



Cornell  
University

ANNOUNCEMENTS

College of  
*Arts and Sciences*

1968-69

**CORNELL UNIVERSITY ANNOUNCEMENTS**

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# Cornell Academic Calendar\*

	1968-69†	1969-70†
Registration, new students	F, Sept. 13	F, Sept. 12
Registration, old students	S, Sept. 14	S, Sept. 13
Fall term instruction begins, 7:30 A.M.	M, Sept. 16	M, Sept. 15
Midterm grade reports due	S, Oct. 26	S, Oct. 25
Thanksgiving recess:		
Instruction suspended, 1:10 P.M.	W, Nov. 27	W, Nov. 26
Instruction resumed, 7:30 A.M.	M, Dec. 2	M, Dec. 1
Fall term instruction ends, 1:10 P.M.	S, Dec. 21	S, Dec. 20
Christmas recess:		
Independent study period begins	M, Jan. 6	M, Jan. 5
Final examinations begin	M, Jan. 13	M, Jan. 12
Final examinations end	T, Jan. 21	T, Jan. 20
Interession begins	W, Jan. 22	W, Jan. 21
Registration, old students	F, Jan. 31	F, Jan. 30
Registration, new students	S, Feb. 1	S, Jan. 31
Spring term instruction begins, 7:30 A.M.	M, Feb. 3	M, Feb. 2
Deadline: changed or make-up grades	M, Feb. 10	M, Feb. 9
Midterm grade reports due	S, Mar. 15	S, Mar. 14
Spring recess:		
Instruction suspended, 1:10 P.M.	S, Mar. 29	S, Mar. 28
Instruction resumed, 7:30 A.M.	M, Apr. 7	M, Apr. 6
Spring term instruction ends, 1:10 P.M.	S, May 17	S, May 16
Independent study period begins	M, May 19	M, May 18
Final examinations begin	M, May 26	M, May 25
Final examinations end	T, June 3	T, June 2
Commencement Day	M, June 9‡	M, June 8‡
Deadline: changed or make-up grades	M, June 16	M, June 15

\* Students in the College of Arts and Sciences should see page 17 for "Important Dates 1968-69."

† The dates shown in the Academic Calendar are subject to change at any time by official action of Cornell University.

‡ Tentative.

The courses and curricula described in this Announcement, and the teaching personnel listed therein, are subject to change at any time by official action of Cornell University.

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# Cornell University

## COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences reflects the history and aims of the University itself. Purposeful and diverse, it is a liberal arts college, a university college, and a graduate school and research center. The role of the liberal arts college is traditionally and properly a double one. It should further a man's understanding of himself and the world he lives in. It should prepare him, if he has the desire and the talent, for further, more specialized study. All of the College's students have both opportunity and obligation to work toward that understanding; about two-thirds of its graduates continue their education.

The College of Arts and Sciences, in its second role as a university college, is responsible for the education of all Cornell students in liberal subjects. This is a taxing commitment, but a valuable one because meeting it helps to create and preserve a single academic community. At the same time, this obligation is also a source of strength and diversity that is not available to the single and solely undergraduate college. A university college, able to draw upon the more highly specialized knowledge and facilities of its more professional fellow colleges, is able to unite liberal and practical studies.

The College is also, and this is its third role, a graduate school and research institute. Teaching and scholarship are not separable activities. Their vigorous and inventive association provides inestimable advantages for undergraduates; it attracts fine minds to the faculty and keeps them professionally alert and humanly responsive; it demands first-rate facilities; and it creates an atmosphere of discovery and excitement.

This mixed character and these several functions are surely the most adequate way to meet the real obligations that higher education in America has assumed. In an American university each student must somehow receive an education which enables him to understand the world and effectively employ his talents in it; each must discover who he is and what his special interests and abilities are; each must be enabled to develop his knowledge, his interests, and his abilities; each must be helped to a sense of responsibility about himself and his work.

The College of Arts and Sciences thinks it can best meet these obligations by promoting diversity and permitting flexibility. For students this means freedom and continuity: freedom to experiment, to discover one's likes and talents, to change directions and correct mistakes; continuity so that experiment can take place without penalty, and with profit and excitement. Combination permits continuity; diversity permits freedom of education choice.

## THE CURRICULUM

The College's curriculum gives the student opportunity for breadth, experiment, and discovery, especially during the first two years. A certain diversity is indeed urged upon him by the Distribution requirement itself. When the student explores a new subject matter he is, in effect, exploring his own latent interests and abilities. As he completes introductory courses the student lays the foundation for more advanced work or even for majoring in particular fields. During his fourth term (or earlier), as his interest comes to a focus, he chooses the subject in which he wishes to concentrate his study, aiming at depth and competence. The usual pattern is for him to devote roughly half the work of the last two years to his major program. Though certain core courses are usually prescribed in any major, there still remains a broad spectrum of choice which includes related courses in other subjects or even in other divisions of the University. Some departments offer two major programs: one, a program of intense and sophisticated preparation for postgraduate study; the other, a more general program for the person who wants a liberal education with some specific concentration, but whose interests are not professional.

Almost all departments have a full, demanding, and rewarding Honors program for those who demonstrate particular ability during their first two years. Many departments have as part of their Honors programs (or in addition to them) specially directed courses and projects which permit students to pursue their own interests and talents.

The College periodically offers experimental courses that cut across subject lines, explore new notions, and test ideas arising from that complicated triangulation that must go on between teacher, student, and subject.

## ADMISSION

The College of Arts and Sciences attempts to select a freshman class whose members are individually able to take full advantage of the educational opportunities afforded by the College and the University. Because those opportunities are rich and diverse, no single criterion is employed. The College selects primarily for what Aristotle called the intellectual virtues, and it especially considers academic ability, intelligence and creativity, independence and maturity, and promise of

mental growth. It also seeks a class with a wide range of other qualities and characteristics, and it honors those young men and women with highly developed special interests and talents. Furthermore, the College is making a real effort to identify and admit students whose schooling and family backgrounds indicate that the standard measures are a poor index of their abilities.

An applicant must have completed a secondary school course giving satisfactory preparation for the work of the College. Sixteen units of entrance credit are required, including four years of English, three years of preparatory mathematics, and three of a foreign language, ancient or modern. (A student who can offer only two years or less of a foreign language but who has a school record of high quality should not hesitate to apply. He should attach a letter to his application form explaining the deficiency.) The remaining units should be chosen from laboratory science, social studies, and further work in mathematics and foreign language. Whenever possible, these sixteen units should be supplemented by courses in similar academic subjects. Exceptions to these requirements may be granted when the applicant's record is unusually promising.

Each candidate for freshman admission is required to take the College Board Scholastic Aptitude Test and the College Board Achievement Test in English composition no later than the January test date during his senior year. He is encouraged, but not required, to take other Achievement Tests of his choice. He should request the College Board to send the results to the Office of Admissions, Cornell University.

Although an Achievement Test in language is not required for admissions consideration, a candidate should, before entering Cornell, take the College Board Achievement Test in any language which he has had in high school and expects to continue in the College. Because the score on such a test is needed for placement in language courses, the test should be taken late in the senior year—in March, May, or even July. A candidate should also keep in mind the further language requirement which he must meet by the end of his sophomore year in the College. If he will be entering with two or more years of some language which he wishes to use toward fulfilling this requirement (see p. 11) he should also take the Achievement Test in that language even though he does not plan to continue it in college. This score will determine whether in the tested language he has met part of the requirement for graduation.

Scores on these various admissions examinations provide no index at all for some qualities and only a rough index for others. But common sense suggests, and experience has shown, that high scores (above 700) tend to be linked with academic success and low scores (below 550) with academic risk in the College of Arts and Sciences.

An applicant for admission who has completed a year or more of work in another institution of recognized collegiate rank will be expected to have had preparatory work equivalent to that prescribed for freshmen. In addition, his progress in meeting the Distribution and language requirements will be carefully examined. Action on completed

applications for transfer will be announced about April 15. A student seeking admission to the College of Arts and Sciences from some other undergraduate division of Cornell must first complete a year of successful study in that division.

Application forms may be obtained from the Office of Admissions, Day Hall, and all communications concerning admission should be directed there. Applications must be returned to the Office of Admissions by January 15.

For information on other matters of general interest such as details about health services and requirements, housing and dining services, tuition, fees, and living expenses, applications for financial aid, and motor vehicle regulations, consult the *Announcement of General Information*. The various *Announcements* of Cornell may be obtained by writing to the Announcements Office, Day Hall, Ithaca, New York 14850, or by inquiring at the administrative offices of the several colleges and schools.

## Advanced Placement

Advanced placement and advanced standing credit toward the degree of Bachelor of Arts may be achieved by an entering freshman in a variety of subjects and in a variety of ways.

Advanced placement shall be awarded whenever a student's record, or his examination scores, or both, indicate that he has earned it. Advanced standing credit shall be awarded only when it totals fifteen or more hours; in such cases the student shall have the option of accelerating one or two terms. It is not always wise to accelerate, and the student should consider his situation carefully, consult with his adviser, and present a coherent plan of study to the Dean's Office for approval. No credit towards graduation shall be allowed for amounts under fifteen hours except in certain, rare cases (such as illness or other necessary absence) when, with approval of the Dean's Office, advanced standing credit may be used to repair deficiencies. Advanced standing credit may be used to satisfy the Distribution requirements, but such use does not carry additional credit hours towards graduation.

Both advanced placement and advanced standing credit may be earned by high attainment on the College Board Advanced Placement Examinations in the following subjects: American history, biology, chemistry, European history, German literature, Latin, mathematics, Spanish literature, and physics. Both advanced placement and advanced standing credit may be earned by high attainment on departmental examinations, given usually at entrance, in the following subjects: biology, chemistry, European history, mathematics, music, and physics.

In modern foreign languages, a student showing superior attainment on the College Board Language Achievement Test may be exempted from the three-hour requirement of advanced work after Qualification and receive three or six hours of advanced standing credit.

More detailed information about the possibilities and procedures of advanced placement is contained in *Advanced Placement of Freshmen*

at *Cornell University*, available from the Office of Admissions, Day Hall.

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

## ADVISING

The counseling staff of the Dean's Office and certain designated faculty members act as advisers to freshmen and sophomores. Their role is to assist the student in his choice of studies, to advise him during the term regarding his work, and to provide him help with personal problems and the choice of a career.

At the time of acceptance into a departmental major, the student will be assigned an adviser in the department administering his major study. The major adviser will guide the student in his selection of courses, counsel him on matters affecting his academic work, and supervise his progress toward the degree.

All students are expected to show initiative in planning their programs and to assume a large measure of responsibility for their progress in meeting requirements.

## REGISTRATION IN COURSES

During a designated period each term, a student will, with the aid of an adviser or by himself, prepare a program of studies for the following term.

For the academic year 1968-69 registration periods will be:

For fall term courses . . . . . April 1 to April 12, 1968

For spring term courses . . . . . October 21 to November 2, 1968

For late filing of a program of studies a fee of \$10 will be charged.

Failure to register during the announced period will be interpreted as intention to withdraw.

Every student must register in each term for at least twelve academic hours, exclusive of basic military training and physical education. The usual program for freshmen and sophomores will consist of five three-hour courses; juniors and seniors will usually carry a program of four four-hour courses. In order for a student to maintain satisfactory progress toward the degree, his program must average fifteen hours a term. No student may register for more than eighteen hours without special permission.

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Program changes will be permitted, without petition or fee, upon recommendation of the adviser, prior to May 10 for the fall term and prior to December 13 for the spring term, and again during the first two weeks of instruction in each term. After the first two weeks of instruction any change will be subject to a \$10 fee and must have the approval of the Counseling Office. One week after the date for reporting midterm grades a course may be canceled for medical reasons only.

Freshmen will register by mail in the summer and may expect the necessary material by early June from the Counseling Office of the College of Arts and Sciences.

### Course Levels

Undergraduate courses are offered at four levels numbered as follows:

100-199. Introductory courses, primarily for freshmen and sophomores.

200-299. Intermediate courses, primarily for freshmen and sophomores.

300-399. Advanced courses, primarily for juniors and seniors.

400-499. Courses on the senior and graduate-student level.

## REQUIREMENTS FOR GRADUATION

### Residence

The degree of Bachelor of Arts 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 for at least two years as a degree candidate in the College of Arts and Sciences and in that College only. Neither advanced standing credit, for the student who is accelerating, nor credit for work done *in absentia* is allowed toward meeting the residence requirement. Students normally spend eight terms in residence and may not exceed this length of time without the permission of the Committee on Academic Records. A student in good standing who leaves his degree in abeyance should not expect a request for reinstatement to be considered after five years.

### Credit

For the degree of Bachelor of Arts, a candidate must have earned credit for 120 hours, of which 100 must be for courses in the College of Arts and Sciences. However, courses outside the College which are specified as meeting the requirements of his major program may be counted in the 100 hours. (There are some service courses, such as typing and remedial reading and writing, for which the College does not grant credit, and

the student should confer with the Dean's Office before calculating them as part of his total number of hours.) Basic courses in military, naval, or air science or in physical education may not be counted in the 120 hours. Advanced courses in those subjects may be counted, to the extent of twelve hours, among the twenty hours allowed outside the College.

## Other Requirements

**A. FRESHMAN HUMANITIES.** A student is required to complete in each term of his freshman year one of the courses specially designed to provide discussion in small classes and to emphasize written discourse. The two courses need not be in the same subject, but they must be designated as meeting this requirement.

(For details see Freshman Humanities Program, page 25.)

*Note:* This requirement is not the same as the humanities requirement in Distribution. A course used in satisfying the Freshman Humanities requirement may not be used in satisfying the Distribution or the language requirement.

**B. FOREIGN LANGUAGE.** This requirement must be fulfilled in a way that makes educational sense, which means that it must comprehend a language that has a substantial body of literature. Normally the student will complete part of the requirement, and may complete all of it, at Cornell. He may also complete part or all of it with a language that he has learned elsewhere. In either case it must be a language with a genuine literature.

There are basically four ways through which the language requirement may be met. First, the student may attain "Qualification" in two languages. Qualification is a level of competence indicated by performance in the College Board Achievement Test (where the required score in a modern language or in Latin is 560), in the departmental placement examination, or in the final examination in the appropriate foreign language course. Qualification in a modern language demonstrates that the student is ready to proceed to a 200-level course. Second, he may meet the prescribed standards in a single language by completing a course in that language at the 200-level or above (a course for which Qualification is a prerequisite), or by earning an equivalent amount of advanced standing credit. Third, he may meet the requirement by attaining Qualification in one language if he has offered for admission three high school units of another language. And fourth, he may offer for completion of the language requirement or for Qualification a language not taught at Cornell; in this case, the student himself must arrange for a satisfactory test of his ability and see that the results become part of his record.

In the ancient languages satisfaction of the language requirement is achieved in Greek by completing Greek 203; in Hebrew by completing Hebrew 204 or 302; in Arabic by completing Arabic 208. In Latin, students who are placed in 107 complete the requirement by passing

## 12 REQUIREMENTS FOR GRADUATION

two three-hour courses beyond 107; those who are placed in 201 by passing 201; placement higher than 201 satisfies the requirement. Advanced standing credit in Greek and Latin is granted for evidence of achievement well beyond the level of Qualification.

Qualification in Greek is attained by passing Greek 103. Qualification in Latin is attained on the basis of the College Board Achievement Test (where the required score is 560), by passing Latin 107, or by placement in a course higher than 107. (For placement in Latin see below, under Classics, Latin, in the Courses of Instruction section.) Qualification in Hebrew is attained by completing Hebrew 201 or by examination. Qualification in Arabic is attained by completing Arabic 207 or by examination.

There are two paths available to the student who is not qualified in a modern foreign language. He may take a sequence of two six-hour courses (numbered 101 and 102) which emphasize conversation and the structure of the language; or he may take a sequence of four three-hour courses (numbered 131-134) which emphasize reading comprehension. These are not fixed paths, and the student will be placed, by examination and by preference and probable major, in the course most likely to meet his needs. He may move from one of the six-hour courses into one of the three-hour courses. He may attain Qualification, and hence progress to a 200-level course and the completion of the requirement, at the end of any one of the courses, whenever he demonstrates sufficient competence in that language. He may attain Qualification in two languages, and thus meet the requirement, whenever his final examination scores indicate sufficient control of those languages.

A native speaker of a language other than English in which there is a substantial literature or any student who has learned such a language may take the placement examination and use that language to satisfy the requirement. All international students must fulfill the Freshman Humanities requirement (first taking "English as a Second Language" if necessary) and the normal language requirement. If a student's native language does not have a substantial literature, the language requirement must be fulfilled by another foreign language which does have a substantial literature.

Although students may use appropriate languages studied or learned elsewhere to meet the language requirement, no formal course-hour credit will be given, except for students who are following an accepted plan of acceleration (or, in exceptional cases, are repairing deficiencies) and who have been granted advanced standing credit beyond the level of Qualification.

By the end of his fourth term a student is to meet at least the level of Qualification in one foreign language. When a student has attained Qualification in one language and it is in his academic interest to delay completion of the requirement until his junior year, his adviser may permit him to do so. However, since several departments demand completion of the requirement as one of the prerequisites for acceptance into the major, the student should plan his languages carefully and consult

with the Counseling Office or his adviser, the department of his prospective major, and the department of the appropriate language.

A student wishing to continue a modern foreign language in which he has not taken a College Board Achievement Test must first take a placement examination given by the University Testing and Service Bureau. He may take the examination if he feels that the College Board score is not an accurate indication of his ability. The examination will be given at the end of every semester and on October 9 and February 26 of the 1968-69 academic year. Ordinarily the examination is also given during Orientation Week in September.

**C. DISTRIBUTION.** Each student must complete six hours of related course work in four of the seven groups listed below, including one six-hour sequence in the physical or biological sciences, one in the social sciences or history, and one in the humanities or expressive arts. Courses used to satisfy the Freshman Humanities or the language requirements may not be used to satisfy the Distribution requirement. The student should complete this requirement during his first two years.

For the *specific courses* which satisfy the requirement, one should consult the headnotes of the various departments in the *Courses of Instruction* section of this *Announcement*.

1. *Mathematics*
2. *Physical Sciences:* Astronomy, Chemistry, Geology, Physics
3. *Biological Sciences*
4. *Social Sciences:* Anthropology, Economics, Government, Linguistics, Psychology, Sociology
5. *History*
6. *Humanities:* Classics, Comparative Literature, English, Modern Foreign Literature, Philosophy, Semitic Literature
7. *Expressive Arts:* Advanced Composition (English 205-206), History of Art, Music, Special Forms of Writing (English 203-204), Theatre Arts

**D. THE MAJOR.** Each student must satisfy the specified requirements of the major as listed by his major department. The major in a subject is defined as including not only the courses in that department but also the courses in related subjects offered in satisfaction of the major requirements.

**E. PHYSICAL EDUCATION.** During the first four terms of residence each student must complete the University requirement of four terms of work in physical education. The courses in physical education are described in publications which the Department of Physical Education makes available to students at registration.

**F. ELECTIVES.** Of the 120 required hours, each student must complete fifteen hours in courses not offered in satisfaction of requirements (A) through (E) above, and not given by the department supervising his major.

## 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 B— or better in at least ninety hours of courses, and of A— or better in at least sixty of these; (2) have not received a grade below C— in more than one course; (3) have received no failing grade. 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

The degree of Bachelor of Arts with Honors 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. He may receive the degree with honors at one of three levels: *cum laude*, *magna cum laude*, or *summa cum laude*. When performance does not justify a degree with Honors, the student may receive course credit toward the degree of Bachelor of Arts.

A student who, after admission to Honors, is found to be unsuited to Honors work, will revert to candidacy for the regular Bachelor of Arts degree.

## GRADES AND ACADEMIC STANDING

Only freshmen will receive midterm grades. Final grades for courses range in descending order from A+ through D—, the lowest passing grade. F is a failing grade. No credit toward graduation will be given for a course in which a failing grade has been received, unless the course is repeated and a passing mark received.

Final grades of S or U may also be given in some courses. S means the student receives the credit specified for the course; U means no

credit. In distinction from the grades A+ through F, the grades of S and U have no assigned numerical equivalents and will not enter into a student's grade average. An undergraduate registered in the College, after consultation with his adviser, may elect to receive a grade of S or U instead of one of the letter grades (A+ to F) in one academic course a term provided that the course is not offered in satisfaction of his major and provided that the instructor is willing to assign such grades. The student may register for the S or U option by filing a permission card with the Scheduling Office. Any changes in exercising the option will be governed by the regulations applying to changes of course.

In certain courses, deemed by the College to require no greater precision of grading, all final grades will be S or U. Such a course may be counted towards the student's major, with the permission of his adviser and of the chairman of the major department. Furthermore, a student may simultaneously take two of the College's S or U courses if both are offered exclusively on an S/U basis, or if one is offered exclusively on an S/U basis in the Arts College, and the other is an education course offered exclusively on an S/U basis, and is required for the completion of the student's education program.

An *incomplete* is not a satisfactory grade. It is 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. When a grade of *inc* is reported, the instructor will also indicate the reasons for it and the conditions for removing it. A mark of *inc* may be removed, with the consent of the Dean and upon payment of the fee required by the University, by meeting those conditions, by examination, or by whatever alternative methods the concerned department may direct. Unless a make-up grade is received in the Dean's Office within one term (see page 17 for specific date), an *inc* will revert to a grade of F.

A student will be considered in good academic standing for the term if, taking a normal course load of at least fifteen hours, he receives no grade of F or U and receives no more than one D. If his record falls below this level he may be warned, placed on "final warning," suspended for a specific period of time (at least one year), or not allowed to register again in the College. Moreover, a student failing to make satisfactory over-all progress in grades, or in hours (whether from failures or "incompletes"), or in the requirements of the major may at any time be warned, placed on "final warning," suspended for a specific period of time (at least one year), or not allowed to register again in the College.

