M W F 9. Mr. HOLMBERG.

A survey of the culture areas from Yucatan to Tierra del Fuego. Topics include the peopling of South America, linguistic classification, archaeology, functional and historical analyses of selected groups.

605. *NATIVE CULTURES OF THE PACIFIC*. Spring term. Credit two hours. Th 4-6. Mr. VIDICH.

A study of representative cultures in Oceania (Australia, Melanesia, Micronesia, and Polynesia). Topics include prehistory; distribution of culture types; current problems of native administration, modernization, and trusteeship.

609. *THE DEVELOPMENT OF CULTURE: AN INTRODUCTION TO ARCHAEOLOGY*. Spring term. Credit two hours. Open to majors and graduate students. T Th S 9. Mr. SMITH.

A review of prehistoric culture sequences in several world areas. Analysis and appraisal of archaeological methods of culture study.

620. *COMPARATIVE SOCIAL AND POLITICAL ORGANIZATION*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 411 or 431. M W F 12. Mr. SHARP.

The varied organization of human relations in selected cultures, both simple and complex; case studies of territorial, familial, clique, club, class, caste, and other bases of association and interaction; the definition and evaluation by comparison and contrast of democratic and other forms of group initiative and control.

[622. *COMPARATIVE RELIGIOUS SYSTEMS OF NON-WESTERN PEOPLES*. Fall term. Credit three hours. Mr. OPLER. Not offered in 1953-54.]

[624. *COMPARATIVE ECONOMIC SYSTEMS OF NON-WESTERN PEOPLES*. Fall term. Credit three hours. Mr. HOLMBERG. Not offered in 1953-54.]

628. *TECHNOLOGY AND CULTURAL CHANGE*. Fall term. Credit three hours. M W F 10. Mr. HOLMBERG.

An analysis of the role of technology in maintaining stability or stimulating change in nonindustrialized cultures; the relevance of various theories of cultural change to the planning and execution of technical programs.

[SEMINAR: *LANGUAGE AND CULTURE*. (See Linguistics 290.) Not offered in 1953-54.]

[675. *SEMINAR: ANTHROPOLOGICAL THEORY*. Spring term. Credit two hours. Mr. OPLER. Not offered in 1953-54.]

677. *SEMINAR: CULTURE AND CULTURE CHANGE IN NORTHEAST AMERICA*. Spring term. Credit two hours. Prerequisite, consent of instructor. Hours to be arranged. Mr. LEIGHTON.

681. *SEMINAR: CULTURE AND CULTURE CHANGE IN MIDDLE AND SOUTH AMERICA*. Spring term. Credit two hours. Hours to be arranged. Mr. HOLMBERG.

683. *SEMINAR: CULTURE AND CULTURE CHANGE IN INDIA*. Fall term. Credit two hours. T 4-6. Mr. ———.

684. *SEMINAR: CULTURE AND CULTURE CHANGE IN CEYLON*. Fall term. Credit two hours. Hours to be arranged. Mr. RYAN.

The historical backgrounds of Ceylon's peoples; cultural regions; contemporary institutions. Emphasis will be placed upon the impact of Western ideologies and techniques upon traditional institutions and upon the island's demographic position.

685. *SEMINAR: CULTURE AND CULTURE CHANGE IN SOUTHEAST ASIA*. Spring term. Credit two hours. Th 4-6. Mr. SHARP.

686. *SEMINAR: CULTURE AND CULTURE CHANGE IN JAPAN*. Spring term. Credit two hours. Hours to be arranged. Mr. SMITH.

Survey of social change from feudal to contemporary times; domestic trends and problems for the future; critical review of Japanese "national character" studies.

687. *SEMINAR: REGIONAL ANTHROPOLOGY*. Throughout the year. Credit and hours to be arranged. Far East: Messrs. LEIGHTON and SHARP; Middle East: Mr. SHARP; North America: Mr. LEIGHTON; Middle and South America: Mr. HOLMBERG; Oceania: Mr. SHARP; Africa: Messrs. HOLMBERG and SHARP.

For advanced students who wish to acquire special competence in the anthropology of a recognized culture area or principal region of the world.

689. *SEMINAR: SPECIAL PROBLEMS IN ANTHROPOLOGY*. Throughout the year. Credit to be arranged. STAFF.