A student will not be allowed to register for a fifth term in the College (or for the first term of his junior year) unless he has been officially accepted into a major program of a department.

## LEAVES OF ABSENCE AND WITHDRAWALS

For reasons satisfactory to the Dean and the faculty, a student in good standing 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 leave the College with the expectation of returning, he should apply for a leave of absence. However, leaves of absence for medical reasons are issued only upon the recommendation of the University Clinic. A leave of absence is not *in absentia* study, and no credit toward graduation may be earned while on leave, except in limited amounts by members of the armed services. Students on leaves of absence are normally expected and urged to leave Ithaca.

If a leave of absence is to take effect during the term in which the student is already registered, it must be requested within ten days after midterm grades have been reported. After those dates it will be granted only upon approval of the Committee on Academic Records.

A withdrawal is a voluntary severance of a student's connection with the College. If it is to take effect during the term for which the student is already registered, it must be requested within twenty-five days after midterm grades have been reported.

Requests for leaves of absences must be submitted through the Counseling Office.

### *IN ABSENTIA* STUDY

Under special circumstances, students are permitted by the Academic Records Committee to gain credit toward graduation by study *in absentia* at another institution. Most of the petitions approved by the Academic Records Committee have been for study abroad during the junior year by students majoring in a foreign language or literature. The work done *in absentia* must be approved by the student's major department as well as the Committee on Academic Records, and programs for such work must be planned carefully in advance.

## CREDIT FOR SUMMER SESSION

Summer session study serves various purposes: following a plan of acceleration; making up deficiencies; satisfying the prerequisite for a course given during the regular college year; gaining knowledge of some special subject matter; enlarging one's choice of electives and exploring new interests. While the College values and encourages all these efforts, it will grant summer session credit only to the student who is accelerating under an approved plan or to the student who has been given permission to repair deficiencies. The use of summer session credit to complete a September degree is permitted only to students who have spent the normal eight terms in residence and have received permission from the Committee on Academic Records. More detailed regulations are printed

on the Petition for Summer Session Credit which a student must file before he enrolls for summer study. Further information is available from the Dean's Office.

Summer courses may be taken before matriculation, but these should be limited to the usual college introductory courses and will be subject to approval for advance standing credit as part of a coherent plan of acceleration. Upon departmental approval, previous summer session work may enable a student to register in more advanced courses. Summer courses taken after a student matriculates must be approved in advance for the particular purpose in mind. The student should consult with his adviser, the department concerned, and the Counseling Office before he can be sure that academic credit will be granted for summer study.

No credit may be earned in a summer session of less than four weeks except by special permission; and no credit will be allowed for a course passed at less than a grade of C- or 70, or the equivalent.

## IMPORTANT DATES, 1968-69

	<i>Fall term</i>	<i>Spring term</i>
Registration for new students	F, Sept. 13, 1968	F, Jan. 31, 1969
Registration, continuing students	S, Sept. 14	S, Feb. 1
Instruction begins, 7:30 a.m.	M, Sept. 16	M, Feb. 3
Last day for changing courses without fee	S, Sept. 28	S, Feb. 15
Last day for dropping courses	F, Nov. 1	F, Mar. 21
Preregistration for 1968-69	(See below*)	
Modern Language Placement ex- aminations	W, Oct. 9	W, Feb. 26
Last day for requesting leave of absence for current term	W, Nov. 6	W, Apr. 9
Last day for requesting withdrawal for current term	W, Nov. 20	M, Apr. 21
Last day for changing preregistra- tion	F, Dec. 13	F, May 9
Final examinations begin	M, Jan. 13, 1969	M, May 26
Last day for submitting make-up grades for previous term incom- pletes	T, Jan. 21	†
Final examinations end	T, Jan. 21	T, June 3

\* Preregistration for 1968-69:

For fall term courses, 1968: April 1-12, 1968.

For spring term courses, 1969: Oct. 21-Nov. 1, 1968.

† Last day of examinations.

## SPECIAL PROGRAMS

**THE SIX-YEAR Ph.D. PROGRAM.** For the exceptionally able and committed student who intends to go on to doctoral study in the liberal

arts or sciences, Cornell offers a program leading to the A.B. degree in three years, the M.A. in four, and the Ph.D. in six. For details see p. 268, at the end of the *Courses of Instruction* section.

*Certain other programs of study are available which do not in themselves lead to a degree but consist of an arrangement of optional courses constituting a useful adjunct to the student's regular major.*

**THE COLLEGE SCHOLAR PROGRAM.** This is primarily a College-wide Honors program designed to provide particularly able students with an educational experience that will most fully complement their interests and their talents. While it assumes no special categories and has no fixed prerequisites, the program will probably appeal most to the student who wishes to combine a traditional major with an entirely different interest (such as mathematics and one of the performing arts) and to the student who wishes to combine different disciplines into one coherent plan of study (such as International Relations or Comparative Literature).

There are about forty College Scholars in a class, and theirs is normally a four-year program, determined by the student and a board of faculty advisers, leading to a Bachelor of Arts degree. During their underclass years participants are relieved of all general College requirements, but they are expected and encouraged to broaden their experience and to explore interests and abilities not already manifest before their arrival at Cornell. The general requirements might also be replaced by the beginnings of a thorough training in one area (such as French literature, philosophy, and history) or in one period (such as the Enlightenment).

During their upperclass years some College Scholars will want to pursue a normal departmental major, which is already rich and diverse. Others will decide that their educational needs might best be served by departing from the traditional categories. Such students might well concentrate in one of the existing interdisciplinary programs such as American, Asian, or Latin American Studies, Greek Civilization, or Comparative Literature (these programs are described in detail in other sections of this *Announcement*). Still other students, in consultation with their advisers, will want to work out a plan which draws upon and unifies the resources of a number of departments. A "major" in Area Development would involve courses in economics, government, history, and social psychology; a "major" in History and Literature would join studies in language and philosophy as well as history and literature; studying the history of art and doing one or more of the fine arts is a possible and sensible combination. Such freedom presupposes both scholarship and maturity, and the College Scholar is expected to develop a thoughtful plan of study and to pursue his work with distinction.

A few students will be admitted directly into the program; most will be admitted at the end of their first semester at Cornell, though it is possible to apply and be accepted at any time during the first two years. The College Scholar will normally be granted sufficient financial aid to meet his needs. Prospective applicants should write to Mr. Robert Scott, Assistant Dean for Admissions, Goldwin Smith Hall, Cornell University, Ithaca, New York 14850.

**THE PROGRAM IN GREEK CIVILIZATION.** This is a program of studies in Greek civilization for a select group of freshmen and sophomores, whether they plan to concentrate in the sciences or in the humanities. Its purpose is to give unity to a student's introduction to the liberal arts as he gains some understanding of philosophy, history, government, science, literature, art, and philology. A considerable amount of substantive knowledge is unified by its common origin in Hellenic culture, and the student will be introduced to this world which forms the deepest foundations of Western civilization.

An integrated approach to a single culture through the various disciplines is an experiment in liberal education. It is an experiment of a sort that needs to be renewed again and again in the humanities, since its goals—precise knowledge and broad horizons—are too easily separated. Ancient Greece is an ideal focus for such an approach. Everything we mean by "civilized" exists there in the highest quality and in manageable quantity—great poetry, art, philosophy, history, rhetoric and science. A study of the important works can lead to an appreciation of each of these disciplines as it has been practiced at any time and in any place. For gaining perspective on our own society, remoteness in time is usually an advantage.

The program is also an alternative to a professionalism which leaves students no occasion to raise the great questions of life in any systematic or scholarly way, a purpose for which many of the best students come to college in the first place. Because the combination of familiar and foreign elements in Greek thought is complicated, much of the teaching and learning will be through discussion. For that reason the program is limited to ten students each year. Regular course meetings will be supplemented by colloquia involving the whole group, faculty and students, every two weeks. Participation in the program leaves the student free to take two other courses each semester and so to satisfy all underclass requirements and to prepare for his major. A typical schedule for the first two years would be (for a detailed account of the courses see page 266 at the end of the *Courses of Instruction* section):

#### FRESHMAN YEAR

##### *Autumn*

Greek Language  
Greek History  
Greek Political Thought  
Elective  
Elective

##### *Spring*

Greek Language  
Greek History  
Greek Political Thought  
Elective  
Elective

#### SOPHOMORE YEAR

Greek Literature in translation  
Greek Science  
Greek Language  
Elective  
Elective

Greek Literature in translation  
Greek Archaeology  
Greek Language  
Elective  
Elective

Faculty members in the program will serve as academic advisers for its students. All ten members of the program will receive scholarships

based on need. For further information write to Professor Donald Kagan, 316 West Sibley Hall, Cornell University, Ithaca, N. Y. 14850.

**INTERNATIONAL STUDIES.** Students interested in foreign area studies or in international problems will find that, though there are no formal programs in such subjects, appropriate courses of study can be selected from the regular offerings of various divisions of the University. For example, in the College of Arts and Sciences there are courses in comparative government, international relations, international law and organization, international economics, and the economics of development; they are listed under anthropology, Asian studies, economics, government, history, and sociology. There are also courses in over twenty modern foreign languages.

The College of Agriculture offers courses in the economics of agricultural development, international agriculture, and rural sociology. The School of Business and Public Administration offers courses in international development. The School of Industrial and Labor Relations offers courses in international and comparative labor relations.

The student seeking specialized foreign-area knowledge may focus on one of the following interdisciplinary area programs: Chinese Studies, Latin American Studies, and Southeast Asian Studies. In addition, it is possible for the student to pursue an area interest in African studies, European studies, South Asian studies, or Soviet studies.

See the course listings under Center for International Studies in the *Courses of Instruction* section; see also the Center's *Announcement*.

**PREPARATION FOR TEACHING.** Teacher education at Cornell is under the supervision of the University Committee on Teacher Preparation. It is possible to satisfy the New York State requirements for provisional certification to teach English, a foreign language, one of the sciences, or mathematics while completing the A.B. program of the College. A fifth year of study is necessary to become permanently certified to teach in this state. Prospective teachers of history or one of the social sciences may enroll in a five-year program leading to a permanent certificate. This is also true of the subjects in which provisional certification is possible. Students who wish to teach in elementary schools must apply for a fifth year which leads to a Master in Arts in Teaching and, normally, permanent certification.

All students interested in elementary or secondary school teaching will need to plan their programs very carefully and should inform their advisers of this interest as early as possible, but not later than the end of the sophomore year. Questions may be directed to the University Office of Teacher Preparation in 104 Stone Hall or to the faculty member in the student's department who is in charge of the teacher preparation program. Students desiring practice teaching experience must apply no later than the end of the first term of the junior year since the number of openings for student teaching is limited.

**PREMEDICAL STUDENTS.** Students who intend to prepare for the study of medicine or dentistry are requested to report once each semes-

ter to the office of the Premedical Advisory Committee, 121 Clark Hall. This Committee has established standard procedures to facilitate the eventual preparation of letters of evaluation for applicants to medical and dental schools.

Medical educators generally agree that in planning his college course a premedical student 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 followed the same course of studies or majored in the same subject. For these and other reasons there is no fixed premedical curriculum at Cornell. Certain minimum requirements for admission are, however, prescribed by all medical schools. The most substantial of these requirements is in chemistry, and it is therefore recommended that the premedical student include chemistry in his freshman course of study. Some premedical students choose to take two sciences in the freshman year, either chemistry and physics or chemistry and biology. Students who plan to pursue major studies in biological sciences will find it advantageous to include biology in their freshman programs.

The Premedical Advisory Committee suggests that since almost all medical schools require English Composition for admission, prospective medical school applicants should elect to satisfy the Freshman Humanities requirement with six hours of English.

**MILITARY TRAINING.** Programs leading to a commission are offered in military science, naval science, and aerospace studies (AFROTC). Twelve hours of credit for advanced courses may be counted among the twenty hours allowed outside the College. Full descriptions of the programs may be found in the *Announcement of Officer Education*.

## THE LIBRARIES

Cornell has eighteen separate libraries—two of them central and sixteen of them special and departmental. The central library's total holdings of more than three million volumes make it the seventh largest university library in the country; about a hundred and seventy thousand volumes are added each year. The College is the principal beneficiary of the two main libraries, the Uris Undergraduate Library and the Olin Research Library, which face each other on the south side of the Arts Quadrangle.

The prime aim of the Uris Library is to bring students and books as closely together as possible. Accordingly, the bookstacks, save for essential reserve books in heavy demand, are open to all readers. The holdings are selective rather than comprehensive. In addition to a reference collection of three thousand bibliographies, encyclopedias, handbooks, and dictionaries, and about two hundred and seventy periodicals, Uris contains about sixty-five thousand volumes for course reading or for general exploration and recreation. A suite of three listening rooms houses a large collection of records and tapes of poetry, drama, fiction, and other material in the spoken arts.

The John M. Olin Library is one of the country's major research libraries. The first floor and lower level contain the Reference and Circulation Departments, the Wason Collection (the most complete holdings of Asian material in the country), the Rare Book Department, the Collection of Regional History and University Archives, and the Department of Maps, Microtexts, and Newspapers. The union catalog of all libraries on the Ithaca campus and the bibliography collection are on the first floor, near the center of the building.

The second through the seventh floors contain bookstacks and offices. They are reserved primarily for faculty, staff, graduate, and honors students, but undergraduates can easily and quickly obtain or discharge books at the circulation desk.

As a means of acquainting new students with its facilities and services, the library arranges for all freshmen to have a lecture-tour early in the fall term.

## SCHOLARSHIPS AND PRIZES

### Open to All Students

New York State offers various types of financial assistance to qualified college students who are state residents. It is very important that students seeking such aid obtain full information and meet promptly each application deadline.

**SCHOLAR INCENTIVE PROGRAM.** Applications should be filed before July 1 for each academic year but will be accepted up to December 1. Applications for the spring semester only have an April deadline. Annual application is required.

**REGENTS COLLEGE SCHOLARSHIPS FOR UNDERGRADUATES.** Candidates should seek directions from their high school principal and/or guidance counselor.

Information on all of the above may be obtained by writing to the Regents Examination and Scholarship Center, New York State Education Department, Albany, N.Y. 12224. Students seeking New York State guaranteed loans should apply to the New York State Higher Education Assistance Corporation, 159 Delaware Ave., Delmar, N.Y. 12054.

### Open Only to Arts and Sciences Students

The scholarships listed *below* are open only to students of the College of Arts and Sciences. For these and others open to all students at entrance, a single application form accompanies the application for admission. Enrolled students may compete for prizes, which are described in a publication obtainable in the Scheduling Office of the College, Goldwin Smith Hall.

**THE DEAN'S SCHOLARSHIPS** are open to men and women entering the College of Arts and Sciences. The annual awards vary from \$100 to \$2200, depending upon financial need. The tenure is four years if the scholastic record of the recipient is creditable. At least twenty scholarships are awarded annually. Final selection and award are based upon academic promise, general character, and financial need. Preference will be given to candidates from

areas not well represented in the present student body of the College of Arts and Sciences.

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

**THE ELISABETH REAMER CARSON SCHOLARSHIP ENDOWMENT** was established by James H. Carson and Elisabeth Reamer Carson in 1958. Elisabeth Reamer Carson graduated in 1927. The scholarship is open to any student in the College. Annual award may vary from \$400 to \$1250. The scholarship may be held for four years. Financial need, academic promise, and general character will be considered in making the award.

**THE GEORGE C. BOLDT MEMORIAL SCHOLARSHIPS** (three scholarships) were created by George C. Boldt, Jr., as a memorial to his father. Each is worth \$500. They will be awarded at the close of the junior year to the three men students of the College who are considered most deserving of this aid. Applications for these scholarships must be filed in the Office of the Dean before March 15 of the academic year preceding the year for which they are awarded.

**THE CHESTER BUCHANAN MEMORIAL SCHOLARSHIP** is a gift of Mrs. Claire F. Buchanan, in memory of her son, Chester Buchanan. It carries an annual stipend of \$300. It is awarded each year on the recommendation of the Department of Geology to the outstanding male senior who is majoring in this subject.

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

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

**THE GERTRUDE C. HEMINGWAY SCHOLARSHIP**, amounting approximately to \$500, is awarded annually to "some deserving young woman student majoring in French, Spanish, or Greek language." Quality of work and financial need will be considered in making the award.

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

**THE MICHAEL W. MITCHELL MEMORIAL SCHOLARSHIP**, initiated by Justice William O. Douglas and a group of his associates, carries a stipend of \$350. Under the terms of this bequest, the award is made upon the recommendation of the Chairman of the Department of Geology to a "student majoring in geology who proves himself adept in other liberal arts fields as well as geology—a student of the world."

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

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

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

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

**THE IDA AND WILLIAM KERR MEMORIAL PRIZE** was created by Mrs. Jane M. G. Foster '18 in memory of Ida Cornell Kerr '84 and William Ogden Kerr '77 and in appreciation of their many kindnesses to Cornell students. The prize, in the form of books worth \$100, is awarded for an essay written by a graduating senior. Each spring seniors with excellent records are invited to submit essays.

# COURSES OF INSTRUCTION

## THE FRESHMAN HUMANITIES PROGRAM

To replace its traditional freshman composition program, the University has recently inaugurated a series of small discussion and writing courses in the humanities which are jointly conducted by ten departments in the College of Arts and Sciences. The aim of the new program is twofold: to offer the incoming student a wide variety of subjects from which to choose, and to provide him with the opportunity of relating his written assignments directly to the subject-areas which primarily interest him. The courses are uniform only in the sense that all of them require intensive practice in composition and that the enrollment in each section is limited to twenty students.

To satisfy the Freshman Humanities requirement, each student must elect any two (but no more than two) of the courses which are described below. Students are expected to enroll in one of these courses during the fall semester and in another during the spring semester of their first year of residence. Unless otherwise noted, each course will be offered both in the fall and the spring. Each course carries three hours of credit. A course used in satisfying the Freshman Humanities requirement may not be used in satisfying the Distribution or language requirement. Supplementary information about the program and specific instructions about registration procedures will be mailed separately to all incoming freshmen in May or June.

## The Classics

Classical civilization Courses 119 and 120, though either may be taken separately, are designed to constitute a broad but carefully integrated introduction to the literature and thought of Greco-Roman civilization.

### CLASSICS 119. FRESHMAN SEMINAR IN GREEK LITERATURE

Fall term.

Readings, in translation, of Hesiod's *Theogony* and *Works and Days*, Aeschylus' *Oresteia*, Sophocles' *Oedipus Tyrannus*, Plato's *Euthyphro*, Homer's *Iliad* and *Odyssey*, and Apollonius' *Argonautica*. Discussion and frequent essays.

### CLASSICS 120. FRESHMAN SEMINAR IN LATIN LITERATURE

Spring term.

Readings, in translation, of selected major works of Latin prose and poetry including Lucretius' *On the Nature of Things*; Virgil's *Eclogues*, *Georgics* and *Aeneid*; excerpts from the histories of Tacitus; Petronius' *Satiricon*. Discussion and frequent essays.

## Comparative Literature

### COMPARATIVE LITERATURE 101. FRESHMAN SEMINAR IN WESTERN LITERATURE (I)

Fall term.

Informal discussion of selected great books of the Western tradition, chiefly poetic masterpieces. The reading will include such works as the *Iliad*, selections from the Bible, the *Divine Comedy*, *Paradise Lost*, and *Faust*.

#### COMPARATIVE LITERATURE 102. FRESHMAN SEMINAR IN WESTERN LITERATURE (II)

Spring term.

Emphasizes major works of the drama and of fiction, from the Ancients to the present. Readings in the Greek tragedies, *King Lear*, the plays of Molière, *Madame Bovary*, *Notes from Underground*, stories by Kafka, and Camus' *The Stranger*.

COMPARATIVE LITERATURE 103-104. (See German, page 28.)

## English

#### ENGLISH 131. EXPERIENCE AND EXPRESSION

Miss Russ, Mr. J. S. Parker, and others.

Practice in the art of imaginative expression and attempts to explore the nature of that art. Students will write original works of poetry, fiction, and the more personal kinds of exposition, and examine the language, rhetoric, and style of their own work as well as the work of established writers.

#### ENGLISH 133. THE USES OF THE PAST

Miss Barish and others.

How confronting the past has stimulated authors from Shakespeare to Allen Ginsburg as they seek to define themselves, their art, and their ideas about society. Readings will include Carlyle, Shaw, Joyce, and T. S. Eliot. Students will write both critically about the texts and experimentally, exploring their own connections with past experience and tradition.

#### ENGLISH 135. WRITING ABOUT EXPERIENCE

Messrs. Bishop, Hertz, and others.

Designed primarily to give the student practice in writing about his own experience, either in the present, here at Cornell, or in the past. Most of the class time will be given to the students' own work.

#### ENGLISH 139. COMEDY AND TRAGEDY

Mr. De Luca and others.

Forms of tragic and comic literature from Sophocles to Samuel Becket. Readings in both drama and the novel. Texts include *Oedipus*, *Othello*, *Volpone*, *Wuthering Heights*, and *Waiting for Godot*.

#### ENGLISH 141. BIBLE AND ANCIENT AUTHORS

Messrs. Shaw, Hill, and others.

Informal discussion of selected books from the Old and New Testaments, considered both as literature and moral teaching. Some of the major cycles of classical and Norse mythology will also be studied.

#### ENGLISH 145. AMERICAN LITERATURE AND VALUES

Mr. Elias and others.

A study of American ideals as expressed in fiction, drama, and essays. Emphasis on issues which characterize the post-Civil War period; but the readings, exploring implications for our own time, will range from Emerson's

essays and Twain's *Connecticut Yankee* to Anderson's *Winesburg, Ohio*, Dreiser's *American Tragedy*, and Miller's *Death of a Salesman*, and will include Carl Becker's *Cornell University: Founders and the Founding*.

#### ENGLISH 147. HUMANISM

Mr. Finlay and others.

Study and informal discussion of major books concerned with man, man's nature and his potentiality, written during the flowering of Humanism in the West. Readings in both English and Continental literatures, including Machiavelli's *Prince*, Leonardo's *Notebooks*, *Essays* by Montaigne and Bacon, More's *Utopia*, as well as English Renaissance dramas.

#### ENGLISH 149. THE SEARCH FOR ORDER

Miss Anderson, Mr. McMillin, and others.

Literature and man's search for meaning in the Renaissance and twentieth century: social, moral, and scientific perspectives in major literary forms. Readings will include *Everyman*, Jonson's *Volpone*, *King Lear*, Hemingway's *In Our Time*, poems by Yeats, Frost, Eliot; and Beckett's *Waiting for Godot*.

#### ENGLISH 151. SHAKESPEARE AND DICKENS

Mr. Gottschalk and others.

Intensive study of some five plays and three or four novels. The point of singling out Shakespeare and Dickens is not to force comparisons, but to encourage a near acquaintance with two great writers, to study the drama and novel as literary forms, and to examine the different attitudes and world views implicit in these works. Texts: *Richard III*, *Merchant of Venice*, *Hamlet*, *Macbeth*, *Lear*; *Oliver Twist*, *Bleak House*, *Great Expectations*.

#### ENGLISH 153. THE LITERATURE OF REASON AND UNREASON

Mr. McCall and others.

Intended as a study of prose forms dominant in the eighteenth century (satire, imaginary voyage, autobiography, realistic fiction), the course will consider a few major texts of the period and seek out comparable forms in modern literature: *Robinson Crusoe*, *Castaway*, and *Lord of the Flies*; *Gulliver's Travels* and *Animal Farm*; *Tom Jones* and *Augie March*; autobiographical writings of Bunyan and Baldwin.

#### ENGLISH 157. AMERICAN FICTION AND CULTURE

Messrs. Farrell, Metlack and others.

Study and informal discussion of nineteenth-century American novels which comment significantly on emerging patterns of American manners and morals. The novelists to be studied include Cooper, Hawthorne, Melville, Howells, and James.

#### ENGLISH 159. POLITICS, LANGUAGE, AND LITERATURE

Mr. Budick and others.

A study of the language and rhetoric occasioned by political events, past and present. Writings of different kinds and intentions (from the *New York Times* to the works of Whitman, Yeats, Orwell, and Hemingway) will be read in an effort to discover what prose style can tell us about the author's motives and character. Written exercises in analysis, argument, autobiography.

#### ENGLISH 161. TRADITION AND REVOLT IN LITERATURE

Miss Marks and others.

In order to discover some of the varieties and values of tradition—and its role in revolt—three major works in their literary and historical contexts will

## 28 THE FRESHMAN HUMANITIES PROGRAM

be studied. Principal texts: Shakespeare's *As You Like It*, Jane Austen's *Pride and Prejudice*, D. H. Lawrence's *Sons and Lovers*.

### ENGLISH 163. RELATIONSHIPS AND THE CREATIVE PROCESS

Messrs. McConkey, Marcus, and others.

A study of writing, emphasizing the writer's need to find analogies and other relationships in the seemingly disparate materials he works with. Readings will include stories (Chekhov), poems (Herbert and Yeats), essays (Agee and Camus), plays (Sophocles). Views on imagination and the creative process by Coleridge, Henri Poincaré, William James, and Frost will be discussed.

### ENGLISH 237. THE READING OF FICTION

Mr. Rosenberg and others.

See p. 112.

### ENGLISH 239. THE READING OF POETRY

Mr. Caputi and others.

See p. 112.

## French

### FRENCH 205. FRESHMAN SEMINAR: MODERN FRENCH DRAMA

Throughout the year. Credit three hours. Qualification in French required. (For definition of Qualification see page 11.) Mrs. McCall.

New directions in dramatic theory and *mise en scène*. Critical studies of Jarry, Cocteau, Anouilh, Sartre, Camus, Beckett, Ionesco, and Genet. Readings in French, discussion and papers in English.

## German

### COMPARATIVE LITERATURE 103. FRESHMAN SEMINAR IN GERMAN LITERATURE (I)

Fall term. Messrs. Bansberg, Connor, Muschg, and staff.

Discussion and reports in small sections, with emphasis on written work. Topic for fall term: Modern Drama. Works by Buechner, Ibsen, Gerhart Hauptmann, the Expressionists, Brecht, and Duerrenmatt. All texts will be read in translation.

### COMPARATIVE LITERATURE 104. FRESHMAN SEMINAR IN GERMAN LITERATURE (II)

Spring term. Comparative Literature 104 may be taken independently of Comparative Literature 103. Messrs. Bansberg, Connor, Muschg, and staff.

Modern German prose writings. The reading list will consist of works by Thomas Mann, Franz Kafka, Günter Grass, and others. All texts will be read in translation.

## Government

### GOVERNMENT 101S. AMERICAN GOVERNMENT

Spring term. Mr. Lewis.

A general introduction to American national government and politics.

**GOVERNMENT 104S. COMPARATIVE GOVERNMENT**

Fall term. Mr. Mozingo.

A comparative study of major contemporary political movements and governmental institutions and processes. Great Britain, France, Germany, Russia, as well as some of the newly emerging countries will provide the materials for the discussion of key issues.

## History

**HISTORY 105-106. INTRODUCTION TO WESTERN CIVILIZATION**

Throughout the year. Credit three hours a term. First term prerequisite to second except by permission. (M) W F 9:05.

A survey of European history since antiquity. Attention is given equally to the major political and social developments and to the intellectual heritage of the West. A considerable portion of the reading is in contemporary sources.

**HISTORY 215-216. AMERICAN HISTORY**

Throughout the year but either term may be taken separately. Messrs. Polenber, Silbey, and staff.

Several major topics are considered each term and use will be made of different modes of historical inquiry: political, constitutional, diplomatic, economic, social, and intellectual. A primary purpose will be to give the student opportunities to make his own historical judgments and analyze those made by others. These aims will be pursued largely through weekly seminar work and frequent short essays.

## History of Art

**HISTORY OF ART 103. FRESHMAN SEMINAR IN ART HISTORY**

Either term. Mrs. Benson, Mr. Brown, Mr. Calkins, Mrs. King, Mr. Lipke, and assistants.

An introduction to the problems of experiencing works of art. Students will meet in small groups for discussion and examination of works of art, largely through reproductions but with occasional museum study, in order to provide training in the techniques of visual analysis. A number of papers will be assigned to give the student experience in writing about the visual arts, but emphasis will also be placed on classroom participation and on the articulation of the visual experience.

Not open to students who have had History of Art 105.

## Philosophy

**PHILOSOPHY 100. FRESHMAN SEMINAR IN PHILOSOPHY**

Either term. Fall term: Messrs. Canfield, Kretzmann, Pike, and Sachs. Spring term: Messrs. Lyons, Sorabji, and Stocker.

## Romance Studies

(See French, page 28, and Spanish below)

## Spanish

### SPANISH 205. THE MODERN SPANISH NOVEL

Fall term. Credit three hours. M W F 11:15. Mr. Kronik. Qualification in Spanish required. (For definition of Qualification see page 11.)

Reading and informal discussion of Spanish fiction from the early twentieth century to the present. Classroom discussion and written work to deal with problems of style, structure, characterization, etc. Readings in Spanish and English; discussion and papers in English.

### SPANISH 206. THE MODERN SPANISH DRAMA

Spring term. Credit three hours. M W F 11:15. Mr. Kronik. Qualification in Spanish required. (For definition of Qualification see page 11.)

Spanish drama of the twentieth century from Benavente and Garcia Lorca to the contemporary writers, Buero Vallejo and Sastre. Informal classroom discussion and written work will center on problems of dramatic technique. Readings in Spanish; discussion and papers in English.

## AMERICAN STUDIES

Mr. D. B. Davis, Chairman; Messrs. S. M. Brown, Jr., D. F. Dowd, R. H. Elias, A. Hacker, C. Rossiter, S. C. Strout, R. M. Williams, Jr.

The American Studies Committee does not offer a formal major, but seeks to encourage interdisciplinary work in the history, culture, and institutions of America. A student may construct his own American Studies program by making a balanced selection from the following list of advanced courses dealing with American subjects: Economics 323, 324, 331, 351; English 329, 330, 336, 442, 444, 446, 447, 448, 459; Government 313, 314, 316, 317, 318, 320, 325, 326; History 371, 372, 375, 377, 378, 380, 381, 383, 384, 470, 472, 473, 478, 481, 482; History of Art 375, 376; Sociology 262, 264; Seminar in Intellectual History (In Six-Year Ph.D. Program, open with consent of instructor).

### 401-402. SEMINAR IN AMERICAN STUDIES

Throughout the year. Credit four hours a term. Prerequisites: senior standing and consent of the instructor. Applicants must provide evidence of their qualifications to undertake seminar work in an advanced interdisciplinary exploration of the history and meaning of American culture. Fall term: W 1:25-3:20, Mr. Davis. Spring term: Th 1:25-3:20, Mr. Elias.

Fall term: changing concepts of the American character—a study of images and interpretations of the American character from the early nineteenth century to the present, through an analysis of selected fiction and of commentaries by Tocqueville and modern social scientists. Spring term: the 1920's—an attempt to define the historical meaning of a decade through a study of the status of the individual as seen in the decade's economy, politics, family relations, justice, literature, fine arts, and philosophy; readings in Veblen, Hoover, J. B. Watson, Hemingway, and Dewey, among others.

## ANTHROPOLOGY

Mr. R. J. Smith, Chairman; Messrs. R. Ascher, F. A. Cancian, E. D. Chapple, C. F. Hockett, K. A. R. Kennedy, B. Lambert, W. W. Lambert, T. F. Lynch, J. V. Murra, M. E. Opler, J. M. Roberts, L. Sharp, J. T. Siegel, Miss Judith M. Treistman, Messrs. T. S. Turner, V. W. Turner, A. P. Wolf, F. W. Young.

Two majors are offered by the Department: (1) a major in anthropology, and (2) a major in social relations.

**ANTHROPOLOGY.** For fulfillment of the major students are required to have taken Anthropology 101 and 102 and an additional thirty-two hours chosen from courses given at the 300 level or higher. Eight of these hours may be taken at comparable level in related fields outside the department and with the approval of the advisor. A minimum of eight hours in anthropology must be at the 400 level or higher.

The student's developing interests may lead him to concentrate in the humanistic, social, or natural science aspects of anthropology, which as a broad field, includes the subdivisions of archaeology, social anthropology, linguistics, psychological anthropology, and physical anthropology. The specific program of courses in the major and related subjects is designed by the student in consultation with his major advisor.

Specialized individual study programs are offered in Anthropology 497-498 (Topics in Anthropology), open to a limited number of juniors and seniors. Consent of the instructor is required.

Students seeking admission to the Department's Honors program should file application on a form obtainable in the departmental office not later than February 15 of their junior year. Final selection will be made by the Anthropology faculty. Honors students may fulfill part or all of their 400-level requirements by taking Anthropology 491 and 492.

Attention of students is directed to the course offerings in linguistics, where subjects closely related to anthropology are treated.

The Department of Anthropology holds colloquia throughout the academic year. Faculty from Cornell and other universities participate in discussion of current research and problems in anthropology; students are encouraged to attend.

The Distribution requirement in Social Sciences is met in Anthropology 101 and 102, or 101 or 102 and either 201 or 202.

**SOCIAL RELATIONS.** The major in social relations is offered jointly by the Department of Anthropology and the Department of Sociology. The major provides the student with basic competence in cultural anthropology, social psychology, and sociology, while giving particular emphasis to the common methods of research in these disciplines. The student electing this major is expected to obtain a grasp of the common interests and evidence of these disciplines as well as knowledge of their unique insights in attempting to develop generalizations regarding man in society. The student's work is integrated in his senior year when he takes the Social Relations Seminar in which he is expected to interrelate aspects of the theory and data of the three disciplines.

1. Prerequisites to the major: The candidate must apply to the Committee on Admission to the Social Relations Major, offering the following:

- a. Either Anthropology 101 or Sociology 101.
- b. Either Psychology 101 or Child Development 115 or Sociology 281.
- c. Industrial and Labor Relations 210 or equivalent.

2. The major. The major calls for a minimum of 36 hours of course work as follows:

a. Three pairs or other combinations of related courses at the 300 level or above, to be selected in consultation with the major adviser. These six courses must include two from each of the following disciplines: anthropology, social psychology, sociology.

b. At least one course in methods, to be selected from the following: anthropological methods, techniques of experimentation (psychology), methods in sociology, advanced psychological statistics, the philosophy of science or of social science, advanced statistics (such as Industrial and Labor Relations 311).

c. At least one course in theory which is related to social relations.

d. The senior seminar in social relations (Sociology 497 or Anthropology 495).

A list of the courses which may be used to satisfy the requirements for the major in social relations is available from any of the major advisers.

Students seeking admission to the program in social relations should apply to the chairman of the Social Relations Committee, John M. Roberts.

#### 101. INTRODUCTION TO CULTURAL ANTHROPOLOGY

Either term. Credit three hours a term. Fall term: M W F 9:05, discussion sections to be arranged. Mr. Wolf. Spring Term: T Th 11:15, discussion sections to be arranged. Mr. Murra.

A comparative study of the organization of cultural behavior in systems of communications, technology, social relations, ritual, ideas, and sentiments; the relation of such systems to personal behavior and to continuity, change, and cultural transfer in history. Illustrative materials drawn largely from non-Western societies.

#### 102. THE EVOLUTION OF MAN

Spring term. Credit three hours. Anthropology 101 is not a prerequisite to Anthropology 102. T Th 10:10. Discussion section to be arranged. Miss Treistman.

An exploration of the archaeological and fossil record of human evolution; emphasis is on the varied ways of uncovering, interpreting, and understanding man's biological and cultural development from the origin of man to the rise of civilization.

#### INTRODUCTION TO ARCHAEOLOGY

(Archaeology 200)

Spring term. Credit three hours. T Th 1:25. Mr. Ascher, Miss Milburn.

#### 201-202. SEMINAR: PROBLEMS IN ANTHROPOLOGY

Throughout the year or either term. Credit three hours a term. Open to freshmen and sophomores who have had Anthropology 101 or 102 or both. Hours to be arranged. Messrs. Ascher, Smith.

A seminar designed to permit intensive development of selected topics and problems raised in Anthropology 101-102. Students will be required to prepare research papers and lead discussions.

### 301. SOCIAL ANTHROPOLOGY

Fall term. Credit four hours. Open to sophomores, juniors and seniors who have not had Anthropology 101. M W F 12:20. Mr. Sharp.

A study and comparison of the types of learned, shared, and transmitted behavior patterns and ideas by means of which men of various periods and places have dealt with their environment, worked out their social relations with their fellow men, and defined their place in the cosmos. An inquiry into human nature and its expression in man's institutional and intellectual creations.

### [302. LANGUAGE AND CULTURE]

Spring term. Credit four hours. Not offered in 1968-69.

### 303. PREHISTORIC ARCHAEOLOGY

Fall term. Credit four hours. M W F 11:15. Mr. Lynch.

A study of Old World prehistory from the origins of culture in the Paleolithic through the beginnings of civilization. Stress will be given to the interrelations between culture and environment in the Pleistocene; the origins and diffusion of agriculture, sedentism, and civilization; and the prehistoric background of European culture and society.

### 304. PHYSICAL ANTHROPOLOGY

Fall term. Credit four hours. M W F 9:05.

A survey of modern theories of man's biological history. The evidence for primate evolution in the data of the fossil record, comparative anatomy, biochemical anthropology, and animal behavior studies. Particular attention is given to taxonomy, phylogeny, protocultural development, and on-going human evolution.

### 305. PSYCHOLOGICAL ANTHROPOLOGY

Spring term. Credit four hours. M W F 10:10. Mr. Wolf.

A detailed consideration of problems selected to illustrate the mutual relevance of psychology and social anthropology.

### 312. CONTEMPORARY ANTHROPOLOGY THEORY

Fall term. Credit four hours. T Th S 10:10. Mr. B. Lambert.

A survey of the principal approaches employed by present-day anthropologists as they seek to understand human society and culture. Applications of social and psychological theory to anthropological problems will be considered.

### [313. CULTURAL CHANGE]

Credit four hours. Not offered in 1968-69.

### [314. APPLIED ANTHROPOLOGY]

Credit four hours. Messrs. Opler, Sharp. Not offered in 1968-69.

### 321. KINSHIP AND SOCIAL ORGANIZATION

Fall term. Credit four hours. M W F 2:30. Mr. T. Turner.

The development of kinship studies, analysis of the family, unilineal and bilateral systems of kinship, marriage. The study of kinship terminology.

Kinship in small-scale and complex societies. Political, economic, and religious aspects of kinship organization.

[323. COMPARATIVE RELIGIOUS SYSTEMS]

Credit four hours. Mr. Siegel. Not offered in 1968-69.

324. MYTH, RITUAL AND SYMBOL

Fall term. Credit four hours. M W F 10:10. Mr. V. Turner.

A survey of various approaches to the understanding of myth, cosmology, ritual, and esthetic symbolism, drawing upon anthropological, psychological, and philosophical sources. The ideas of certain literary critics and historians of religion will also be considered. An attempt will be made to isolate the basic formal principles of symbolic structures, to analyze the nature and sources of the affective and cognitive aspects of symbolic meaning and to define the social and cultural functions of the major categories of symbolism.

326. ECONOMIC ANTHROPOLOGY

Fall term. Credit four hours. M W F 1:25. Mr. Cancian.

Data on economic systems of primitive and peasant societies and problems in the conceptualization of these data will be reviewed in terms of the "substantive," "formal," and "adaptive" approaches to economic anthropology. Attention will be given to economic change.

328. COMPARATIVE POLITICAL AND LEGAL ORGANIZATION

Spring term. Credit four hours. M W F 9:05. Mr. Roberts.

A survey of the fields of primitive government and law. Selected governmental and legal systems will be compared in terms of relevant anthropological theories and problems.

363. ARCHAEOLOGY OF ASIA

Spring term. Credit four hours. M W F 9:05. Miss Treistman.

A survey of the archaeology of Asia with emphasis on the origins of civilization in India, Southeast Asia, China, and Japan.

[364. ARCHAEOLOGY OF THE AMERICAS]

Credit four hours. Mr. Lynch. Not offered in 1968-69.

372. LIVING RACES OF MAN

Spring term. Credit four hours. T Th S 10:10.

A survey of the major features of phenotypic variation in human populations today. Attention is directed to the evolutionary factors of race formation operating through time and across geographical lines, to the racial histories of particular human groups, and to the development of concepts about race in Western thought.

[415-416. SURVEY OF ANTHROPOLOGICAL THEORY]

Throughout the year. May be taken either term or both terms. Credit four hours a term. Mr. Opler. Not offered in 1968-69.

COMPARATIVE RURAL SOCIETIES

(Rural Sociology 420, Agr.)

Fall term. Credit three hours. Prerequisite, one general course in sociology or anthropology. M W F 11:15. Mr. Polson.

[423. COMPARATIVE SOCIAL SYSTEMS]

Credit four hours. Not offered in 1968-69.

## 426. THE CONTENT OF CULTURE

Fall term. Credit four hours. M W F 11:15. Mr. Roberts.

Attention is given to the description and management of the informational resource known as culture with a view to developing a theory of culture content. Codes, models, and inventories are given specific attention.

## [427. CONSTANTS AND VARIABLES IN CULTURE]

Credit four hours. Mr. Roberts. Not offered in 1968-69.

## [430. ETHNOLOGY OF NORTH AMERICA]

Credit four hours. Mr. Roberts. Not offered in 1968-69.

## 432. ETHNOLOGY OF MIDDLE AMERICA

Spring term. Credit four hours. T Th S 9:05. Mr. Cancian.

A survey of the social anthropology of the Indian and peasant populations of Mexico and Guatemala, with emphasis on peasant economies and social organization.

## 434. ETHNOLOGY AND MAINLAND SOUTHEAST ASIA

Spring term. Credit four hours. M W F 11:15. Mr. Sharp.

The development and distribution of major cultural systems in mainland Southeast Asia. Discussion of selected groups in southern China, Assam, Burma, Thailand, Laos, Cambodia, and Vietnam, and of the fate of traditional cultural characteristics following the expansion of Chinese, Indian, Moslem, and Western civilizations into these areas.

## [435. ETHNOLOGY OF ISLAND SOUTHEAST ASIA]

Credit four hours. Mr. Siegel. Not offered in 1968-69.

## 436. ETHNOLOGY OF AFRICA

Spring term. Credit four hours. M W F 2:30. Mr. V. Turner.

A social and cultural survey of representative African peoples. Stress is laid on the comparative study of political institutions and local descent groups. Ritual beliefs and practices are considered in relation to repetitive and radical change.

## [438. ETHNOLOGY OF OCEANIA]

Credit four hours. Mr. B. Lambert. Not offered in 1968-69.

## 441. CULTURE AND SOCIETY IN SOUTH ASIA

Fall term. Credit four hours. T Th S 9:05.

A survey of the social, economic, political, and religious institutions of the countries of South Asia. Both the traditional cultures and the changes which are taking place are considered.

## 443. CHINESE CULTURE AND SOCIETY

Spring term. Credit four hours. M W F 1:25. Mr. Wolf.

An analytical survey of the social structure and nonmaterial culture of late traditional China. Attention is given to cultural geography and population, family and kinship, stratification and mobility, religion and values, economic institutions, and the power structure.

## [445. JAPANESE CULTURE AND SOCIETY]

Credit four hours. Mr. Smith. Not offered in 1968-69.