For students who require thesis supervision or guidance in the study of special anthropological problems or who are doing intensive reading in special fields of anthropology such as archaeology. Consult appropriate staff members.

690. *SEMINAR: CASE STUDIES IN APPLIED ANTHROPOLOGY*. Spring term. Credit two hours. Prerequisite, consent of instructor. M 7:30-9:30 p.m. Evening preliminary examinations. Mr. LEIGHTON and STAFF.

Designed for students in engineering, agriculture, nutrition, and the social sciences who are concerned with the modernization of underdeveloped regions of the world. Analysis of selected cases relating to human problems resulting from technological or other cultural change.

693-694. *SEMINAR: FIELD RESEARCH IN SOUTHEAST ASIA*. Throughout the year. Credit and hours to be arranged. Prerequisite, consent of instructor. Mr. HANKS.

A research seminar conducted in the area for a limited number of advanced students in anthropology or Southeast Asian studies.

695-696. *SEMINAR: CONTEMPORARY INDIA*. Throughout the year. Credit two hours a term. Prerequisite, consent of instructor. F 4-6. Mr. ———.

697-698. *SEMINAR: FIELD RESEARCH IN INDIA*. Throughout the year. Credit and hours to be arranged. Prerequisite, consent of instructor. Mr. OPLER.

A research seminar conducted in India for a limited number of advanced students in anthropology.

SEMINARS FOR HONORS STUDENTS

402. *HONORS SEMINAR*. Spring term. Credit three hours. Prerequisite, acceptance as candidate for Honors. M 2-4. Mr. LAMBERT and STAFF.

403. *HONORS SEMINAR*. Fall term. Credit three hours. Prerequisite, acceptance as candidate for Honors. M 2-4. Mr. LAMBERT and STAFF.

404. *HONORS SEMINAR*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 403. T 2-4. Mr. LAMBERT and STAFF.

SPEECH AND DRAMA

Mr. H. D. ALBRIGHT, *Chairman*; Messrs. R. W. ALBRIGHT, C. C. ARNOLD, HARRY CAPLAN, G. P. CREPEAU, G. A. McCALMON, S. J. SAVE-REID, W. H. STANTON, C. K. THOMAS, H. A. WICHELS.

Students may elect a general major, or a major with emphasis on (1) Rhetoric and Public Speaking, (2) Phonetics and Speech Training, (3) Dramatic Production. The following courses must be completed: (1) in the Department, twenty-one hours, including nine hours from Courses 101, 111 (or 141), 202, 333; (2) in related subjects, six hours (not taken to meet distribution 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 thirty-nine hours in the major and related subjects, twenty-four must be in other than introductory courses.

Students registered jointly in Arts and Sciences and in Law or Business and Public Administration must complete the following courses: (1) in the Department, eighteen hours, including six hours from Courses 101, 111 (or 141), 202, 333; (2) in related subjects, twelve hours.

Juniors and seniors majoring in the Department may, with the consent of the adviser, take informal study (in Public Speaking, 020; in Speech Training, 030; in Dramatic Production, 040).

Students planning to teach Speech should satisfy the basic requirements for teachers of English. For those preparing to teach English, the Department recommends fifteen to eighteen hours in Speech and Drama including Courses 101, 111 (or 141), 333, 401.

INTRODUCTORY COURSES

101. *PUBLIC SPEAKING*. Either term. Credit three hours. Not open to freshmen or to students who have taken Speech and Drama 103 or 105. M W F 8,

9, 10, 11, 12, or 2; T Th S 8, 9, 10, or 11. Messrs. ARNOLD, SAVEREID, WICHELS, and assistants.

This course is designed to help the student express his convictions clearly and effectively in oral discourse. Study of basic principles of expository and persuasive speaking with emphasis on selection, evaluation, and organization of materials, and on simplicity and directness of style and delivery. Practice in preparation and delivery of speeches on current issues, in reading aloud, and in chairmanship; study of examples; conferences.

Foreign students and others whose pronunciation of English falls below the normal standard, and students with special vocal problems, are advised to confer with Mr. THOMAS or Mr. R. W. ALBRIGHT before registering.