451. INTERPRETIVE ARCHAEOLOGY

Fall term. Credit four hours. Th 1:25-3:20. Mr. Ascher.

A discussion of the dual humanistic, scientific aims of archaeology and how they may be achieved. The nature of evidence, recognition, observation, classification, experiment, quantification, and analogy in archaeological inference. Critical evaluation of attempts to reconstruct specific events, systems of knowledge, personalities, trade, migration, populations, communities, and culture history. Examples are drawn from several parts of the world and from contemporary as well as ancient communities. Laboratory and field work arranged where appropriate for individual projects.

452. SCIENCE IN ARCHAEOLOGY

Spring term. Credit four hours. Prerequisites, two years of biological or physical science; or two years of mathematics, computer science or engineering; or two years of the above in any combination. M 1:25-3:20. Mr. Ascher.

A multidisciplinary seminar focused on applications to archaeology of some aspects of science. Topics vary with the composition of the class, but they can include applications drawn from the biological, physical, geological, material, or computer sciences; mathematics, statistics, and engineering. Attention is given to archaeological thought and to accomplishments in science and technology (e.g., Stonehenge) of peoples known from archaeological data. Class readings include examples of applications (e.g., radiocarbon dating) and collaborative approaches to classic problems (e.g., emergence of food-producing communities). Laboratory and field work on the design and construction of experimental archaeological sites.

[466. TECHNOLOGY]

Credit four hours. Miss Treistman. Not offered in 1968-69.

[471. PHYSICAL ANTHROPOLOGY LABORATORY]

Credit four hours. Prerequisites, Anthropology 102, 202, 304 or 372; or Biological Sciences 101-102, 103-104, 210, 270, 280, 301, 311, 361, or 362; or consent of the instructor. Not offered in 1968-69.

491. HONORS SEMINAR

Fall term. Credit four hours. T 1:25-3:20. Mr. Smith.

492. HONORS THESIS

Spring term. Credit four hours. Prerequisite, Anthropology 491. Hours to be arranged.

494. ETHNOHISTORY

Spring term. Credit four hours. M W F 10:10. Mr. Murra.

The utilization of concepts derived from field anthropology such as status lineages, rights-in-land or ethnogenesis in historical research. Problems in evaluating African, Meso-American and Andean oral traditions and of early European eyewitness reports.

495. SOCIAL RELATIONS SEMINAR

(also Sociology 497)

Fall term. Credit four hours. Open only to seniors majoring in social relations. Hours to be arranged.

497. TOPICS IN ANTHROPOLOGY

Either term. Credit two hours. Prerequisite, consent of the instructor. Hours to be arranged. Staff.

## 498. TOPICS IN ANTHROPOLOGY

Either term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Staff.

## GRADUATE SEMINARS

## 502. THE DESIGN OF FIELD RESEARCH

Spring term. Credit four hours. T 1:25-3:20. Mr. Cancian.

After consideration of general problems of technique including rapport, language and recording of data, the seminar will focus on the formulation of questions to be answered with field data and specification of the types of data adequate to answer them. Topics will include the uses of texts, case histories, observation, interviews, surveys and ethnohistory.

## 507-508. SPECIAL PROBLEMS IN ANTHROPOLOGY

Throughout the year. Credit and hours to be arranged. Staff.

## [CROSS-CULTURAL RESEARCH METHODS]

(Rural Sociology 516) (Agr. or Grad. School)

Credit three hours. Mr. Young. Not offered in 1968-69.

## 514. APPLIED ANTHROPOLOGY

Spring term. Credit four hours. W 3:35-5:35. Mr. Sharp.

The uses of anthropology in the modern world. Designed not only for students of the humanities and social sciences, but also for natural scientists concerned with the cultural problems involved in technological change, community development, native administration, and modernization in various regions of the world.

## 522. KINSHIP AND DESCENT

Fall term. Credit four hours. F 3:35-5:35. Mr. B. Lambert.

A comparative study of the functions of descent groups and of the interpersonal relations of natural and fictive kinsmen will be undertaken, with the object of determining some of the causes of variation in these aspects of social structure. Particular emphasis will be placed on cognatic societies.

## 525. MODELS IN CULTURE

Spring term. Credit four hours. Th 3:35-5:35. Mr. Roberts.

The place of natural models in culture is examined from the viewpoints of ethnography, anthropological method, and anthropological theory. Attention is given to natural models which are primarily expressive (e.g., games, myths, paintings, etc.) and to models which are primarily cognitive (e.g., maps, quipus, tallies, etc.). Consideration is given to the involvements of individuals and groups in such models and to the place of models in the management of cultural information by individuals and groups.

## 527. ETHOS, EPISTEMOLOGY AND MOTIVATION

Fall term. Credit four hours. Th 3:35-5:35. Mr. T. Turner.

The seminar will investigate the ways in which the cognitive and affective orientations of actors to situations become standardized in social and cultural systems. The substantive focus of the seminar will be upon the analysis of myth, ritual symbolism, social structure and political processes of primitive societies. Readings will include Freud, Piaget, Kant, Merleau-Ponty, Bateson, Levi-Strauss, Durkheim, Mauss and Turner.

38 ANTHROPOLOGY

[531. MIDDLE AMERICA]

Credit four hours. Mr. Cancian. Not offered in 1968-69.

[532. TRIBAL PEOPLES OF LOWLAND SOUTH AMERICA]

Credit four hours. Mr. T. Turner. Not offered in 1968-69.

533. ANDEAN RESEARCH

Fall term. Credit four hours. M 3:35-5:35. Mr. Murra.

Cultural continuities in Andean development. The ecological, archaeological, ethnohistoric and contemporary ethnological record. The Andean heritage as a resource for modernization.

[534-535. SOUTHEAST ASIA: READINGS IN SPECIAL PROBLEMS]

Credit to be arranged. Mr. Siegel. Not offered in 1968-69.

537. AFRICA

Fall term. Credit four hours. W 3:35-5:35. Mr. V. Turner.

Consideration of the symbolism and social dynamics of politics and religion in traditional and changing African societies.

541. SOUTH ASIA

Spring term. Credit four hours. M 3:35-5:35.

An analysis of selected social, economic, and ideological institutions and developments in India and South Asia, and of present tendencies in regard to them.

542. CHINA

Spring term. Credit four hours. T 3:35-5:35.

Consideration of problems in Chinese culture and civilization. Topics to be announced.

543. JAPAN

Spring term. Credit four hours. Th 1:25-3:25. Mr. Smith.

Japanese society is discussed as a test case for theories of modernization and development, with major emphasis on the historical antecedents of Japan's modern century.

[561. PROBLEMS IN ASIAN ARCHAEOLOGY]

Credit four hours. Miss Treistman. Not offered in 1968-69.

[564. PROBLEMS IN EUROPEAN ARCHAEOLOGY]

Credit four hours. Mr. Lynch. Not offered in 1968-69.

565. ARCHAEOLOGY: AGRICULTURE AND CIVILIZATION

Fall term. Credit four hours. Prerequisite, Anthropology 364. T 3:35-5:35. Mr. Lynch.

The origins, diffusion, and development of agriculture and civilization in the Americas.

[575. PHYSICAL ANTHROPOLOGY: HISTORY AND THEORY]

Credit four hours. Mr. Kennedy. Not offered in 1968-69.

576. PHYSICAL ANTHROPOLOGY: PROBLEMS IN RESEARCH AND THEORY

Spring term. Credit four hours. Th 1:25-3:35.

## [577. PALAEOANTHROPOLOGY OF SOUTH ASIA]

Credit four hours. Mr. Kennedy. Not offered in 1968-69.

## 601-602. FIELD RESEARCH

Throughout the year. Credit to be arranged. Staff.

Field research seminars may be conducted in the United States, Latin America, Africa, India, Southeast Asia, Taiwan, Japan, and other areas for a limited number of adequately prepared students.

## ARCHAEOLOGY

Mr. R. Ascher, Chairman; Messrs. A. H. Detweiler, S. W. Jacobs, D. Kagan, T. F. Lynch, Miss Elizabeth Milburn, Messrs. S. J. O'Connor, I. Rabinowitz, Miss Judith M. Treistman, Mr. F. O. Waage.

Archaeology is taught in several departments within the University. Any undergraduate, no matter what his major, may elect a *concentration* in archaeology. The provisions of the concentration are:

(a) Completion of Introduction to Archaeology with a grade of B or better. This should be accomplished not later than the second semester of the sophomore year.

(b) Completion of at least four additional courses in archaeology. The distribution should be such that the courses are selected from the offerings of two or more departments.

(c) Participation in an archaeological excavation either at a summer field school or at a research excavation approved in advance by the concentration adviser. This provision may be waived at the discretion of the adviser.

A student electing the concentration selects a concentration adviser. If the student is majoring in a department that offers archaeology, he selects his adviser from within that department. If the student is not majoring in such a department, he should consult with Mr. Ascher who will guide him in the choice of an adviser. Upon graduation, successful completion of the concentration will be noted on the student's academic record.

## 200. INTRODUCTION TO ARCHAEOLOGY

Spring term. Credit three hours. Open to all undergraduates whether or not they elect the concentration. T Th 1:25. Mr. Ascher, Miss Milburn.

A consideration of the essential methods and aims of archaeology. During the second half of the semester specialists from several departments will discuss a variety of problems in, and approaches to, archaeology.

## [INTRODUCTION TO CLASSICAL ARCHAEOLOGY]

(Classics 220)

Not offered in 1968-69.

## ANCIENT HISTORY

(History 301-302)

Throughout the year. M W F 11:15. Mr. Kagan.

**PREHISTORIC ARCHAEOLOGY**

(Anthropology 303)

Fall term. M W F 11:15. Mr. Lynch.

**PREHISTORIC ART**

(History of Art 313)

Fall term. M W F 9:05. Mr. Waage.

**PRECLASSICAL GREECE**

(Classics 319)

Fall term. M W F 10:10. Miss Milburn.

**ARCHAEOLOGY OF CLASSICAL GREECE**

(Classics 320)

Spring term. M W F 10:10. Miss Milburn.

**[GREEK SCULPTURE]**

(History of Art 321)

Not offered in 1968-69.

**ARTS OF THE ROMAN EMPIRE**

(History of Art 322)

Spring term. Tuesday 1:25-3:20. Mr. Waage.

**ARCHAEOLOGY OF ASIA**

(Anthropology 363)

Spring term. M W F 9:05. Miss Treistman.

**[ARCHAEOLOGY OF THE AMERICAS]**

(Anthropology 364)

Not offered in 1968-69.

**NUMISMATICS**

(History of Art 521)

Fall term. Hours to be arranged. Mr. Waage.

**[CERAMICS AND THE TECHNIQUES OF EXCAVATION]**

(History of Art 523)

Not offered in 1968-69.

**[THE ANCIENT NEAR EAST]**

(Architecture 430)

Not offered in 1968-69.

**[THE CLASSICAL WORLD]**

(Architecture 431)

Not offered in 1968-69.

**INTERPRETIVE ARCHAEOLOGY**

(Anthropology 451)

Fall term. Th 1:25-3:20. Mr. Ascher.

**SCIENCE IN ARCHAEOLOGY**

(Anthropology 452)

Spring term. M 1:25-3:20. Mr. Ascher.

[INTRODUCTION TO ARCHITECTURAL ASPECTS OF  
ARCHAEOLOGICAL FIELDWORK]

(Architecture 460)

Not offered in 1968-69.

DESIGN AND CONSERVATION

(Architecture 465; Planning 746)

Fall term. Mr. Jacobs; Mr. Jones.

SOUTHEAST ASIAN ART AND ARCHAEOLOGY

(History of Art 588)

Fall term. W 1:25-3:20. Mr. O'Connor.

## ASIAN STUDIES

S. J. O'Connor, Chairman; Messrs. E. Ahmed, B. R. O'G. Anderson, D. E. Ashford, K. Biggerstaff, N. C. Bodman, H. Capener, Nai-Ruenn Chen, Cheun-tang Chow, A. T. Dotson, J. M. Echols, G. H. Fairbanks, John C. Fei, H. Feldman, J. W. Gair, F. H. Golay, A. B. Griswold, D. G. E. Hall, M. Hugo-Brunt, R. B. Jones, Jr., G. McT. Kahin, G. B. Kelley, K. A. R. Kennedy, T. C. Liu, J. McCoy, J. W. Mellor, D. Moringo, M. E. Opler, C. A. Peterson, R. A. Polson, R. M. Quinn, H. Shadick, L. Sharp, J. T. Siegel, R. J. Smith, Mrs. Etsuko Terasaki, Miss Judith Treistman, Messrs. A. P. Wolf, John U. Wolff, O. W. Wolters, M. W. Young.

The applicant for admission to the major in Asian studies must have completed at least one course selected from among those listed under the Department of Asian Studies and must be recommended by the instructor in charge of that course. He must have received a minimum grade of C in this and in all other courses taken in the Department.

The candidate for the A.B. degree with a major in Asian studies is required to complete two courses at the 200 level in one of the Asian languages offered at Cornell. The major consists of at least thirty additional hours (which may include further language work), selected by the student in consultation with his adviser, from among the courses listed under the Department of Asian Studies numbered 300 and over. Majors normally concentrate in one of the following areas: China, Japan, South Asia, Southeast Asia.

The candidate for Honors must maintain a cumulative average of B in courses in the humanities and social sciences. He must also maintain an average of B in courses in the Department. In his senior year, the Honors candidate will take a two-term graduate seminar selected from among those listed below in consultation with his adviser, normally taking a seminar relating to the area in which his studies have been concentrated.

The Honors candidate will also take the Honors Course (Asian Studies 401) in which he writes his Honors paper. He may also enroll in Asian Studies 402 in his senior year, but this course is not required of him. At the end of his junior year, the student should consult with

the professor with whom he plans to write his paper, to obtain permission to register for the Honors course. There will be a comprehensive written examination in May of his senior year, administered by the supervisor of his Honors work.

## Asia, General

### ECONOMICS OF AGRICULTURAL DEVELOPMENT

(Agricultural Economics 364) (Agr.) Spring term. T Th S 9:05. Mr. Freebairn.

### SEMINAR ON THE ECONOMICS OF TROPICAL AGRICULTURE

(Agricultural Economics 667) (Agr.) Spring term. F 2:30-4:25. Mr. Poleman.

### COMPARATIVE RURAL SOCIETIES

(Rural Sociology 420) (Agr.) Fall term. M W F 11:15. Mr. Polson.

### ARCHAEOLOGY OF ASIA

(Anthropology 363) Spring term. M W F 9:05. Miss Treistman.

### [PROBLEMS IN ASIAN ARCHAEOLOGY]

(Anthropology 561) Fall term. T 3:35-5:35. Miss Treistman. Not offered in 1968-69.

### ARCHITECTURE AND PLANNING IN THE FAR EAST

(Architecture 435) Fall term. M W F 11:15. Mr. Hugo-Brunt.

### PUBLIC POLICY AND ECONOMIC DEVELOPMENT

(Economics 371) Fall term. M W F 9:05.

### ECONOMIC GROWTH AND DEVELOPMENT

(Economics 571) Fall term. Hours to be arranged.

### THE UNITED STATES AND ASIA

(Government 377) Spring term. M W F 9:05. Mr. Kahin.

### SEMINAR IN THE INTERNATIONAL RELATIONS OF ASIA

(Government 577) Fall term. Hours to be arranged. Mr. Kahin.

### SEMINAR IN INTERNATIONAL RELATIONS OF ASIA: JAPAN AND SOUTHEAST ASIA

(Government 578) Spring term. Mr. Allison.

### SELECTED TRADITIONS IN ASIAN ART

(History of Art 281) Spring term. M W F 10:10. Mr. O'Connor.

### ART OF INDIA AND SOUTHEAST ASIA

(History of Art 386) Fall term. M W F 10:10. Mr. O'Connor.

### 401. ASIAN STUDIES HONORS COURSE

Either term. Credit four hours a term. Staff.

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

## 402. ASIAN STUDIES DIRECTED READING

Either term. Credit two hours a term. Staff.

Open only to majors in the department in their senior year; provides the student with the opportunity to read intensively in a selected area under the direction of a member of the staff.

## 591-592. SEMINAR: FIELD RESEARCH

Throughout the year. Staff.

For description see the *Announcement of the Graduate School: Social Sciences*.

## China

## AREA COURSES

## CHINESE CULTURE AND SOCIETY

(Anthropology 443) Spring term. M W F 1:25. Mr. Wolf.

## SEMINAR: CHINA

(Anthropology 542) Spring term. T 3:35-5:35.

## INTRODUCTION TO THE ECONOMY OF CHINA

(Economics 369) Fall term. T Th S 9:05. Mr. Chen.

## SEMINAR: THE ECONOMY OF CHINA

(Economics 676) Spring term. Hours to be arranged. Mr. Chen.

## CHINESE FOREIGN POLICY

(Government 300) Both terms. Hours to be arranged. Mr. Mozingo.

## CHINESE GOVERNMENT AND POLITICS

(Government 347) Fall term. M W F 10:10.

## THE FOREIGN POLICY OF CHINA

(Government 478) Spring term. T Th 2:30-4:00. Mr. Mozingo.

## SEMINAR IN THE POLITICS OF CHINA

(Government 547) Spring term. Hours to be arranged.

## [COMPARATIVE COMMUNISM]

(Government 548) Spring term. Hours to be arranged. Messrs. Mozingo and Rush. Not offered in 1968-69.

## SEMINAR IN COMMUNIST CHINA IN INTERNATIONAL POLITICS

(Government 583) Fall term. Hours to be arranged. Mr. Mozingo.

## HISTORY OF CHINESE CIVILIZATION PRIOR TO THE NINETEENTH CENTURY

(History 323) Fall term. T Th S 10:10. Mr. Peterson.

## HISTORY OF CHINESE CIVILIZATION: NINETEENTH AND TWENTIETH CENTURIES

(History 324) Spring term. T Th S 10:10. Mr. Biggerstaff.

CHINESE HISTORY: T'ANG AND SUNG PERIODS

(History 492) Spring term. T Th 1:25-3:20. Mr. Peterson.

CHINESE HISTORIOGRAPHY AND SOURCE MATERIAL

(History 591) Fall term. Hours to be arranged. Mr. Peterson.

MODERNIZATION OF CHINA

(History 593-594) Throughout the year. M 3:35-5:30. Mr. Biggerstaff.

SEMINAR IN MEDIEVAL CHINESE HISTORY

(History 691-692) One or two terms. Hours to be arranged. Mr. Peterson.

SEMINAR IN MODERN CHINESE HISTORY

(History 693-694) One or two terms. Hours to be arranged. Mr. Biggerstaff.

ART OF CHINA

(History of Art 383) Fall term. M W F 11:15. Mr. Young.

PROBLEMS IN CHINESE ART

(History of Art 584) Spring term. W 1:25-3:25. Mr. Young.

[STUDIES IN CHINESE PAINTING]

(History of Art 586) Spring term. W 1:25-3:25. Mr. Young. Not offered in 1968-69.

HISTORY OF THE CHINESE LANGUAGE

(Chinese 402) Either term. W 2:30-4:25. Mr. Bodman.

LINGUISTIC STRUCTURE OF CHINESE

(Chinese 403) Either term. T 2:30-4:25. Mr. Bodman.

[SINO-TIBETAN LINGUISTICS]

(Linguistics 581-582) Throughout the year. Th 2:30-4:25. Not offered in 1968-69.

CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION

(Comparative Literature 371) Fall term. M W F 10:10. Mr. Shadick.

CHINESE IMAGINATIVE LITERATURE IN TRANSLATION

(Comparative Literature 372) Spring term. M W F 10:10. Mr. Shadick.

Other courses dealing extensively with China are Anthropology 363, 561; Economics 371; Government 377, 577; History of Art 281; Architecture 435, and Planning 705 (Arch.).

LANGUAGE COURSES

ELEMENTARY CHINESE

(Chinese 101-102)

INTERMEDIATE CHINESE I

(Chinese 201-202)

INTRODUCTION TO CLASSICAL CHINESE  
(Chinese 213)

[ELEMENTARY HOKKIEN CHINESE]  
(Chinese 131H-132H)  
Not offered in 1968-69.

[ELEMENTARY CANTONESE]  
(Chinese 131C-132C)  
Not offered in 1968-69.

INTERMEDIATE CANTONESE  
(Chinese 133C-134C)

INTERMEDIATE CHINESE II  
(Chinese 301-302)

INTERMEDIATE CLASSICAL CHINESE  
(Chinese 312)

CHINESE HISTORICAL AND PHILOSOPHICAL TEXTS  
(Chinese 313)

ADVANCED READINGS IN MODERN CHINESE  
(Chinese 411-412)

CLASSICAL CHINESE PROSE  
(Chinese 414)

CLASSICAL CHINESE POETRY AND DRAMA  
(Chinese 416)

READINGS IN THE TRADITIONAL CHINESE NOVEL  
(Chinese 420)

ADVANCED READINGS IN CLASSICAL CHINESE  
(Chinese 521-522)

SEMINAR IN CHINESE LITERATURE  
(Chinese 571-572)

## Japan

### AREA COURSES

[JAPANESE CULTURE AND SOCIETY]  
(Anthropology 445) Fall term. M W F 9:05. Mr. Smith. Not offered in 1968-69.

JAPAN  
(Anthropology 543) Spring term. Th 1:25-3:25. Mr. Smith.

[ART OF JAPAN]  
(History of Art 384) Spring term. M W F 11:15. Mr. Young. Not offered in 1968-69.

[LINGUISTIC STRUCTURE OF JAPANESE]

(Japanese 404) Spring term. M W F 2:30. Mr. McCoy. Not offered in 1968-69.

Other courses dealing extensively with Japan are Anthropology 363, 561; Government 377, 577; History of Art 281; Architecture 435, and Planning 705 (Arch.)

LANGUAGE COURSES

ELEMENTARY JAPANESE

(Japanese 101-102)

INTERMEDIATE JAPANESE

(Japanese 201-202)

SELECTED READINGS IN JAPANESE

(Japanese 301-302)

INTRODUCTION TO CLASSICAL JAPANESE

(Japanese 305-306)

JAPANESE READING FOR STUDENTS OF CHINESE

(Japanese 401-402)

ADVANCED READINGS IN JAPANESE

(Japanese 405-406)

South Asia

AREA COURSES

CULTURE AND SOCIETY IN SOUTH ASIA

(Anthropology 441) Fall term. T Th S 9:05.

SOUTH ASIA

(Anthropology 541) Spring term. M 3:35-5:35.

[PALAEOANTHROPOLOGY OF SOUTH ASIA]

(Anthropology 577) Fall 1968. Mr. Kennedy. Not offered in 1968-69.

SEMINAR: THE AGRICULTURAL DEVELOPMENT OF SOUTH ASIA

(Agricultural Economics 664) (Agr.) Fall term. T 2:30-4:25. Mr. Mellor.

HISTORY OF HINDI

(Hindi 401) Fall term in alternate years. Hours to be arranged. Mr. Fairbanks.

SEMINAR IN HINDI LINGUISTICS

(Hindi 600) Either term. Hours to be arranged. Mr. Fairbanks, Mr. Gair or Mr. Kelley.

[INDIA AS A LINGUISTIC AREA]

(Linguistics 331) Fall term in alternate years. Hours to be arranged. Mr. Fairbanks, Mr. Gair or Mr. Kelley. Not offered in 1968-69.

**[INDO-ARYAN STRUCTURES]**

(Linguistics 432) Spring term. Hours to be arranged. Mr. Gair. Not offered in 1968-69.

**[DRAVIDIAN STRUCTURES]**

(Linguistics 436) Spring term in alternate years. Hours to be arranged. Mr. Kelley. Not offered in 1968-69.

**ELEMENTARY PALI**

(Linguistics 530) Either term as needed. Hours to be arranged. Mr. Gair.

**[ELEMENTARY SANSKRIT]**

(Linguistics 531-532) Throughout the year in alternate years. Hours to be arranged. Not offered in 1968-69.

**COMPARATIVE INDO-ARYAN**

(Linguistics 534) Spring term in alternate years. Hours to be arranged. Mr. Fairbanks.

**COMPARATIVE DRAVIDIAN**

(Linguistics 536) Spring term in alternate years. Hours to be arranged. Mr. Kelley.

**SEMINAR**

(Linguistics 600) Each term. Hours to be arranged. Various members of the staff.

**DIRECTED RESEARCH**

(Linguistics 615-616) Either term. Staff.

Other courses dealing extensively with South Asia are 363, 561; Economics 371; Government 338, 377, 577; History of Art 281, 386; Agricultural Economics 364, 667, and Rural Sociology 420, 528 (Agr.).

**LANGUAGE COURSES****ELEMENTARY HINDI**

(Hindi 101-102) M-F 9:05; T Th 10:10.

**HINDI READING**

(Hindi 201-202)

**HINDI COMPOSITION AND CONVERSATION**

(Hindi 203-204)

**READING IN HINDI LITERATURE**

(Hindi 301-302)

**ADVANCED COMPOSITION AND CONVERSATION**

(Hindi 303-304)

**ADVANCED HINDI READING**

(Hindi 305-306)

**ELEMENTARY SINHALESE**

(Sinhalese 101-102)

**SINHALESE READING**

(Sinhalese 201-202)

**ELEMENTARY TELUGU**

(Telugu 101-102)

**TELUGU READING**

(Telugu 201-202)

**ELEMENTARY URDU**

(Urdu 101-102)

**URDU READING**

(Urdu 201-202)

## Southeast Asia

### AREA COURSES

**[COMPARATIVE RELIGIOUS SYSTEMS]**

(Anthropology 323) Fall term. M W F 2:30-4:25. Mr. Siegel. Not offered in 1968-69.

**ETHNOLOGY OF MAINLAND SOUTHEAST ASIA**

(Anthropology 434) Spring term. M W F 11:15. Mr. Sharp.

**[ETHNOLOGY OF ISLAND SOUTHEAST ASIA]**

(Anthropology 435) Fall term. M W F 1:25. Mr. Siegel. Not offered in 1968-69.

**[SOUTHEAST ASIA: READINGS IN SPECIAL PROBLEMS]**

(Anthropology 534-535) Throughout the year. Hours to be arranged. Mr. Siegel. Not offered in 1968-69.

**ECONOMIC POLICY AND DEVELOPMENT IN SOUTHEAST ASIA**

(Economics 365) Fall term. M W F 9:05. Mr. Golay.

**[SEMINAR: ECONOMIC GROWTH IN SOUTHEAST ASIA]**

(Economics 678) Spring term. Hours to be arranged. Mr. Golay. Not offered in 1968-69.

**GOVERNMENT AND POLITICS OF SOUTHEAST ASIA**

(Government 344) Fall term. T Th 2:30-4. Mr. Anderson.

**SEMINAR IN POLITICAL PROBLEMS OF SOUTHEAST ASIA**

(Government 644) Spring term. Hours to be arranged. Mr. Kahin.

**SOUTHEAST ASIAN HISTORY TO THE FOURTEENTH CENTURY**

(History 495) Fall term. T Th S 11:15. Mr. Wolters.

**SOUTHEAST ASIAN HISTORY FROM THE FIFTEENTH CENTURY**

(History 496) Spring term. T Th S 11:15. Mr. Wolters.

**SEMINAR IN SOUTHEAST ASIAN HISTORY**

(History 695-696) One or two terms. Hours to be arranged. Mr. Wolters.

**SOUTHEAST ASIAN ART AND ARCHAEOLOGY**

(History of Art 588) Fall term. W 1:25-3:25. Mr. O'Connor.

**SEMINAR: SOUTHEAST ASIAN LINGUISTICS**

(Linguistics 571-572) Throughout the year. Hours to be arranged. Mr. Jones.

**SEMINAR: MALAYO-POLYNESIAN LINGUISTICS**

(Linguistics 573-574) Throughout the year. Hours to be arranged. Mr. Wolff.

**CONTRASTIVE VIETNAMESE AND CHINESE GRAMMAR**

(Linguistics 583) Either term. Hours to be arranged. Mr. Quinn.

**[SOUTHEAST ASIAN LITERATURE IN TRANSLATION]**

(Comparative Literature 380) Fall term. T 2:30-4:25. Mr. Echols. Not offered in 1968-69.

**501-502. SOUTHEAST ASIA**

Throughout the year. Credit 4 hours. F 3:35-5:30, or to be arranged.

Fall term (BURMA), Mr. Hall. Spring term (Thailand), Mr. Sharp.

For full description see the *Announcement of the Graduate School: Social Sciences*.

**676. SOUTHEAST ASIAN RESEARCH TRAINING SEMINAR**

Spring term. Credit to be arranged. Hours to be arranged. Open only to advanced graduate students preparing for fieldwork in Southeast Asia. Mr. Seloasoemardjan.

Other courses dealing extensively with Southeast Asia are Economics 371, 571; Government 377, 577; History of Art 281, 386; Architecture 435 and Planning 705, 707 (Arch.); Agricultural Economics 364, 667, and Rural Sociology 420, 528 (Agr.)

**LANGUAGE COURSES****ELEMENTARY BURMESE**

(Burmese 101-102)

**BURMESE READING**

(Burmese 201-202)

**BURMESE COMPOSITION AND CONVERSATION**

(Burmese 203-204)

**ADVANCED BURMESE READING**

(Burmese 301-302)

**ELEMENTARY CEBUANO (BISAYAN)**

(Cebuano 101-102)

**ELEMENTARY INDONESIAN**

(Indonesian 101-102)

**INDONESIAN READING**

(Indonesian 201-202)

**INDONESIAN COMPOSITION AND CONVERSATION**

(Indonesian 203-204)

READINGS IN INDONESIAN AND MALAY

(Indonesian 301-302)

ADVANCED INDONESIAN CONVERSATION AND COMPOSITION

(Indonesian 303-304)

ADVANCED READINGS IN INDONESIAN AND MALAY LITERATURE

(Indonesian 305-306)

LINGUISTIC STRUCTURE OF INDONESIAN

(Indonesian 403)

MALAYO-POLYNESIAN LINGUISTICS

(Linguistics 573-574)

ELEMENTARY JAVANESE

(Javanese 131-132)

INTERMEDIATE JAVANESE

(Javanese 133-134)

OLD JAVANESE

(Linguistics 537-538)

ELEMENTARY TAGALOG

(Tagalog 101-102)

LINGUISTIC STRUCTURE OF TAGALOG

(Tagalog 403)

ELEMENTARY THAI

(Thai 101-102)

THAI READING

(Thai 201-202)

THAI COMPOSITION AND CONVERSATION

(Thai 203-204)

ADVANCED THAI

(Thai 301-302)

THAI LITERATURE

(Thai 305-306)

ELEMENTARY VIETNAMESE

(Vietnamese 101-102)

VIETNAMESE READING

(Vietnamese 201-202)

VIETNAMESE COMPOSITION AND CONVERSATION

(Vietnamese 203-204)

ADVANCED VIETNAMESE

(Vietnamese 301-302)

VIETNAMESE LITERATURE

(Vietnamese 305-306)

## ASTRONOMY

Mr. T. Gold, Chairman; Messrs. F. D. Drake, S. Gulkis, M. O. Harwit, C. Hazard, E. E. Salpeter, G. Shaviv, R. W. Shaw, Y. Terzian.

Undergraduates interested in graduate work in astronomy should major in either physics or mathematics, and take astronomy courses as electives. Graduate students must register with the instructor in charge of the desired course on regular registration days at the beginning of each term.

The distribution requirement in physical sciences is met in Astronomy 201-202.

### 201. INTRODUCTION TO ASTRONOMY

Fall term. Credit four hours. Lectures, M W F 9:05. Laboratory, M T Th F 2-4:25. Mr. Shaw.

Fundamentals of astronomy with emphasis on the planets, moon, comets, meteors, the solar system as a unit. Telescopes. Night observation at Fuertes Observatory. Intended as a base for those who major in astronomy and as a survey for students from other fields.

### 202. INTRODUCTION TO ASTRONOMY

Spring term. Credit four hours. (Astronomy 201 is not prerequisite to Astronomy 202). M W F 9:05. Laboratory, M T Th or F 2-4:25. Mr. Shaw.

Fundamentals of astronomy with emphasis on the sun, stars, the galaxy, the sidereal universe. Spectroscopy. Night observation at Fuertes Observatory. Suitable for major students and as a survey for students from other fields.

### 305. CELESTIAL NAVIGATION

Spring term. Credit three hours. M W F 11:15. Mr. Shaw.

Celestial and space navigation. Theory of position determination on sea, in air, and in space. Air and Nautical Almanacs. Day and night practice with marine, standard bubble, and automatic sextants. Chart work.

### 332. ELEMENTS OF ASTROPHYSICS

Spring term. Credit three hours. Prerequisites, calculus and a course in modern physics. Hours to be arranged. Mr. Terzian.

Topics to be covered will include: Size, mass and age of stars, galaxies, and the Universe; stellar evolution and the formation of heavy chemical elements; interstellar matter and star formation.

### [338. ASTROCHEMISTRY]

Fall term. Credit four hours. Prerequisites, Astronomy 202, the calculus, and the consent of the instructor. Lectures M W F 11:15. Laboratory to be arranged. Mr. Shaw. Not offered in 1968-69.

### 340. SPECIAL TOPICS IN ASTRONOMY

Fall or spring term. Credit two or four hours. Prerequisite, consent of the instructor. Mr. Shaw.

Instruction in selected topics for qualified students according to their needs and preparation. Observational techniques and instrumentation. Binary stars, orbital computation, coordinate measurement, photometry, and spectroscopy. Special attention to the problems of science teachers.

## 52 BIOLOGICAL SCIENCES

### 431. INTRODUCTION TO ASTROPHYSICS

Fall term. Credit three hours. Prerequisites, Physics 225, 226, and 303 or the equivalent. Mr. Harwit.

Dynamics of planetary and stellar systems. Stellar structure and evolution. Binary, variable and peculiar stars. Nuclear synthesis in stars. Stellar atmospheres. Abundance of the chemical elements.

### 432. INTRODUCTION TO SPACE PHYSICS

Spring term. Credit three hours. Prerequisites, Astronomy 431 or consent of instructor. Mr. Harwit.

Interstellar dust and gas. Evolution of the Stromgren sphere. Star formation. Interstellar magnetic fields, cosmic rays and radio emission. Interplanetary gas and dust. Comets, meteorites, and micrometeorites.

For complete descriptions of the following graduate courses see the *Announcement of the Graduate School: Physical Sciences*.

### 510. COSMOLOGY AND EVOLUTION

### 520. RADIO ASTRONOMY I

### 521. RADIO ASTRONOMY II

### 524. RADIO WAVES IN IONIZED GASES

### 531. COSMIC RAYS

### 532. PHYSICS OF THE MAGNETOSPHERE

### 560. INTERSTELLAR MATTER

### 635. ASTRONOMY FROM ABOVE THE ATMOSPHERE

### 640. ADVANCED STUDY AND RESEARCH

### 660. STRUCTURE AND EVOLUTION OF STARS

## BIOLOGICAL SCIENCES

Dr. Robert S. Morison, Director; M. Alexander, H. W. Ambrose, J. M. Anderson, H. P. Banks, J. P. Barlow, D. M. Bates, C. O. Berg, D. W. Bierhorst, A. W. Blackler, W. L. Brown, T. J. Cade, J. M. Calvo, J. M. Camhi, L. E. Carmichael, R. T. Clausen, R. K. Clayton, L. C. Cole, C. L. Comar, L. J. Daniel, E. A. Delwiche, W. C. Dilger, T. Eisner, S. T. Emlen, H. L. Everett, J. M. Fessenden-Raden, G. R. Fink, E. L. Gasteiger, J. L. Gaylor, A. J. Gibson, Q. H. Gibson, P. W. Gilbert, J. H. Gillespie, R. J. Guillory, D. J. Hall, B. P. Halpern, G. G. Hammes, W. Hansel, L. A. Heppel, G. P. Hess, R. W. Holley, J. W. Hudson, A. T. Jagendorf, W. T. Keeton, E. B. Keller, J. M. Kingsbury, R. P. Korf, D. A. Lancaster, E. R. Lemon, S. L. Leonard, R. E. MacDonald, R. J. MacIntyre, R. E. McCarty, D. B. McCormick, W. N. McFarland, L. N. Miller, H. E. Moore, H. B. Naylor, L. A. Neal, W. L. Nelson, R. D. O'Brien, D. Pimentel, E. Racker, E. C. Raney, D. S. Robson, R. B.

Root, F. Rosenblatt, R. L. Russell, M. Salpeter, H. A. Scheraga, H. W. Seeley, Jr., E. M. Shantz, L. I. Slobin, R. Spanswick, A. M. Srb, F. C. Steward, H. T. Stinson, E. L. Stone, D. N. Tapper, J. F. Thompson, B. V. Travis, C. H. Uhl, L. D. Uhler, P. J. VanDemark, A. vanTienhoven, W. J. Visek, B. Wallace, J. W. Wells, D. C. Wharton, J. H. Whitlock, H. H. Williams, D. B. Wilson, W. A. Wimsatt, L. D. Wright, R. Wu, S. A. Zahler, D. B. Zilversmit.

Students will be provisionally accepted in the biological sciences specialization as established by the Division of Biological Sciences during their freshman year or the first term of the sophomore year. Final admission to the specialization will require completion of (1) a year of biology (Biological Sciences 101-102 or 103-104); (2) a year of general chemistry (preferably Chemistry 107-108); and (3) a year of calculus (Mathematics 111-112 or 111-122). Whenever possible, the student should include the above three subjects in his freshman schedule and complete organic chemistry and genetics in the sophomore year. It is also advisable for students anticipating a concentration in biochemistry or physiology or complete Physics 207-208 in the sophomore year, and all students should consider doing so. A student is not encouraged to undertake a specialization in biological sciences unless his performance in the above courses gives evidence of capacity to do satisfactory work at a more advanced level.

In addition to the introductory courses in chemistry, biological sciences, and mathematics, each major student must complete the following: (1) Chemistry 353-355 (or 357-358), (2) a year of physics (preferably Physics 207-208, but 101-102 is also accepted), (3) Biological Sciences 281 (Genetics), (4) Biological Sciences 431 (or 531) (Biochemistry) (5) the breadth requirement outlined below, (6) one of the concentration areas outlined below.

The breadth requirement is designed to insure that each major student becomes familiar with a minimum number of different aspects of modern biology. In fulfillment of this requirement, each student must pass one of the listed courses in two of the following eight categories: (1) *Behavior*: Biological Sciences 320, 421; Psychology 201, 323. (2) *Developmental Biology*: Biological Sciences 347, 385. (3) *Ecology and Evolution*: Biological Sciences 361, 475. (4) *Microbiology*: Biological Sciences 290A. (5) *Morphology*: Biological Sciences 311, 313, 316, 345. (6) *Physical Science and Mathematics*: Chemistry 236, 387 or 389; Geology 101; Mathematics 213 or 221; Statistics 410. (7) *Physiology*: Biological Sciences 240, 413, 414. (8) *Taxon-oriented Courses*: Biological Sciences 270, 316, 341, 344. Entomology 212; Plant Pathology 309.

The concentration requirement is designed to help the student achieve depth in some area of biology of his own choosing. It permits maximum flexibility, while insuring that the selection of advanced courses will form a coherent and meaningful unit. The student should seek the advice of his adviser in selecting the courses he will take in fulfillment of both the breadth and concentration requirements. The possible concentration areas are:

(1) *Animal Physiology and Anatomy*: Twelve hours, usually selected from the following: Biological Sciences 311, 313, 316, 385, 410, 412, 413, 413A, 414, 419, 511, 511A, 512; Animal Science 427-428; Poultry Science 425, 520; Veterinary Medicine 924.

(2) *Behavior*: Biological Sciences 320 and eleven hours to be selected in consultation with the adviser.

(3) *Biochemistry*: The student must fulfill the organic chemistry and biochemistry core requirements by taking Chemistry 357-358 and Biological Sciences 431. Chemistry 236 must be taken under the breadth requirement. In addition, the student should take Chemistry 389-390 (or 387-388) and Biological Sciences 432.

(4) *Botany*: Usually Biological Sciences 240, 341, 345 and 347 (two of these courses may be selected under the breadth requirement).

(5) *Ecology and Evolution*: At least fourteen hours, selected in consultation with an adviser, usually from courses in the following areas: biogeography, comparative physiology, ecology (including plant ecology and quantitative ecology), evolution, limnology, marine ecology and oceanography, meteorology and climatology, parasitology, systematics. A course in introductory ecology, a course in systematics, and a course in physiology must be included here or under the breadth requirement.

(6) *Genetics and Development*: Nine hours, usually selected from the following: Biological Sciences 280, 347, 385, 440, 475, 482, 486, 489, 495, 495A, 584, Statistics 410, Plant Breeding 515.

(7) *Microbiology*: Biological Sciences 290, which may be selected under the breadth requirement, plus twelve hours in courses in basic microbiology, including at least two with a laboratory (such as 390B, 490B, 495. Veterinary Medicine 340).

Students who, for good reason, wish to undertake a course of studies not covered by these seven concentration areas may petition for permission to do so.

Students interested in teaching biology in secondary schools may specialize in Biological Sciences for the B.S. degree and then complete the requirements for the M.A.T. (Master of Arts in Teaching) degree during a fifth year in the School of Education. The fifth year includes one semester of graduate study in the sciences, a summer of preparation for teaching, and one semester of internship in a secondary school. Stipends and fellowship support are available to selected candidates in the fifth year. Students interested in the five-year program leading to secondary school teaching are urged to consult their adviser and an adviser in the School of Education during their freshman year.

An Honors program offers the superior student an opportunity to do independent work under the supervision of a member of the Division. This usually entails independent laboratory work on a project in addition to writing a thesis. Candidates for this program must have at least a 2.7 cumulative average with a 3.0 average in the sciences and obtain a sponsor within the Division. An Honors candidate may enroll in research courses offered by his sponsor. No more than four credit hours of research courses can be used for completion of the

requirements in the area of concentration. Recommendation to the faculty that a candidate graduate with Honors will be the responsibility of the Honors Program Committee. Students interested should consult their adviser for further details, preferably during the first term of the junior year.

Registration for the Honors Program can be no later than the first term of the senior year. The final report of the student's work must be in the hands of the committee not later than the first day of the study period prior to week of the final examinations.

The Distribution requirement in biological sciences for non-majors is satisfied by Biological Sciences 101-102 or 103-104. A student may qualify for advanced standing credit and/or placement in biological science by superior performance on the Advanced Placement Examination in biology or on a special placement examination to be given at entrance to students who present evidence of particularly thorough training in the subject.

## General Courses

### 101-102. BIOLOGICAL SCIENCES

Fall and spring terms. Credit three hours a term. Biological Sciences 101 is prerequisite to Biological Sciences 102, unless special permission is obtained from the instructor. 101-102 cannot be taken for credit after 103-104. Lectures, M W F 8, or M W F 10:10. Laboratory, M T W Th or F 1:30-4:25, or Th F or S 8-11, or T Th or F 10:10-1:00, or S 9:05-11:55, or T W 7:30-10:20 P.M. Neither the Friday lecture nor the laboratory will meet every week. Two preliminary examinations will be given each term at 7:30 in the evening. Messrs. Keeton, Ambrose, Camhi, Zollinhofer, guest lecturers, and assistants.