111. *ORAL INTERPRETATION OF LITERATURE*. Spring term. Credit three hours. Not open to freshmen or to students who have taken Speech and Drama 141. M W F 12. Mr. ———.

Study, for understanding and appreciation, of poetry and prose selected from the best English and American writers; practice in reading aloud; conferences; drill.

*131. *VOICE TRAINING*. Spring term. Credit two hours. Open to freshmen. Consult the instructor before registering. T Th 12. Mr. R. W. ALBRIGHT.

An elementary course for the improvement of the speaking voice. Individual and group practice in the overcoming of such faults as nasality, weak quality, and indistinctness. Attention to the principles of voice production. Students with special vocal problems are advised to take this course before Course 101.

*133. *TRAINING FOR STUTTERERS*. Fall term. Credit two hours. Open to freshmen. Hours to be arranged. Mr. R. W. ALBRIGHT.

The nature of the problem; remedial treatment; conferences.

141. *DRAMATIC INTERPRETATION*. Fall term. Credit three hours. Not open to freshmen or to students who have taken Speech and Drama 111. Prerequisite, consent of the instructor. T Th S 10. Mr. H. D. ALBRIGHT.

Analysis and interpretative reading of various types of dramatic prose and poetry; principles of stage presentation; reports, individual exercises, and group rehearsal.

[175. *ART OF THE THEATRE*. Not offered in 1953-54.]

PUBLIC SPEAKING: ORAL READING

202. *ADVANCED PUBLIC SPEAKING*. Spring term. Credit three hours. Prerequisite, Speech and Drama 101 or 105. M W F 12 or T Th S 10. Mr. WICHELS and Mr. ———.

Study of speech composition with special attention to interest, persuasion, and style. Practice in composing and delivering speeches for various occasions; critical study of examples; conferences.

205. *DISCUSSION*. Either term. Credit three hours. Not open to freshmen or to students who have taken Speech and Drama 103. Fall term, M W F 9, Mr. SAVEREID. Spring term, M W F 9 or T Th S 9, Mr. ARNOLD and Mr. SAVEREID.

Study of the principles of systematic investigation and reflective thinking as applied to discussion. Practice in discussion of current problems by use of such forms as: round-table, panel, dialogue, case conference, committee, parliamentary, and lecture-forum.

[209. *ORAL INTERPRETATION OF LITERATURE*. Not offered in 1953-54.]

213. *ARGUMENT*. Either term. Credit three hours. Prerequisite, Speech and Drama 101 or consent of the instructor. Fall term, M W F 10. Spring term, T Th S 10. Mr. WICHELS.

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 10. Mr. WICHELS.

Advanced study of principles, types, and standards of reasoning on public questions. Practice in forensic and parliamentary debate and in cross-examination.

[221. *FORMS OF PUBLIC ADDRESS*. Not offered in 1953-54.]

[227. *ORATORY AS A LITERARY FORM*. Not offered in 1953-54.]

241. *PUBLIC OPINION AND THE METHOD OF ARGUMENT*. Spring term. Credit three hours. Not open to freshmen. T Th S 11. Mr. ARNOLD.

Critical study of the methods of persuasion exemplified in the discussion of contemporary issues. Lectures, readings, and reports on the theory of persuasion, the available grounds for argument and appeal in modern society, and the patterns of argument exemplified in current debates; some practice in speech writing.

275-276. *HISTORY OF PUBLIC ADDRESS*. Throughout the year. Credit three hours a term. Primarily for graduates; open only by consent of the instructor. T 2-4:30. Mr. WICHELS.

[281-282. *BRITISH ORATORS*. Not offered in 1953-54.]

[287-288. *THEORIES OF PUBLIC ADDRESS*. Not offered in 1953-54.]

290. *THESES AND SPECIAL PROBLEMS IN PUBLIC ADDRESS*. Either term. Credit three hours. Hours to be arranged. Mr. WICHELS and Mr. ARNOLD.

Open to graduate candidates working on theses and to other graduates prepared for independent study of special topics in rhetoric and public speaking.

[291-292. *RHETORICAL CRITICISM*. Not offered in 1953-54.]

The Department calls attention to three prizes in Public Speaking, competition for which will be open in the spring term: The Woodford Prize, for seniors; the Class of 1894 Memorial Prize in Debate, for juniors and seniors; and the Class of 1886 Memorial Prize in Public Speaking for sophomores and juniors.

SPEECH TRAINING AND PHONETICS

333. *ENGLISH PHONETICS*. Fall term. Credit three hours. Not open to freshmen. M W F 12. Mr. THOMAS.

Principles of phonetics; study of English pronunciation, based chiefly on contemporary American usage; practice in phonetic analysis, and, where necessary, drill for the improvement of individual speech.

[334. *PRINCIPLES OF PHONETICS*. Not offered in 1953-54.]

336. *REGIONAL AND HISTORICAL PHONETICS*. Spring term. Credit three hours. Prerequisite, Speech and Drama 333. M W F 12. Mr. THOMAS.

The major varieties of American pronunciation and their development.

337. *HISTORICAL PHONETICS*. Fall term. Credit three hours. Prerequisite, Speech and Drama 336. For graduates. Hours to be arranged. Mr. THOMAS.

The development of present-day American pronunciation from Early Modern English.

351-352. *PRINCIPLES OF SPEECH CORRECTION*. Throughout the year. Credit three hours a term. T Th S 9. Mr. R. W. ALBRIGHT.

Study of principles and methods, correlated with supervised practice in the Speech Clinic.

353-354. *PRINCIPLES OF SPEECH CORRECTION*. Throughout the year. Credit three hours a term. Prerequisite, Speech and Drama 352. Primarily for graduates. Hours to be arranged. Mr. THOMAS.

381-382. *SPEECH TRAINING*. Throughout the year. Credit three hours a term. For graduates. Hours to be arranged. Mr. THOMAS.

390. *THESES AND SPECIAL PROBLEMS IN SPEECH TRAINING AND PHONETICS*. Either term. Credit three hours. Hours to be arranged. Mr. THOMAS and Mr. R. W. ALBRIGHT.

Open to graduate candidates working on theses and to other graduates prepared for independent study of special topics in speech training and phonetics.

SPEECH CLINIC. For students working under the direction of the Department. Consult Mr. THOMAS or Mr. R. W. ALBRIGHT.

DRAMATIC PRODUCTION

401. *DRAMATIC PRODUCTION: DIRECTION*. Fall term. Credit three hours. For upperclassmen and graduates. M W F 11. Mr. STANTON.

Theory of stage direction; fundamentals of theatrical mounting; survey of practical phases of production. Lectures, exercises, and reports. Prerequisite for further work in dramatic production.

405. *ADVANCED DRAMATIC PRODUCTION: DIRECTION*. Fall term. Credit three hours. Open to upperclassmen by consent of the instructor. Th 2-4 and an hour to be arranged. Mr. STANTON.

Readings, reports, and exercises in the direction and production of plays.

421. *ADVANCED DRAMATIC INTERPRETATION*. Spring term. Credit three hours. For graduates and, by consent of the instructor, for upperclassmen majoring in the Department. W 2-4:30. Mr. H. D. ALBRIGHT.

Varied projects in acting and group rehearsal, leading to public presentations by the Laboratory Players; individual drills, pantomimes, and reading exercises.

431. *DRAMATIC PRODUCTION: STAGECRAFT*. Fall term. Credit three

hours. Open to upperclassmen by consent of the instructor. T Th 12. Laboratory, T 2-4:30. Mr. CREPEAU.

The theory and practice of stage production; planning of small theatres; stage arrangement; problems and practice in design, scene construction, and elements of lighting. Lectures, demonstrations, reports.

433-434. *THEATRE PRACTICE*. Throughout the year; may be entered either term. Credit two hours a term. Open by consent of the instructor to upperclassmen who have taken or who are taking Speech and Drama 141 or 401. Hours to be arranged. Mr. CREPEAU, Mr. McCALMON, and the STAFF of the University Theatre.

Projects in the productions of the University Theatre.

437. *DRAMATIC PRODUCTION: STAGE LIGHTING*. Spring term. Credit three hours. M W 11. Laboratory, T 2-4:30. Mr. STANTON.

Light and color applied to theatrical production. Lectures, laboratory exercises, and reports.

439-440. *THEATRE PRACTICE*. Throughout the year; may be entered either term. For graduates. Hours and credits as arranged. Mr. CREPEAU, Mr. McCALMON, and STAFF.