Designed both for students who intend to specialize in biological sciences and for those specializing in other subjects, such as the social sciences or humanities, who want to obtain a thorough knowledge of biology as part of their general education. Plant and animal materials are considered together rather than in separate units. The fall semester covers cellular biology, the biochemistry of metabolism, physiology and anatomy, and behavior. The spring semester includes genetics, developmental biology, evolutionary theory, the biology of populations and communities, the origin of life, and evolutionary patterns in the plant and animal kingdoms. Each topic is considered in the light of modern evolutionary theory.

The Friday lectures, given approximately every other week, will be by outstanding faculty members of the University, lecturing on their own field of research. The intent is to acquaint students with the excitement and promise of modern biological research, both basic and applied, and, more particularly, with the research being done at Cornell.

### 103-104. PLANT AND ANIMAL BIOLOGY

Fall and spring terms. Credit three hours a term. Limited to 500 students. Certain students in Agriculture may take Biological Sciences 106 instead of Biological Sciences 104, but this substitution does not fulfill the requirement for admission to a Biological Sciences major. 103-104 cannot be taken for credit after 101-102. Lectures, T Th 9:05 or 11:15. Laboratory, M T W Th or F 1:25-4:25, or M or T 10:10-1:10, or S 8-11 or 10:10-1:10. Two preliminary examinations will be given each term at 7:30 in the evening; the dates are:

October 22 and December 3, 1968 and March 11 and April 24, 1969. Fall term, Mr. Banks; spring term, Mr. Leonard.

Designed to give students an understanding of the growth, development and evolution of plants and animals and their role in nature. This integrated course provides the basic knowledge necessary for those who intend to specialize in some aspect of plant or animal sciences.

Plant biology (fall term) emphasizes the dynamic aspects of plant function, structure, growth and evolution. In laboratory, emphasis is placed on experimentation and analysis of living material. One period is devoted to field work. Biological principles are developed from a firsthand study of specific organisms and their function and interrelationships.

Animal biology (spring term) deals with the functional aspects of organ systems of animals beginning with the more familiar forms which serve as a point of reference. Material will include an introduction to the biochemical features of metabolism and regulatory control. Representatives of the major phyla will be used to illustrate biological principles.

#### 106. INTERMEDIATE PLANT BIOLOGY

Spring term. Credit three hours. No specific prerequisite, but most students will have had at least Biological Sciences 103 or its equivalent. Lectures, T Th 9:05. Laboratory, M T or W 1:25-4:25. Mr. Banks.

Designed to provide a basic understanding of the structure, function, reproduction, and relationships of representatives from diverse plant groups. Intended for those who intend to specialize in some aspect of the plant sciences. Wherever possible students will be involved in the field collection of their own laboratory materials. Students will be encouraged to carry out a project of their own choice, possibly in collaboration with staff members in Botany or in allied plant science departments.

#### 301. LABORATORY METHODS IN BIOLOGY

Fall or spring term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104. Limited to juniors, seniors, and graduate students; 20 students per section. Lecture-laboratory, T or F 10:10-12:35. Additional periods by appointment. Mr. Uhler.

For students who intend to teach or to follow some phase of biology as a profession. Subjects covered: collection, preservation, and storage of materials; the preparation of bird and mammal study skins; injection of circulatory systems with latex; clearing and staining of small vertebrates; and the preparation and staining of smears, whole mounts, and sections.

#### MATHEMATICAL AND STATISTICAL MODELS IN BIOLOGY (Statistics and Biometry 410.)

#### 401. TEACHING BIOLOGY

Fall or spring term. Credit four hours. Prerequisite, permission to register; enrollment limited. Hours to be arranged. Messrs. Keeton and Ambrose.

Discussions of recent developments in the teaching of biology, and participation in teaching elementary biology at the college level.

#### 409. RESEARCH IN BIOLOGY

Fall or spring term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material written permission from the staff member who will supervise the work and assign the grade. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

**600. SENIOR SEMINAR DEVOTED TO SELECTED TOPICS IN BIOLOGY**

Fall or spring term. Credit to be arranged. Admission by consent of instructor. M 7:30-9:30 P.M. Staff.

This course is designed to acquaint Biological Science majors with the critical evaluation of important papers and research problems.

**602. SEMINAR FOR M.S.T. DEGREE CANDIDATES**

Spring term. Credit one hour. Hours to be arranged. Mr. Uhler.

Discussion and evaluation of new approaches to biological instruction.

## Animal Physiology and Anatomy

**210. ANIMAL PHYSIOLOGY**

Spring term. Credit three hours. Prerequisites, Chemistry 103 or equivalent; students must at least have taken high school courses in biology and chemistry. No credit for majors in Biological Sciences. Lectures, M W F 8:00. Staff.

Basic concepts of human anatomy and physiology will be presented to provide the groundwork for the understanding of the functioning of the human body in health and disease. Emphasis will be placed on the relationship of human physiology to problems of public health and contemporary living. The individual systems, such as cardiovascular, gastrointestinal, neurological, endocrine, renal, etc., will be discussed singly and in correlation with each other. Guest lecturers will be invited as appropriate.

**311. COMPARATIVE ANATOMY OF VERTEBRATES**

Fall term. Credit four hours. Prerequisites, Biological Sciences 101-102, or 103-104. Lectures, times to be announced. Laboratory, M F or T Th 1:25-4:25, or T Th 8-11, or W 1:25-4:25 and S 8-11. Staff.

Dissections and demonstrations of representative vertebrate types, including fish, amphibian, reptile, bird, and mammal. Intended to give students an appreciation of man's structural heritage and some insight into the interrelationship of form and function among the vertebrates.

**313. HISTOLOGY: THE BIOLOGY OF THE TISSUES**

Fall term. Credit four hours. Prerequisites, a two-semester introductory biology sequence; comparative anatomy and organic chemistry or biochemistry desirable. Lectures, T Th 11:15. Staff. Laboratory, T Th 8-9:55, or 2:30-4:25. Staff.

A general course dealing with the biology of the tissues to provide the student with a basis for understanding the microscopic and fine structural organization of vertebrates and the methods of analytic morphology at the cell and tissue levels. The dynamic interrelations of structure, chemical composition and function in cells and tissues are stressed.

**316. INVERTEBRATE ZOOLOGY**

Spring term. Credit four hours. Prerequisite, at least one year of biological science or permission of instructor. Two lectures and two laboratories per week, Lectures, W F 11:15. Laboratory, W F 2:30-4:25. Mr. Anderson.

Lectures on selected topics in the development, structure, function, and interrelations of invertebrate animals, with particular attention to phylogenetic aspects. Intensive laboratory work in representative invertebrates, utilizing living or fresh specimens wherever possible. A significant amount of independent work is required of each student, including reports on library research.

**ANIMAL EMBRYOLOGY**

(Biological Sciences 385.)

**INSECT MORPHOLOGY AND HISTOLOGY**

(Entomology 322.)

**[410. PROBLEMS IN FUNCTIONAL VERTEBRATE ANATOMY]**

Spring term. Credit four hours. Given in alternate years. Prerequisites, Biological Sciences 311 and consent of instructor. Lectures, W 9:05. Discussion period to be arranged. Laboratory, W F 1:25-4:25. Mr. Gilbert. Not offered in 1968-69.

**VERTEBRATE MORPHOLOGY**

(Veterinary Anatomy 900.)

**412. SPECIAL HISTOLOGY: THE BIOLOGY OF THE ORGANS**

Spring term. Credit four hours. Given in alternate years. Prerequisites, Biological Sciences 313, or consent of instructor. Enrollment limited to 18 students. Lectures, W F 9:05. Stimson 105. Laboratory, W F 2-4:25. Staff.

A continuation of Biological Sciences 313. The microscopic and ultra-structural organization of the principal vertebrate organ systems are studied in relation to their development, functional interaction and special physiological roles. Biological Sciences 313 and 412 together present the fundamental aspects of the microscopic and submicroscopic organization of the vertebrate body from a physiological perspective. The organization of the course involves student participation in "lecture-seminars," and the prosecution of independent project work supplementary to the regular work of the laboratory. The latter enables students to gain practical experience with histological and histochemical preparative techniques.

**[413. GENERAL ANIMAL PHYSIOLOGY, LECTURES]**

Fall term. Credit three hours. Lectures, M W F 10:10. Staff. Not offered in 1968-69.

**[413A. GENERAL ANIMAL PHYSIOLOGY, LABORATORY]**

Fall term. Credit one hour. Lecture, W 2:30, alternate weeks only. Laboratory, T 8-11 or M T Th or F 1:25-4:25, alternate weeks. Staff. Not offered in 1968-69.

**FUNDAMENTALS OF ENDOCRINOLOGY**

(Animal Science 427-428.)

**COMPARATIVE PHYSIOLOGY OF REPRODUCTION OF VERTEBRATES**

(Poultry Science 425.)

**414. MAMMALIAN PHYSIOLOGY**

Spring term. Credit six hours. Registration by permission. Prerequisite, a year of biological sciences. Courses in biochemistry, histology, and gross anatomy desirable. Lectures, M W F 8:00. Discussion, S 10:00. Laboratory, M or W 1:25. Messrs. Visek (in charge), Gasteiger, Hansel, and Bensadoun.

A general course in mammalian physiology including circulation, respiration, digestion, metabolism, renal function, endocrinology, and the nervous system.

**419. RESEARCH IN ANIMAL PHYSIOLOGY AND ANATOMY**

Fall or spring term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material written permission from the staff member who will supervise the work and assign the grade. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

**SENSORY FUNCTION**

(Biological Sciences 427, 428.)

**[511. CELLULAR PHYSIOLOGY, LECTURES]**

Fall term. Credit three hours. Prerequisites, previous courses in animal or plant physiology and biochemistry desirable. Lectures, M W 11:15. Not offered in 1968-69.

**[511A. CELLULAR PHYSIOLOGY, LABORATORY]**

Fall term. Credit two hours. Prerequisite, consent of the instructor. Enrollment is limited. Laboratory, W or Th 1:25-4:25. Not offered in 1968-69.

**[512. COMPARATIVE PHYSIOLOGY]**

Spring term. Credit four hours. Prerequisites, Biological Sciences 413 or 414 and biochemistry or the equivalent.] Not offered in 1968-69.

**513. EXPERIMENTAL ENDOCRINOLOGY**

Fall term. Credit two or three hours. Prerequisites, a year of zoology or its equivalent, organic chemistry, physiology and consent of instructor. Primarily for graduate students, open to undergraduates for two credits. Lectures, M F 11:15. Laboratory, M or F 2-4:25. Mr. Leonard.

Lectures on the anatomy and physiology of the vertebrate endocrine glands, glandular interrelationships, mechanisms of hormone action, chemical and physiological properties of the hormones, assay methods. Laboratory includes small animal surgery, micro technique for the endocrines, illustrative experiments on the effects of hormones.

**[516. SPECIAL TOPICS IN COMPARATIVE PHYSIOLOGY]**

Spring term. Prerequisite, consent of instructor. Enrollment limited. For advanced students in biological sciences. Credit and hours to be arranged. Mr. McFarland.] Not offered in 1968-69.

**GENERAL PHOTOBIOLOGY**

(Biological Sciences 547.)

**ELEMENTS OF PHYSICAL BIOLOGY**

(Veterinary—Physical Biology 920.)

Fall term. Credit three hours. T Th F 11:15. Prerequisites, basic courses in chemistry, physics, biology, and calculus, or consent of the instructor. Mr. Comar and Staff.

Lectures on atomic, molecular and cellular aspects of matter; physico-chemical concepts in biology; membrane phenomena; mathematical approaches; compartmental analysis; tissue culture; informational macromolecules; biological coding and control.

## Neurobiology and Behavior

### 320. NEUROBIOLOGY AND BEHAVIOR

Spring term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104. Limited to juniors, seniors, and graduate students. Lectures, T Th S 11:15. Messrs. Eisner (in charge), Gilbert, O'Brien, Halpern, Rosenblatt, Camhi, and Emlen, and Mrs. Salpeter.

Evolution of behavior, cueing of behavior, social and non-social behavior, neuroanatomy, neurophysiology, neurochemistry, neural networks, memory.

### 421. COMPARATIVE VERTEBRATE ETHOLOGY

Fall term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104, and 320, and permission of the instructor. Lectures T Th 9:05. Laboratory, to be arranged. Mr. Dilger.

A survey of the methods and principles of vertebrate ethology for students specializing in this field or for those in other branches of zoology wishing to broaden their knowledge of animal behavior. Emphasis is placed on the causation, function, biological significance, and evolution of species-typical behavior. The laboratories are designed to give first-hand knowledge of the material covered in lectures.

### PHYSIOLOGICAL PSYCHOLOGY

(Psychology 323.)

### COMPARATIVE PSYCHOLOGY

(Psychology 326.)

### 427. SENSORY FUNCTION

(Also Psychology 427.)

Fall term. Credit three hours. Prerequisite, Biological Sciences 320 or the equivalent. Lectures, T Th 10:10. Messrs. Halpern and Tapper.

Sensory receptors and the central nervous system transformation of afferent activity will be considered in relation to human and animal psychophysical data and to the adaptive significance of behavior. The receptors will be examined in terms of anatomy, biochemistry, biophysics of transduction, and the central nervous system control of peripheral input. Information and signal detection theories will be applied.

### 428. LABORATORY IN SENSORY FUNCTION

(Also Psychology 428.)

Spring term. Credit two hours. Prerequisite, Biological Sciences 427. Hours to be arranged. Enrollment limited to fifteen students. Messrs. Halpern and Tapper.

### 429. RESEARCH IN ANIMAL BEHAVIOR

Fall or spring term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material, written permission from the staff member who will supervise the work and assign the grade. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

### [520. COMPARATIVE NEUROLOGY]

Spring term. Credit four hours. Prerequisite, permission of instructor. Lecture, T Th 12:20. Laboratory, M or W 2-4:25. Not offered in 1968-69.

**521-522. BRAIN MECHANISMS and MODELS**

Fall and spring terms. Credit four hours a term. Prerequisites, one year of calculus and one year of biological sciences or psychology and permission of instructor. Lectures M W 7:30 P.M. Laboratories to be arranged. Mr. Rosenblatt.

Fall semester: Review of fundamentals of neurophysiology, psychological and physiological criteria for brain models, computers, and digital automata in relation to brain mechanisms, review of representative models, theory of elementary perceptrons. The Mark I perceptron will be available for laboratory work.

Spring semester: Theory of multi-layer and cross-coupled perceptrons; recognition of temporal patterns; problems of figure organization, cognitive sets, sequential programs, and other problems of advanced models.

**[523. ECOLOGICAL ASPECTS OF ANIMAL BEHAVIOR]**

Fall term. Credit three hours. Lectures, M W F 9:05. Messrs. Ambrose and Emlen. Not offered in 1968-69.

A discussion of the interrelationships of animal behavior and ecology, with emphasis on the following topics: behavioral adaptations to the environment; ecological significance of diverse social systems; spatial relationships (habitat selection, homing, orientation, and navigation); role of social behavior in population regulation; evolution of altruistic behavior.

**524. BEHAVIORAL NEUROPHYSIOLOGY**

Spring term. Credit three hours. Prerequisite, Biological Science 320 or equivalent. Lectures, T Th S 9:05. Mr. Camhi.

A study of the relationship between animal behavior and the activity of individual nerve cells, considered empirically. Review of electrical properties of excitable tissue. Predictions from the study of animal behavior. Sensory coding of environmental energies. Principles of integration. Integration of sensory inputs. Neural control of muscle contraction. Correlating nerve activity and behavior, problems and prospects. Examples will be chosen from throughout the animal kingdom, with slight preference for invertebrate phyla.

**524A. BEHAVIORAL NEUROPHYSIOLOGY LABORATORY**

Spring term. Credit two hours. Biological Science 524 must be taken concurrently. Enrollment limited to fifteen students. Time and place to be announced. Mr. Camhi.

Experiments in neurophysiology, often related to specific behavior patterns.

**FUNCTIONAL ORGANIZATIONS OF THE NERVOUS SYSTEM**

(Veterinary—Physical Biology 924.)

**620. SEMINAR IN NEUROBIOLOGY AND BEHAVIOR**

Fall or spring term. Credit one hour. Time to be arranged. Organizational meetings, Sept. 16, 1968, and Feb. 3, 1969. 8 P.M. Staff.

Fall topic: Animal Behavior. Spring topic: Neurobiology.

**622. SEMINAR IN ECOLOGICAL ANIMAL BEHAVIOR**

Spring term. Credit one hour. Time to be arranged. Open to qualified graduate and undergraduate students who have taken courses in animal behavior and ecology, and who have secured permission of the instructor. Mr. Ambrose.

## Biochemistry

### 231. INTRODUCTORY BIOCHEMISTRY

Fall term. Credit three hours. Prerequisite, Chemistry 104 or 108, or the equivalent. May not be taken for credit by students who have completed a more advanced course in this section. Lectures, T Th F 12:20. Mr. Williams.

A brief survey of organic chemistry as related to biological compounds and a discussion of selected biochemical topics and reactions associated with the metabolism of animals, plants, and microorganisms. Especially designed as a general course for four-year students in Agriculture.

### 431. PRINCIPLES OF BIOCHEMISTRY, LECTURES

Fall term. Credit four hours. Prerequisite, Organic Chemistry 353-355 or the equivalent. Lectures, M 8; T Th S 8. Miss Daniel.

A basic course dealing with the chemistry of biological substances and their transformation in living organisms.

### 432. PRINCIPLES OF BIOCHEMISTRY, LABORATORY

Spring term. Credit three hours. Prerequisite, quantitative analysis, or permission of the instructor. Must be taken following Biological Sciences 431. Laboratory, M W or T Th 2-4:25. Discussion period, M 1:25. Preliminary examinations on March 7 and April 11, 1969 will be held at 7:30 P.M. Mr. Neal and Mrs. Fessenden-Raden.

Laboratory practice with biochemical substances and experiments designed to illustrate reactions which may occur in biological systems.

### 439. RESEARCH IN BIOCHEMISTRY

Fall or spring term. Credit hours to be arranged. For undergraduate students concentrating in biochemistry. Prerequisite, adequate ability and training for the work proposed. Undergraduates must attach to their preregistration material written permission from the staff member who will supervise the work and assign the grade. Staff.

Special work in any branch of biochemistry on problems under investigation by the staff of the section.

### [530. BIOCHEMISTRY OF THE VITAMINS]

Spring term. Credit two hours. Given in alternate years. Prerequisites, Chemistry 353-355 and Biological Sciences 431 or their equivalent. Lecture, T Th 10:10. Miss Daniel. Not offered in 1968-69.

The chemical and biochemical aspects of the vitamins.

### 531-532. GENERAL BIOCHEMISTRY, LECTURES

Fall and spring terms. Credit four hours a term. Prerequisite, Chemistry 358 and physical chemistry or permission of instructor. Lectures, M W F S 9:05.

An integrated treatment of the fundamentals of biochemistry. Fall semester: Proteins, enzymes and the nature of enzymatic catalysis; carbohydrate metabolism; energetics. Mr. Calvo and Staff. Spring semester: Nitrogen metabolism; lipid metabolism; biosynthesis of macromolecules. Mr. Guillory and Staff.

### 533. GENERAL BIOCHEMISTRY, LABORATORY

Fall term. Credit three hours. Prerequisites, Chemistry 358 and 388 or 390. Must be taken with or following Biological Sciences 531. Laboratory, T or Th 9:05-4:25. One discussion period to be arranged. Messrs. Nelson, McCarty and Wharton.

Selected experiments on carbohydrates, lipids, proteins, amino acids, nucleic acids, and metabolism (cellular particulates, kinetics, general enzymology) will be given to illustrate basic biochemical principles. The course will emphasize the quantitative aspects rather than qualitative identifications.

#### 536a. ADVANCED BIOCHEMICAL METHODS, LABORATORY

Spring term. Credit two hours. Prerequisite, Biological Sciences 533. Graduate majors in biochemistry only. Hours to be arranged. Miss Keller and Mr. Wu. Research techniques in biochemistry and molecular biology.

#### 536b. ADVANCED BIOCHEMICAL RESEARCH

Spring term. Credit two hours. Prerequisite, Biological Sciences 536a. Graduate majors in biochemistry only. Hours to be arranged. Mr. Racker and Staff. Research work in the laboratory of staff members on a rotating basis.

#### 537. ADVANCED BIOCHEMISTRY, LECTURES

Fall term. Credit one to three hours. Students may take one or more sections of the course, as each section can be taken without attending a preceding section. Prerequisites, Biological Sciences 531 and 532 or permission of instructor. T Th 9:05.

- (a) Mr. Wright, Mechanism of Coenzyme Function  
Nine lectures and reading assignments for term paper.
- (b) Mr. Zilversmit, Biochemistry of Membranes  
Nine lectures and reading assignments for term paper.
- (c) Mr. Gibson, Mechanism of Enzyme Action  
Nine lectures and reading assignments for term paper.

#### 538. ADVANCED BIOCHEMISTRY, LECTURES

Spring term. Credit one to three hours. Students may take one or more sections of the course, as each section can be taken without attending a preceding section. Prerequisites, Biological Sciences 531 and 532 or permission of instructor. T Th 9:05.

- (a) Mr. Heppel, Nucleic Acids  
Nine lectures and reading assignments for term paper.
- (b) Mr. Wilson, Protein Synthesis  
Nine lectures and reading assignments for term paper.
- (c) Mr. Edelstein, Structure and Function of Proteins  
Nine lectures and reading assignments for term paper.

#### 631-632. RESEARCH SEMINAR IN BIOCHEMISTRY

Fall and spring term. Credit one hour per term. M 8-9:30 p.m. Mr. Racker. Required of all graduate students majoring in biochemistry. The course may be repeated for credit.

#### 633. GRADUATE SEMINAR IN BIOCHEMISTRY

Fall term. Credit one hour. Prerequisites, Biological Sciences 531 and 532. Hours to be arranged.