451. *HISTORY OF THE THEATRE*. Fall term. Credit three hours. Open to upperclassmen. M W F 10. Mr. McCALMON.

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. McCALMON.

A study of the American theatre and of the principal American plays, with emphasis on the drama as an experience of the national life and culture.

461-462. *PLAYWRITING*. Throughout the year. First term is prerequisite to the second. Credit three hours a term. F 2-4:30. Mr. McCALMON.

Dramatic theory and practice; four one-act plays will be written each term.

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. H. D. ALBRIGHT.

The chief theories of dramatic production in relation to aesthetic principles.

480. *THE MOTION PICTURE: A SURVEY*. Spring term. Credit three hours. T Th 11. Laboratory, Th 2-4:30. Mr. STANTON.

The development of the motion picture as a modern art. Characteristic problems and devices of the art; economic and social aspects; the documentary film; the educational film. Numerous films will be viewed; students are urged to attend the film programs of the University Theatre.

481. *DRAMATIC ART*. Fall term. Credit three hours. For graduates. Th 2-4:30. Mr. H. D. ALBRIGHT.

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 three hours. Hours to be arranged. Mr. STANTON, Mr. H. D. ALBRIGHT, and Mr. McCALMON.

Open to graduate candidates working on theses, and to other graduates prepared for independent study of special topics in drama and the theatre.

The Department calls the attention of students interested in Dramatic Production to the following courses: those listed under the Fine Arts; English 341-342, 369-370, 551-552; Literature 301-302; History of Costume (in the College of Home Economics); Arts of Design (in the College of Architecture). Additional opportunities for training, under the supervision of members of the Department, are available in the several divisions of the Cornell University Theatre.

Two prizes in playwriting are offered under the auspices of the Department in 1953-54: The Heermans Prize for One-act Plays on an American Theme, and the Cornell Dramatic Club Prize (open to graduates and undergraduates, with no restriction as to theme.)

ZOOLOGY

Mr. H. B. ADELMANN, *Chairman*; Messrs. J. M. ANDERSON, L. C. COLE, P. W. GILBERT, S. L. LEONARD, M. SINGER, W. A. WIMSATT, ———.

For a major in Zoology there must be completed: (1) Zoology 101-102, or 103-104, and eighteen other hours selected from Zoology 211-212, 222, 224, 301, 302, 304, 401-402, 404, 451, 452, 515-516, Conservation 8, and Plant Breeding (Genetics) 101; and (2) fifteen hours in related fields, selected from courses in Bacteriology, Chemistry, Biochemistry, Botany, Conservation, Entomology, Geology, Physics, Human Physiology, or Plant Breeding.

Introductory Zoology (Zoology 101-102), or General Zoology (Zoology 103-104), or the equivalent is prerequisite to all courses in the Department.

At the pleasure of the staff a limited number of students who are well qualified to carry out advanced and independent work may become candidates for Honors in Zoology. In addition to the normal requirements for a major, Honors candidates must take at least nine hours of advanced and intensive Honors work (Zoology 050) under the supervision of an Honors adviser. During their final term, Honors candidates will be required either to submit a creditable thesis or to pass a comprehensive examination. Prerequisites for admission to candidacy for Honors are a cumulative average grade of 80 in all studies and permission of the Honors adviser. Application for admission to Honors work should be made to Mr. Singer, preferably early in the junior year.

Provisions are also made for a limited number of students who are not Honors candidates to undertake informal study (Zoology 040).

*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 F 10-12:20; or S 9-11:20. Stimson 104 and 116. Mr. ANDERSON and assistants.

An introduction to the fields of zoological study, designed both to provide a background for more specialized courses 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. Lectures, T Th 8. Laboratory, M T W Th or F 2-4:20; M 10-12:20; or S 9-11:20. Mr. LEONARD and assistants.

This course will survey the various branches of the zoological sciences to serve as a background for advanced work in the study of animals.

The principles of zoology will be illustrated by the study of representative animals with emphasis on those of economic importance to agriculture and to man. Emphasis will be placed on the biology of the vertebrates including the structural, functional, developmental, and genetic aspects.