- (a) Mrs. Fessenden-Raden and Mr. Guillory, Bioenergetics.
- (b) Mr. McCormick, Mechanism of Enzyme Action.

#### 634. GRADUATE SEMINAR IN BIOCHEMISTRY

Spring term. Credit one hour. Prerequisites, Biological Sciences 531 and 532. Hours to be arranged.

- (a) Mr. Wu, Control Mechanism.
- (b) Mr. McCarty, Photosynthesis.

639. BIOCHEMISTRY SEMINAR

Fall and spring terms. No credit. F 4:15. Savage 100. Staff.

Lectures on current research in biochemistry presented by distinguished visitors and staff.

## Botany

240. PLANT PHYSIOLOGY

Spring term. Credit five hours. Primarily for undergraduates; open to graduate students without background in plant physiology. Prerequisites, Biological Sciences 101-102 or 103-104, and introductory chemistry. Prior or simultaneous course in organic chemistry is desirable. Lectures, T Th S 10:10. Conference 12:20-1:10 on same day as laboratory. Laboratory, M T W Th or F 1:25-4:25. Mr. Jagendorf and assistants.

The behavior, growth and environmental responses of plants, primarily but not exclusively higher plants. Topics will include membrane properties, solute and water transport, the uses of osmotic forces; mineral nutrition; organic nutrition, growth characteristics, hormone action; light, gravitational and temperature responses; diurnal rhythms, photoperiod; saline, drought and freezing injury; some aspects of infection, disease resistance; respiration and photosynthesis.

341 TAXONOMY OF VASCULAR PLANTS

Fall term. Credit four hours. Prerequisite, Biological Sciences 281 or permission to register. Lectures and discussions, T Th 9:05. Laboratory, T Th 2-4:25. Mr. Clausen.

An introduction to the classification of vascular plants, with attention to principles, methods of identification, and literature. In the first part of the term, trips are held in laboratory periods.

344. BIOLOGY OF THE ALGAE

Spring term. Credit four hours. Lectures, M W F 11:15. Laboratory, M or F 2-4:25. Mr. Kingsbury.

An introduction to the freshwater and marine algae including consideration of their ecology as members of the plankton and benthos and their importance to man. The laboratory, utilizing field material and cultures from an extensive living collection, is designed to illustrate lecture topics, provide familiarity with algae in the field, and introduce the student to techniques used in isolating, culturing, and studying algae in the laboratory.

COMPARATIVE MORPHOLOGY OF FUNGI

(Plant Pathology 309.)

[345. PLANT ANATOMY]

Fall term. Credit four hours. Lectures, T Th 8. Laboratory, T Th 10:10-12:35 or M W 2-4:25. Mr. Bierhorst. Not offered in 1968-69.

A detailed study of plant histology with equal emphasis on developmental aspects and mature structure.

347. CYTOLOGY

Fall term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104 or the equivalent. Lectures, M W 9:05. Laboratory, M W or T Th 10:10-12:35. Mr. Uhl.

A study primarily of the structure of cells and their components and the relation of these to function and to heredity. Special attention is given to chromosomes. Both plant and animal material are used.

#### 349. PLANTS AND MAN

Fall term. Credit three hours. Lectures and discussion, M W F 9:05. Mr. Bates.

A consideration of the role of plants in the human environment and in the evolution of civilizations. Intended for students in all colleges. Emphasis is on ethnobotanical considerations and on historical to present-day utilization of plants in nutrition, housing, clothing, medicine, religion, and the arts.

#### 440. CYTOGENETICS

Spring term. Credit three hours. Prerequisites, Biological Sciences 347 and 281 or the equivalent. Lectures, M W 9:05. Laboratory, M or W 10:10-12:35. Mr. Uhl.

An advanced course dealing mainly with the cellular mechanisms of heredity and including recent researches in cytology, cytogenetics, and cytotoxicology.

#### 442. TAXONOMY AND ECOLOGY OF VASCULAR PLANTS

Spring term. Credit four hours. Prerequisite, Biological Sciences 341 or permission to register. Lectures and discussions, T Th 9:05. Plant Science 143. Laboratory, T Th 2-4:25. Mr. Clausen.

A study of the principles of classification, the fundamentals of geographical distribution, and the evolutionary importance of environmental variation. Laboratory periods in the later part of the term are devoted to study of natural populations in the field.

#### [444. MORPHOLOGY OF LOWER VASCULAR PLANTS]

Spring term. Credit four hours. Given in alternate years. Prerequisite, Biological Sciences 345 and preregistration with instructor in charge. Lectures, M W 12:20. Laboratory, M W 2-4:25. Mr. Bierhorst. Not offered in 1968-69.

#### 446. MORPHOLOGY OF HIGHER VASCULAR PLANTS

Spring term. Credit four hours. Given in alternate years. Prerequisites, Biological Sciences 345 and preregistration with instructor in charge. Lectures, M W 12:20. Laboratory, M W 2-4:25. Mr. Bierhorst.

An advanced course in the comparative morphology, life histories, and phylogeny of the seed plants, including consideration of structure, development and morphogenesis as applied to morphological interpretation.

#### [448. PALEOBOTANY]

Spring term. Mr. Banks. Not offered in 1968-69.

#### 449. RESEARCH IN BOTANY

Fall or spring term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material written permission from the staff member who will supervise the work and assign the grade. Staff.

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.

#### 543. PLANT PHYSIOLOGY, ADVANCED LABORATORY

Fall term. Credit 4 hours. Primarily for graduate students doing work in plant physiology, but open to others if space permits. Prerequisites, organic

chemistry. Biological Sciences 240, or the equivalent, and biochemistry. Laboratory, T or W 8:00-5:00. Recitation, M 4:30-5:30. Preregistration recommended. Staff.

An introduction to some modern methods in experimental plant biology.

#### 545. PHYSICAL APPROACHES TO PROBLEMS OF PHOTOSYNTHESIS

Fall term. Credit three hours. Given in alternate years. Prerequisites, Chemistry 104 or 108, Mathematics 112, Physics 208, or permission of the instructor. Lectures, M 1:25, T Th 10:10. Mr. Clayton.

Emphasis is on physical and photochemical mechanisms and physical experimental approaches. Photosynthetic organisms: their photochemical apparatus, metabolic pathways, and mechanisms for energy conversion. Descriptive introduction to the physics of excited states in molecules and molecular aggregates. Optical and photochemical properties of chlorophyll, and of the living photosynthetic tissue. Contemporary investigations of the photosynthetic mechanism. The level of the course can be judged by consulting R. K. Clayton, *Molecular Physics in Photosynthesis* (Blaisdell Publishing Co., Waltham, 1965).

#### [547. GENERAL PHOTOBIOLOGY]

Fall term. Credit three hours. Given in alternate years. Prerequisites, same as for Biological Sciences 545. Lectures, M 1:25, T Th 10:10. Mr. Clayton. Not offered in 1968-69.

#### [548. PLANT PHYSIOLOGY: ASPECTS OF METABOLISM]

Spring term. Credit three hours. Given in alternate years. Prerequisites, Biological Sciences 240 and 431, Chemistry 353, or the equivalent. Lectures, M W F 9:05. Messrs. Jagendorf, Thompson, McCarty and staff. Not offered in 1968-69.

#### 549. PLANT PHYSIOLOGY: TRANSPORT PHENOMENA

Fall term. Credit three hours. Given in alternate years. Prerequisites, Biological Sciences 240 or its equivalent. Lectures, M W Th 11:15. Mr. Spanswick.

An advanced course dealing with the transport of ions, water and organic materials in plants. Mechanisms of ion transport. Relationships between ion transport and metabolism. Ion uptake and transport in higher plants. Phloem transport. Water relations of single cells and whole plants. Water relations of crops and natural communities.

#### 587. PERSPECTIVES IN PLANT PHYSIOLOGY: ADVANCED LECTURE SERIES

Fall term. Credit two hours, or may be taken without credit. M W F 10:10. Mr. Steward.

Primarily intended for graduate students, but open to qualified undergraduates, the course will review salient topics in plant physiology, their present status, historical development and the problems they still present. Topics considered will change somewhat from year to year but will normally include some treatment of cell physiology, organic and inorganic nutrition, metabolism, growth and development.

#### PLANT ECOLOGY

(Biological Sciences 563.)

#### ADVANCED MYCOLOGY

(Plant Pathology 569, 579, 589.)

641. SEMINAR IN TAXONOMY AND ECOLOGY OF VASCULAR PLANTS

Fall term. Credit one hour. Prerequisite, Biological Sciences 442 or permission to register. Lecture and discussion, M 11:15. Mr. Clausen.

An examination of primary problems concerned with the classification, evolution, and environmental relationships of vascular plants.

643. SEMINAR IN PLANT PHYSIOLOGY

Fall and spring terms. Credit one hour if requested. Required of graduate students taking work in plant physiology and open to all who are interested. F 11:15. Staff.

Reports on current research in plant physiology, by visitors, staff, or advanced graduate students.

645. CURRENT TOPICS IN PLANT PHYSIOLOGY

Fall and spring terms. Credit two hours. Course may be repeated for credit. Time to be arranged. Staff.

Seminar reports by graduate students, on current literature in experimental plant physiology or related areas.

647. SPECIAL TOPICS IN PLANT TAXONOMY

Fall and Spring terms. Credit one hour per term. Prerequisite, permission to register. Lecture and discussion. Hours to be arranged. Messrs. Moore, Dress, Ingram, and Bates.

A series of four topics, one presented each term, designed to provide professional background in biosystematics, literature of taxonomic botany, nomenclature, and tropical families of phanerogams.

A. *Families of Tropical Phanerogams*. Fall term, 1969. The families of flowering plants encountered solely or chiefly in tropical regions will be considered in lectures, discussions and demonstrations with the aim of providing basic points of recognition for and an understanding of diversity and relationships in these families for the student venturing into the tropics. Mr. Moore.

B. *Literature of Taxonomic Botany*. Spring term 1970. A survey of the basic reference works in taxonomy from the pre-Linnaean literature drawn on by Linnaeus to contemporary publications with comments on the peculiarities of the books (when appropriate), on publication dates, typographic devices and intricacies of bibliographic citation. Lectures, demonstrations, discussions, and problems. Mr. Ingram.

C. *Nomenclature*. Fall term 1968. An analysis of the International Code of Botanical Nomenclature and its application to various plant groups. Lectures, problems, discussion. Mr. Dress.

D. *Biosystematics*. Spring term 1969. A consideration of biosystematic approaches to taxonomy, including chemical, numerical, cytological and statistical methodologies as well as a review of classic studies. Mr. Bates.

CURRENT TOPICS IN MYCOLOGY

(Plant Pathology 649.)

## Ecology, Evolution, and Systematics

270. BIOLOGY OF THE VERTEBRATES

Spring term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104. Lectures, M W 10:10. Laboratory, M W or T Th 2:00-5:00 or T Th 8:00-11:00. Mr. Cade.

An introduction to the evolution, classification, life history and ecology, and behavior of vertebrate animals. Laboratory and field work is concerned with structure, classification, taxonomic methods, biology of local species, and studies of selected aspects of vertebrate life, including food habits, activity cycles, behavior, and physiological adaptation.

**INSECT BIOLOGY**

(Entomology 212.)

**INVERTEBRATE ZOOLOGY**

(Biological Sciences 316.)

**PLANT TAXONOMY**

(Biological Sciences 341, 442, 641.)

**361. GENERAL ECOLOGY**

Either term. Credit three hours. (Not open to freshmen.) Prerequisites, Biological Sciences 101-102 or 103-104 or the equivalent. Lectures T Th 9:05. Discussion W or Th 1:25, 2:30 or 3:35. Fall term, Mr. Feeney; Spring term, Mr. Root.

Principles concerning the interactions between organisms and their environment. Influence of competition, social behavior, predation, and other factors on population size and dispersion. Role of energy flow and mineral cycling in determining the structure and productivity of ecosystems. Succession and classification of natural communities. Influence of climate and past events on the diversity and stability of communities in different regions of the world. Interspecific competition and the niche concept. Chemical interactions between organisms. Application of ecological principles to human problems. Modern evolutionary theory will be stressed throughout and attention given to conflicting ecological hypotheses.

**362. LABORATORY AND FIELD ECOLOGY**

Fall term. Credit two hours. Prerequisite, permission of instructor. Laboratory, T Th 2-4:25. Mr. Cole and others.

A laboratory and field course to accompany or follow Biological Sciences 361, for students who intend to concentrate in the area of ecology. Enrollment limited. This course will give the students a first-hand contact with ecological techniques.

**SOIL MICROBIOLOGY**

(Agronomy 306.)

**INTRODUCTORY INSECT TAXONOMY**

(Entomology 331.)

**INTRODUCTORY PARASITOLOGY**

(Entomology 351.)

**BIOLOGY OF THE ALGAE**

(Biological Sciences 344.)

**374. FIELD MARINE BIOLOGY**

Credit two hours. Prerequisite, a full year of college biology. A special course offered on Star Island, off Portsmouth, New Hampshire, June 10-24, 1969. Messrs. Anderson, Gilbert, Hewitt, Raney, Barlow, Kingsbury (in charge), and guest lecturers.

Living material and habitats are emphasized in introducing students to the major disciplines of marine biology and in rounding out the student's knowledge of these topics as presented at inland locations. For more details, see the Summer Session Announcement, or consult Mr. Kingsbury.

460. MARINE ECOLOGY

Spring term. Credit three hours. Prerequisites, Biological Sciences 361, 461, and permission of the instructor. Enrollment limited. Lectures, M W F 10:10. Mr. Barlow.

A consideration of the oceanographic aspects of the marine environment. For graduate students and advanced undergraduates. Lectures and seminars, with demonstrations and field trips to be arranged.

461. OCEANOGRAPHY

Fall term. Credit three hours. Prerequisites, college physics and chemistry. Lectures, T Th 10:10, Laboratory, Th 12:20-2:50, or at other times to be arranged. Mr. Barlow.

An introduction to general oceanography. Primarily for students with an interest in marine biology. Laboratory devoted to demonstration of equipment, analysis of some typical oceanographic observations, and work with simple models.

462. LIMNOLOGY

Fall term. Credit four hours. Prerequisites, Biological Sciences 361, organic chemistry, and one year of college physics or permission of instructor. Lecture, W F 11:15. Laboratory, F 1:25-4:25, S 9-12. Mr. Hall.

A study of processes and mechanisms in the biology, chemistry and physics of inland waters taught from a functional and analytic point of view. Laboratories devoted to both field studies and experiments on model systems.

462A. LIMNOLOGY, LECTURES

Fall term. Credit two hours. Prerequisites, Biological Sciences 361, organic chemistry, and one year of college physics, or permission of instructor. Lecture, W F 11:15. Mr. Hall.

The lecture portion of Biological Sciences 462.

463. PLANT ECOLOGY

Fall term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104 or equivalent. Lectures, M W F 10:10. Laboratory and field trips, T or F 2-5. Messrs. Miller and Whittaker.

Principles of plant-environment interactions in relation to the distribution, structure and functioning of plant communities. These principles will be illustrated by analyzing representative plant communities and their environments in various parts of the world.

AQUATIC ENTOMOLOGY AND LIMNOLOGY

(Entomology 471.)

[469. BIOLOGY OF FISHES]

Fall term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104, or 270, or the equivalent. Lectures, M W 9:05. Laboratory, M W or T Th 2-4:25. Mr. Raney. Not offered in 1968-69.

An introduction to the study of fishes; their structure, classification, evolution, distribution, ecology, physiology, and behavior. Laboratory studies on structure, identification, classification, and nomenclature. Field studies of local species.

## 470. ICHTHYOLOGY

Fall term. Given in even numbered years. Credit four hours. Prerequisite, Biological Sciences 469 or permission of instructor. Lectures, M W 9:05. Fernow 16. Laboratory M W 2-4:30. Mr. Raney.

Lectures on advanced aspects of the biology of fishes including systematics, ecology, life history, and literature. Laboratory studies of the orders, major families and principal genera, and of systematic procedures. Field studies of the ecology and life history of local species.

## 471. MAMMALOLOGY

Fall term. Credit four hours. Prerequisites, Biological Sciences 270 or equivalent work in vertebrate biology and permission of instructor. Lectures, T Th 10:10. Laboratory, F 2:00-4:25, and S 9:05-11:30. Mr. Hudson.

Lectures on the evolution, classification, distribution and adaptations, both physiological and morphological, of mammals. Laboratory and field work on ecology, behavior, physiology and the taxonomy of recent mammals, with emphasis on the North American fauna.

## 472. ORNITHOLOGY

Spring term. Credit four hours. Prerequisites, Biological Sciences 270 or equivalent work in vertebrate biology and permission of instructor. Lectures, M W 11:15. Laboratory W 2-4:30 and S 8-11:00. Mr. Lancaster.

Lectures cover various aspects of the biology of birds, including anatomy, physiology, classification, evolution, migration and orientation, behavior, ecology and distribution. Laboratory will include studies of external and internal morphology, pterylosis, molts and plumages, skin identification of birds of New York and families of birds of the world. Several demonstration periods will emphasize hybridization, evolution, adaptive radiation, mimicry, and geographic variation. Field work includes identification of birds and familiarization of some techniques used in field research.

## 475. EVOLUTIONARY THEORY

Fall term. Credit four hours. Prerequisites, Biological Sciences 281; a course with some taxonomic content in botany or zoology is desirable, or else some experience with making and maintaining a personal collection of some plant or animal group. Lectures, T Th 11:15, Discussion, Th 12:20. Mr. Brown.

Lectures and class discussions on organic evolution, with primary emphasis on the mechanisms of speciation and adaptation. The course begins with a few lectures on taxonomic methodology.

## 479. RESEARCH IN ECOLOGY, EVOLUTION, AND SYSTEMATICS

Fall or spring term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material written permission from the staff member who will supervise the work and assign the grade. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

ECOLOGICAL ASPECTS OF ANIMAL BEHAVIOR  
(Biological Sciences 523.)

## [561-562. QUANTITATIVE ECOLOGY]

Throughout the year. Credit four hours a term. Given in alternate years. Prerequisites, one year of biology and permission of instructor. Organic chemistry and some college mathematics are desirable. Lectures, M W 11:15. Laboratory, W 1:25-4:25. Mr. Cole. Not offered in 1968-69.

**563. ADVANCED PLANT ECOLOGY**

Spring term. Credit four hours. Prerequisite, Biological Sciences 463. One course each in plant physiology and soils is strongly recommended. Lectures M W F 10:10. Mr. Miller.

Lectures and seminars dealing with the physiological mechanisms and the physical, chemical, and biological processes which underlie ecosystem structure and function. Some major topics included will be responses to the environment by individual plants, populations and species, and the flux of energy, nutrients and water in ecosystems.

**[565. SPECIAL TOPICS IN LIMNOLOGY]**

Fall term. Credit three hours. Primarily for graduate students. Prerequisite, consent of instructor. Hours to be arranged. Mr. Hall. Not offered in 1968-69.

A laboratory and seminar course. Advanced discussion and experimentation in specific topics in limnology. Content variable from year to year, but in general dealing with topics related to the production and metabolism of biological associations in inland water.

**ADVANCED INSECT TAXONOMY**

(Entomology 531, 532, 533, 534.)

**ADVANCED PARASITOLOGY: PROTOZOA AND HELMINTHS**

(Entomology 551.)

**571. ADVANCED TOPICS IN VERTEBRATE BIOLOGY**

Fall term. Credit two hours. Prerequisites: Advanced courses in vertebrate biology and permission of instructors. Enrollment limited. Messrs. Cade and Hudson.

Seminars on selected topics of vertebrate ecology, behavior, physiology, and systematics with an emphasis on review of current literature. Time and place to be arranged.

**661. SEMINAR IN POPULATION AND COMMUNITY ECOLOGY**

Fall term. Credit one hour. Course restricted to graduate students. Prerequisites, a course in ecology and permission of instructor. Lecture, M 7:30 P.M. Mr. Root.

The topic for 1968 will be the organization and natural communities. Participants will present reports on the evidence for recent theories advanced to explain the structure of food webs, the relative abundance of species, and the regulation of species diversity in communities. This course may be repeated for credit.

## Genetics and Development

**280. HUMAN GENETICS**

Spring term. Credit three hours. Prerequisite, Biological Sciences 101-102 or 103-104. Students who have had Biological Sciences 281 may register only with the permission of the instructor. Lectures, M W 10:10. Discussion, F 10:10. Mr. Srb.

An introduction to biological heredity through consideration of the genetics of man. Advances in the science of genetics are having a profound effect on man's understanding of himself and on his potential for influencing his present and future well-being. The course is intended primarily

to contribute to the student's general education in these matters, and although certain aspects of genetics will be considered with some rigor, the course is not designed to serve as a prerequisite to advanced courses in genetics.

### 281. GENETICS

Fall or spring term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104. Students who have had Biological Sciences 280 may register only with the permission of the instructor. Lectures, M W F 8. Laboratory, M T W Th or F 2:30-4:25, or T Th S 8-9:55. Students do not preregister for laboratory sections; laboratory assignments will be made at the end of the first lecture period. Messrs. Fink, MacIntyre, Russell and assistants.

A general study of the fundamental principles of genetics in eucaryotes, procaryotes, and viruses. Discussions of gene transmission, gene action and interaction, gene linkage and recombination, gene structure, gene and chromosome mutations, genetic aspects of differentiation, genes in populations, breeding systems, extrachromosomal inheritance. Animals, plants and microorganisms are used in the laboratory, which also includes an independent study of inheritance in *Drosophila*.

### CYTOLOGY

(Biological Sciences 347.)

### 385. ANIMAL EMBRYOLOGY

Fall term. Credit four hours. Prerequisite, Biological Sciences 281. Lectures, M W F 11:15. Laboratory, W 8-9:55 or 2:30-4:25, or F 2:30-4:25. Mr. Blackler.