201. *HUMAN STRUCTURE AND DEVELOPMENT*. Fall term. Credit three hours. Not open to freshmen. Prerequisite, a laboratory science, preferably general zoology or biology. Lectures, T Th 10. Recitations, T 9, 11, W 9, 10, 11, Th 8, 9, 11 or F 8, 9, 10, 11. Mr. SINGER and assistants.

This course is prerequisite to Psychology 202, which forms the second half of a year course.

The aim is to give the student an understanding of structure, function and development of the growing human being as the result of interplay between biological, psychological, and social factors. Course material is drawn from the pertinent biological and social sciences.

211-212. *COMPARATIVE ANATOMY OF VERTEBRATES*. Throughout the year. Credit three hours a term. Prerequisite, Zoology 101-102, or 103-104, or the equivalent. Lecture, M 8 or 9. Laboratory, M F or T Th 2-4:30; W F or T Th 8-10:30; or W 2-4:30 and S 8-10:30. Mr. GILBERT and assistants.

A thorough study and dissection of representative vertebrate types, including fish, amphibian, reptile, bird, and mammal, together with demonstrations on species other than the types dissected. The course is intended to give students an evolutionary background for the study and appreciation of the structure of higher vertebrates, including man.

[222. *PHYSICAL ANTHROPOLOGY AND HUMAN EVOLUTION*. Spring term. Credit three hours. Lectures, M W F 12. Not offered in 1953-54.]

224. *COMPARATIVE NEUROLOGY*. Spring term. Credit three hours. Enrollment limited to 22 students; permission of the instructor required. Prerequisites, nine hours of animal biology. Lectures T Th 12. Laboratory M or W 2-4:30. Mr. SINGER and assistant.

A comparative study of the vertebrate nervous system with emphasis upon the primate. Studies include dissections of the brain and the identification of nuclei and tracts in sections of the brain and spinal cord. Functional aspects of anatomical relations are stressed.

299. *HUMAN ANATOMY*. Hours and credit to be arranged. Open to a limited

number of graduate students only. Permission of instructor required for registration. Mr. SINGER.

Detailed dissection of the human body with some emphasis upon function.

301. *HISTOLOGY: THE BIOLOGY AND DEVELOPMENT OF THE TISSUES*. Fall term. Credit four hours. Prerequisite, 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 general survey of the structure 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 development of the body. There is also offered opportunity to gain knowledge of technique in the fixing, embedding, and sectioning of selected organs.

304. *VERTEBRATE EMBRYOLOGY*. Spring term. Credit five hours. Prerequisite, Zoology 101-102, or 103-104 and 211-212. Zoology 301 is also desirable. 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.

305-306. *HISTOLOGY AND EMBRYOLOGY*. Throughout the year. For students of veterinary medicine only. Credit eight hours. Fall term: lectures, T F 12; laboratory, W F 2-4:30. Spring term: lectures W F 9; laboratory W F 10-1:00. Messrs. ADELMANN and WIMSATT.

This course aims to provide the student of veterinary medicine with a practical knowledge of the normal structure and development of the tissues and organs of the animal body by the direct study of them in the laboratory. The emphasis of the course is on the domesticated animals of particular interest to the veterinarian.

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. 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 three hours. Prerequisites, one year of biology or zoology and college courses in chemistry and physics. Organic chemistry and comparative anatomy are also desirable. Lectures, W F 9. Laboratory, T W Th or F 1:40-4:30. Mr. ———.

The principal physiological functions of both vertebrates and invertebrates, including respiration, metabolism, digestion, circulation, excretion, muscle contraction, nerve action, and physiological regulation.

452. *GENERAL AND CELLULAR PHYSIOLOGY*. Spring term. Credit three hours. Prerequisites, Zoology 451, organic chemistry, and permission of the instructor. Histology and calculus are also desirable. Seminars, M 2-4 or F 2-4. Laboratory, T W or Th 1:40-4:30. Mr. ———.

476. *EXPERIMENTAL ENDOCRINOLOGY*. Spring term. Credit two or three hours. Prerequisite, Zoology 101-102 or 103-104 or equivalent, chemistry and physiology. Lectures, M F 11. Laboratory M 2-4:30. Open to graduate students only, preregistration required. 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.

[515-516. *INVERTEBRATE ZOOLOGY*. Throughout the year. Credit three hours a term. Prerequisites, Zoology 101-102 or 103-104, or equivalent. One lecture a week during laboratory periods. Laboratory F 2-5 and S 9-12. Mr. ANDERSON.

Deals with the body plans, physiology, and development of the major groups of invertebrates. Consideration is given to the taxonomy and life histories of animals affecting human welfare. Not offered in 1953-54.]

040. *RESEARCH PROBLEMS*. 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.

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, College of Agriculture*). Throughout the year. Credit three hours a term. The course may be begun in either term. Not open to students who have had both Zoology 101-102 and Botany 1. If Biology 1 is taken after either Zoology 101-102 or Botany 1, credit two hours a term. Lectures and demonstrations, M W 9 or 11. Laboratory, M T W Th or F 2-4:20, or T S 10-12:20. Mr. HOOD and assistants.

An elementary course planned to meet the needs of students majoring outside the plant and animal sciences; particularly adapted as the first year of a two-year sequence in biology for the prospective teacher of general science in the secondary schools. The course deals with the nature of life, life processes, the activities and origin of living things. It covers the organization of representative plants and animals, including man as an organism, and the principles of nutrition, growth, behavior, reproduction, heredity, and evolution.

ELEMENTARY TAXONOMY AND NATURAL HISTORY OF VERTEBRATES. (Conservation 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. Mr. HAMILTON and Mr. RANEY.

Lectures on fishes, amphibia, reptiles, birds, and mammals, dealing with the principles of classification and nomenclature, characteristics, relationships, and bionomics of these groups. The laboratory gives practice in the identification of North American species. Field studies of the local fauna are undertaken during the fall and spring.

GENERAL ORNITHOLOGY. (Conservation 9, College of Agriculture) Spring term. Credit three hours. Open to all students. Lecture, W 11. Field work and laboratory, M W or T Th 2-4:30. Mr. KELLOGG and Mr. ———.

Introduction to the study of birds, particularly the local species; their songs and habits; designed to give a working knowledge to those wishing to study birds as an avocation, and fundamental to those planning advanced work in ornithology or wild life conservation. Laboratory work with bird skins is based on the field work. During May, field trips will be taken at 5:30 a.m.

GENERAL ENTOMOLOGY. (Entomology 12, College of Agriculture) Fall term. Credit three hours. Open to all students. Lectures, W F 11. Laboratory, W Th F 2-4:30 or S 10:30-1. Mr. ———.

A survey of the structure, biology, and classification of insects, with laboratory exercises on, and demonstrations of, their anatomy and biology, and practice in the identification of representative forms.

303. *HUMAN PHYSIOLOGY*. Either 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. M W F 10. Mr. DYE and Mrs. BARHYDT.

This is an introductory course designed primarily to present fundamental and practical information concerning the physiological processes and systems of the human body. Lectures, illustrations, and demonstrations.

305. *ENDOCRINOLOGY AND METABOLISM*. Fall term. Credit three hours. Prerequisites, six or more hours of biology, and a previous or parallel course in

organic chemistry. Open to upperclassmen and graduate students. M W F 8. Mr. DYE.

A study of metabolism, endocrinology, and reproduction. Illustrated lectures.

STATISTICS

Courses in statistics, both theoretical and applied, are offered in many of the departments of the schools and colleges on the campus. Among them are the departments of Agricultural Economics, Industrial and Engineering Administration, Mathematics, Plant Breeding, Psychology, Sociology and Anthropology; and the School of Industrial and Labor Relations.

Of the courses in statistics offered by departments of other schools and colleges only the two listed below may be counted in the ninety Arts hours required for the degree of Bachelor of Arts.

STATISTICAL REASONING. (Industrial and Labor Relations 210) Either term. Credit three hours.

ECONOMIC AND SOCIAL STATISTICS. (Industrial and Labor Relations 211) Either term. Credit three hours.

COURSES IN OTHER DIVISIONS

Courses of interest to students in the College of Arts and Sciences are offered by the Departments of Military Science and Tactics, Air Science and Tactics, Naval Science, Physical Education, and Clinical and Preventive Medicine and are described in the *Announcement of the Independent Divisions and Departments*. Courses in other colleges and schools are described in their respective Announcements.

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