A course in general animal embryology with equal emphasis on the physiological as well as the morphological basis of early development. Vertebrate development is treated on a comparative basis.

### CYTOGENETICS

(Biological Sciences 440.)

### 480. POPULATION GENETICS

Spring term. Credit three hours. Prerequisite, Biological Sciences 281 or the equivalent and permission of instructor. Lectures, T Th 11:15. Mr. Wallace.

A study of factors which influence the genetic structure of Mendelian populations and which are involved in race formation and speciation.

### 482. PHYSIOLOGICAL GENETICS

Spring term. Credit three hours. Prerequisites, Biological Sciences 281 and a course in organic chemistry. Lectures, M W 8. Mr. Srb.

The nature and activities of chromosomal and nonchromosomal genetic material are considered in relation to the functional attributes of organisms.

### 486. PLANT DEVELOPMENT

Spring term. Credit one hour. Prerequisite, Biological Sciences 101-102 or 103-104. Not open to students who have taken Biological Sciences 444-446. Lectures, M W F 10:10 (for five weeks only). Messrs. Steward and Bierhorst.

The course will deal with problems of growth, development, and morphogenesis, with special reference to plants. There will be 15 lectures delivered in five weeks. These lectures constitute a portion of Biological Sciences 444-446 and 541-542; students who specifically require a short course in plant development may register for Biological Sciences 486.

**489. RESEARCH IN GENETICS AND DEVELOPMENT**

Fall or spring term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material written permission from the staff member who will supervise the work and assign the grade. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

**[584. EXPERIMENTAL EMBRYOLOGY]**

Spring term. Credit four hours. Lecture, T 11:15. Laboratory, T Th 2-4:25. Mr. Blackler. Not offered in 1968-69.

**680. CURRENT TOPICS IN GENETICS**

Throughout the year. Credit two hours a term. Open to graduate students, with preference given to majors in the field of genetics; undergraduates by permission only. No auditors. Enrollment limited to twenty students. M 10:10-12:05. Staff.

A seminar course with critical presentation and discussion by students of original research papers in a particular area of current interest. Content of the course and staff direction will vary from term to term, and will be announced a semester in advance.

## Microbiology

**290. GENERAL MICROBIOLOGY**

Fall or spring term. Credit five hours. Prerequisites, Biological Sciences 101-102 or 103-104 and Chemistry 104 or 108 or the equivalent. Lectures, M W F 11:15. Laboratory, M W 2-4:25; T Th 8-11 or 2-4:25. Fall term, Mr. Seeley; spring term, Mr. VanDemark.

A study of the basic principles and relationships in the field of microbiology, with fundamentals necessary to further work in the subject. The course offering in the spring term will provide special emphasis on the application of microbiology in home economics and agriculture.

**290A. GENERAL MICROBIOLOGY, LECTURES**

Fall or spring term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104 and Chemistry 104 or 108 or the equivalent. Lectures, M W F 11:15. Fall term, Mr. Seeley; spring term, Mr. VanDemark.

The same as the lecture part of Course 290. Will not serve alone as a prerequisite for advanced microbiology courses.

**290B. GENERAL MICROBIOLOGY, LABORATORY**

Fall or spring term. Credit two hours. May be taken only by special permission of the instructor. Fall term, Mr. Seeley; spring term, Mr. VanDemark.

The same as the laboratory part of Biological Sciences 290.

**390A. ADVANCED BACTERIOLOGY LECTURE**

Fall term. Credit three hours. Prerequisites, organic chemistry, Biological Sciences 290 or permission of the instructor. Biochemistry is desirable and may be taken concurrently. Lectures, T Th S 9:05. Mr. MacDonald.

A study of the comparative physiological and ecological relationships among bacteria and some related organisms. A number of groups of bacteria will be discussed in detail as well as factors which influence their ability to survive in nature. In addition, a number of lectures will be devoted to the history of bacteriology and to the theory and development of bacterial classification.

**390B. ADVANCED BACTERIOLOGY LABORATORY**

Fall term. Credit three hours. Co-registration in 390A and permission of the instructor. Laboratory—lecture M 1:25. Other hours to be arranged. Mr. MacDonald.

Techniques for the isolation, cultivation, and detailed study of selected groups of organisms. Some of the more standard techniques of physiological study will be introduced.

**[393. APPLIED AND INDUSTRIAL MICROBIOLOGY]**

Fall term. Credit three hours. Given in alternate years. Prerequisites, Course 290 or the equivalent. Lectures, T Th S 11:15. Messrs. Delwiche, Seeley, VanDemark. Not offered in 1968-69.

**394. DAIRY AND FOOD MICROBIOLOGY**

Spring term. Credit four hours. Prerequisite, Biological Sciences 290. Lectures, M W 12:20. Laboratory, M W 2-4:25. Mr. Naylor.

The major families of microorganisms of importance in dairy and food science are studied systematically with emphasis on the role played by these organisms in food preservation, food fermentations, and public health. The laboratory work includes practice in the use of general and special methods for microbiological testing and control of dairy and food products as well as practice in the isolation and characterization of organisms found in foods.

**SOIL MICROBIOLOGY**

(Agronomy 306.)

**PATHOGENIC BACTERIOLOGY**

(Veterinary—Microbiology 340.)

**490A. MICROBIAL PHYSIOLOGY LECTURE**

Spring term. Credit three hours. Prerequisites, Biological Sciences 390 or permission of instructor. Lectures, T Th S 10:10. Primarily for microbiology majors intending to enter graduate school and for graduate students. Mr. Gibson and Staff.

A study of the organization of physiological processes in microorganisms, including a study of structure, energy-yielding mechanisms, macromolecular biosynthesis and of growth and regulation.

**490B. MICROBIAL PHYSIOLOGY LABORATORY**

Spring term. Credit three hours. Prerequisites, a grade of B- or better in Biological Sciences 390, co-registration in 490A and permission of the instructor. Time to be arranged. Mr. Gibson and Staff.

Experiments on material covered in Course 490A will be used to introduce students to modern techniques used in physiological research, such as the use of radioisotopes, large-scale growth of microorganisms, and the isolation and characterization of specific cellular components.

**495. MICROBIAL GENETICS**

Fall term. Credit four hours. Prerequisites, Biological Sciences 281 and 290 or permission of the instructor. For upperclassmen and graduate students. Lecture, W 7:30-9:25 P.M. Laboratory, T 1:25-4:25 and other hours to be arranged. Mr. Zahler.

Genetics of bacteria and their viruses, with emphasis on the mechanisms of genetic phenomena.

**495A. MICROBIAL GENETICS, LECTURES**

Fall term. Credit two hours. Prerequisites, Biological Sciences 281 and 290 or 290A. For upperclassmen and graduate students. Lecture, W 7:30-9:25 P.M. Mr. Zahler.

The course is the same as the lecture portion of Biological Sciences 495.

**496. CHEMISTRY OF MICROBIAL PROCESSES**

Spring term. Credit two hours. Prerequisites, beginning courses in general microbiology, biochemistry, and organic chemistry. Course intended for upperclassmen and graduate students. Lectures, M W 11:15. Mr. Delwiche.

Selected topics pertaining to the energy metabolism, oxidative and fermentative abilities, and biosynthetic capacities of microorganisms. Where possible and appropriate the subject matter deals with the various microbial forms in a comparative sense.

**498. VIROLOGY**

Spring term. Credit three hours. Given in alternate years. Prerequisites, Biological Sciences 290 and 281 and permission of the instructor. Lectures, T Th S 11:15. Mr. Naylor, assisted by Messrs. Ross and Carmichael.

A study of the basic physical, chemical, and biological properties of plant, animal and bacterial viruses.

**499. RESEARCH IN MICROBIOLOGY**

Fall or spring term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material written permission from the staff member who will supervise the work and assign the grade. Staff.

**590. METHODS IN ADVANCED BACTERIOLOGY**

Fall and Spring term. Credit two hours. Primarily for graduate students. Prerequisite, permission of instructor. Limited enrollment. Hours to be arranged. Staff.

Intended to acquaint advanced students with some of the more important techniques used in the study of bacterial physiology. Emphasis will be placed on the use of radioisotopes; growth, structure and function of cells.

**595. MOLECULAR IMMUNOLOGY**

Spring term. Credit two hours. For advanced undergraduates and graduate students. Prerequisite, biochemistry, permission of the instructor. Hours to be arranged. Mr. Slobin.

A study of the immune response with particular emphasis on the structure and evolution of immunoglobulins, the nature of antigen-antibody interactions and the molecular biology of antibody biosynthesis.

**ADVANCED SOIL MICROBIOLOGY**

(Agronomy 506.)

**SEROLOGY**

(Veterinary—Microbiology 941.)

**IMMUNOCHEMISTRY**

(Veterinary—Microbiology 944.)

**ANIMAL VIROLOGY**

(Veterinary—Microbiology 945.)

## 691. GRADUATE SEMINAR IN MICROBIOLOGY

Fall and Spring terms. Credit one hour per term. Hours to be arranged. Staff. Required of all graduate students majoring in microbiology.

## 699. MICROBIOLOGY SEMINAR

Fall and Spring terms. No credit. Th 4:15. Staff. Required of graduate students majoring in microbiology and open to all who are interested.

## CHEMISTRY

Mr. R. A. Plane, Chairman; Messrs. A. C. Albrecht, S. H. Bauer, A. T. Blomquist, J. M. Burlitch, R. A. Caldwell, W. D. Cooke, V. du Vigneaud, E. Elson, R. C. Fay, M. E. Fisher, J. H. Freed, M. J. Goldstein, G. G. Hammes, J. L. Hoard, R. Hoffmann, R. E. Hughes, E. S. Kostiner, F. A. Long, J. Meinwald, W. T. Miller, G. H. Morrison, H. Muxfeldt, R. F. Porter, H. A. Scheraga, M. F. Semmelhack, M. J. Sienko, G. W. Smith, D. A. Usher, B. Widom, C. F. Wilcox.

A major in chemistry permits considerable flexibility in the detailed planning of a course program. The required courses can be completed in three years, leaving the senior year open for advanced and independent work in all areas of chemistry: physical, organic, inorganic, analytical, theoretical, bio-organic, biophysical. A major in chemistry can also provide the necessary basis for significant work in related areas such as molecular biology, chemical physics, geochemistry, chemical engineering, solid state physics, and medicine.

The courses are arranged as a progression with some courses (including mathematics and physics) prerequisite to those which are more advanced. During the first year the student should normally register for general chemistry (preferably Chemistry 115-116), mathematics, a Freshman Humanities course, and a foreign language or, in some instances, physics. Students who are not prepared to begin their programs with Chemistry 115-116 may choose an alternate sequence Chemistry 107-108, 236, or Chemistry 103-104, 108, 236, for general chemistry. In the second year the student should complete calculus, take physics, organic chemistry, begin physical chemistry and complete a course in Distribution. Physical chemistry should be completed in the third year along with courses in advanced inorganic and analytical chemistry and in Distribution. Advanced work in chemistry and related subjects could be pursued in the fourth year. The opportunity for independent research is also available. All students with questions about details of a major program are encouraged to consult with the chairman of the Department of Chemistry or his representative. Entering students exceptionally well prepared in chemistry may receive advanced placement credit for Chemistry 107-108 and proceed to a more advanced program.

Prerequisites to admission to a major in chemistry are (1) Chemistry 115-116, or 107-108 and 236, or 103-104, 108 and 236; (2) Physics 207; and (3) Mathematics 111. A student is not encouraged to undertake a

major in chemistry unless he has passed the above courses at a good level of proficiency. Students are encouraged to complete Chemistry 279 by the end of their sophomore year.

For a major in chemistry the following courses must be completed: (1) Chemistry 355-356, 357-358, 279, 389-390, 391-392, 339, and 410; (2) Mathematics 112, 213; (3) Physics 208; and (4) Russian 101 or 131-132, or preferably, German 101 or 131-132, unless two units of either language have been offered for entrance. Advanced courses in physics and mathematics are recommended as electives for students who intend to continue for an advanced degree in chemistry.

The major defined in the *Announcements of the College of Arts and Sciences* for 1964-65 and 1965-66 is applicable to the classes graduating 1967-69.

The Honors program in chemistry offers the superior student an opportunity to do independent study in seminars and gain experience in research during his senior year. It is particularly recommended to those who plan graduate work in chemistry. Completion of the program at a high level of performance leads to the degree of Bachelor of Arts with Honors in Chemistry. The requirements for admission to the Honors program are a cumulative average grade of at least B and permission of the Department. Prospective Candidates for Honors should discuss their plans with their advisers by March 1 of their junior year. Candidates for Honors must complete Chemistry 497 and 498.

The Distribution requirement in physical sciences is satisfied in chemistry by Chemistry 103-104, 107-108, or 115-116.

Students and members of the teaching staff are required to wear safety glasses or approved eye-protective devices in all chemistry laboratories.

General identification of the courses listed below is as follows:

Inorganic: 410, 411, 421, 505-506, 515, 516.

Analytical: 236, 339, 433, 525, 527.

Organic: 353, 355, 356, 357-358, 457, 461, 465-466, 565, 566, 570, 572, 574.

Physical and Theoretical: 279, 287-288, 289-290, 389-390, 391-392, 477, 481, 578, 586, 589, 593, 594, 596, 598.

Bio-organic: 568, 572, 582.

Biophysical: 577, 586.

### 103-104. INTRODUCTION TO CHEMISTRY

Throughout the year. Credit three hours a term. Chemistry 103 is prerequisite to Chemistry 104. Recommended for students who have not had high school chemistry and for those desiring a less mathematical course than Chemistry 107-108. Lectures, M F 10:10 or 11:15. Laboratory, M W or F 1:25-4:25, W 10:10-1:10 or S 8-11. Scheduled preliminary examinations may be held in the evenings. If passed with a grade of C, this course serves as a prerequisite for Chemistry 108 or Chemistry 353. Fall term, Mr. Sienko; spring term, Mr. Blomquist; and assistants.

An introduction to chemistry with emphasis on the important principles and facts of inorganic and organic chemistry.

## 107-108. GENERAL CHEMISTRY

Throughout the year. Credit three hours fall term and four hours spring term. Prerequisite, high school chemistry; 104 or 107 are prerequisites to 108. Enrollment is limited. Recommended for those students who will take further courses in chemistry. Lectures, T Th 9:05 and 10:10. Laboratory, W F or S 8-11; T or Th 1:25-4:25; M W or F 1:25-4:25. Scheduled preliminary examinations may be held in the evening. Fall term, Mr. Freed; spring term, Mr. Fay; and assistants.

The important chemical principles and facts are covered, with considerable attention given to the quantitative aspects and to the techniques that are important for further work in chemistry. Second-term laboratory includes a systematic study of qualitative analysis.

*Note:* Entering students exceptionally well prepared in chemistry may receive advanced credit for Chemistry 107-108 by demonstrating competence in the Advanced Placement Examination of the College Entrance Examination Board, or in advanced standing examination given at Ithaca on the Saturday before classes start in the fall.

## 115-116. GENERAL CHEMISTRY AND INORGANIC QUALITATIVE ANALYSIS

Throughout the year. Credit four hours in fall term, five in spring. Prerequisite, high school chemistry and physics at a grade of 90 or higher; Chemistry 115 is prerequisite to Chemistry 116. Coregistration in a calculus course at the level of Mathematics 111 or 191 and/or high school calculus required. Recommended for students who intend to specialize in chemistry or in closely related fields. Enrollment limited to 120. Fall term: lectures, M W F 12:20; one laboratory period, T or Th 10:10-1:10, W or F 8-11, or W or F 1:25-4:25. Spring term: lectures, M W 12:20. When announced in advance, quizzes, extra lectures or recitations will be F 12:20. Two laboratory periods, T Th 10:10-1:10; W F 8-11; W F 1:25-4:25; M T 1:25-4:25; or Th 1:25-4:25, S 8-11. Preliminary examinations will be given in the evening. Fall term, Mr. Hoffmann; spring term, Mr. Burlitch; and assistants.

An intensive, systematic study of the laws and concepts of chemistry, with considerable emphasis on mathematical aspects. Laboratory work will cover both qualitative and quantitative analysis.

## 236. INTRODUCTORY QUANTITATIVE ANALYSIS

Either term. Credit four hours. Prerequisite, Chemistry 108 or advanced placement in chemistry. Enrollment is limited. Lectures: T Th 12:20. Laboratory: fall term, M W or T Th 1:25-4:25; spring term, M W or T Th 1:25-4:25, or F 1:25-4:25 and S 8-11, if warranted by sufficient registration. Preliminary examinations may be given in the evening. Mr. Morrison and assistants.

A study of the fundamental principles of quantitative chemistry. Laboratory experiments are designed to illustrate basic principles and practice of quantitative procedures.

## 279. PHYSICAL CHEMISTRY I

Spring term. Credit four hours. Prerequisites, Chemistry 108 or 116, Mathematics 213, and coregistration in Physics 208, or consent of the instructor. Required of candidates for the degree of A. B. with a major in chemistry. Lectures, M W F 10:10. Preliminary examinations will be given in the evening. Mr. Albrecht.

Fundamental concepts in atomic and molecular theory; the origins of quantum theory, atomic spectra, elementary wave mechanics, quantum chemistry, and molecular structure.

**287-288. INTRODUCTORY PHYSICAL CHEMISTRY**

Throughout the year. Credit three hours a term. Prerequisites, Chemistry 108 or 116 and Mathematics 111-112 or consent of the instructor. Chemistry 287 is prerequisite to 288. Lectures, M W F 9:05. Preliminary examinations may be given in the evening. Mr. Albrecht and assistants.

A systematic treatment of the fundamental principles of physical chemistry.

**289-290. INTRODUCTORY PHYSICAL CHEMISTRY LABORATORY**

Throughout the year. Credit two hours a term. Coregistration in Chemistry 287-288 required. Chemistry 289 is prerequisite to 290. Laboratory lecture, F 12:20. Laboratory, M T or W Th 1:25-4:25 or F 1:25-4:25, S 8-11.

The development of needed skills in the experimental aspects concerned with the fundamental principles of physical chemistry.

**339. ANALYTICAL CHEMISTRY**

Fall term. Credit four hours. Prerequisites, Chemistry 356 and Chemistry 391. Coregistration in the latter course is permitted. Required of candidates for the degree of A.B. with a major in chemistry. Lectures, M W F 9:05. Laboratory, one of the following periods: M T W Th F 1:25-4:25; or S 9:05-12:05.

Examination of modern analytical chemistry. Laboratory work includes utilization of emission spectroscopy, polarography, spectrophotometry and nuclear magnetic resonance spectroscopy.

**353. ELEMENTARY ORGANIC CHEMISTRY**

Either term. Credit four hours. Prerequisite, Chemistry 104 at a grade of C or better, or 108, or 116. Primarily for students in the premedical and biological curricula. Parallel registration in Chemistry 355 is recommended. Lectures, M W F S 11:15. Scheduled preliminary examinations may be held in the evening. Fall term, Mr. Meinwald. Spring term, Mr. Caldwell.

An integrated study of aliphatic and aromatic organic compounds, their occurrence, methods of preparation, reactions, and uses.

The student should determine the entrance requirements for the particular medical school he wishes to enter. Students may obtain six hours credit by taking Chemistry 353-355. An additional two hours credit in laboratory may be obtained by taking Chemistry 356.

**355. ELEMENTARY ORGANIC LABORATORY**

Either term. Credit two hours. Prerequisite or parallel, Chemistry 353 or 357. Enrollment is limited; registrants who do not appear at the first meeting of their section will forfeit their registration. Required of candidates for the degree of B.Ch.E. or A.B. with a major in chemistry. Discussion-laboratory, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; F 1:25-4:25, S 8-11. Scheduled preliminary examinations may be held in the evenings. Mr. Goldstein and assistants.

An introduction to various laboratory techniques for the separation, purification, and analysis of organic compounds as these are applied to problems of natural products, of reaction kinetics, and of organic synthesis.

**356. ELEMENTARY ORGANIC LABORATORY**

Spring term. Credit two hours. Prerequisite, Chemistry 353-355. Enrollment is limited; registrants who do not appear at the first meeting of their section will forfeit their registration. Required of candidates for the degree of B.Ch.E. or A.B. with a major in chemistry. Discussion-laboratory, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; F 1:25-4:25, S 8-11. Scheduled preliminary examinations may be held in the evenings. Mr. Semmelhack and assistants.

A laboratory course designed to illustrate both classical and spectroscopic methods for determining the structures of organic compounds.

### 357-358. INTRODUCTORY ORGANIC CHEMISTRY

Throughout the year. Credit three hours a term. Prerequisite, Chemistry 108, or 116, or advanced placement in chemistry. Chemistry 357 is prerequisite to Chemistry 358. Parallel registration in Chemistry 355-356 is recommended. Required of candidates for the degree of B.Ch.E. and A.B. with a major in chemistry. Lectures, M W F 9:05. Scheduled preliminary examinations may be held in the evening. Mr. Miller.

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

### 389-390 PHYSICAL CHEMISTRY II and III

Throughout the year. Credit four hours a term. Prerequisites, Chemistry 236 and 279, Mathematics 213 or 221, Physics 208 or consent of the instructor. Chemistry 389 is prerequisite to 390. Required of candidates for the degree of A.B. with major in chemistry who are encouraged to coregister in Chemistry 391-392. Lectures, M W F 10:10. Examinations and make-up lectures, Th 7:30 p.m. Fall term, Mr. Scheraga; spring term, Mr. Bauer; and assistants.

A study of the more fundamental principles of physical chemistry from the standpoint of the laws of thermodynamics and statistical mechanics.

### 391-392. PHYSICAL CHEMISTRY LABORATORY II AND III

Throughout the year. Credit two hours a term. Chemistry 391 is prerequisite to 392. Chemistry 389-390 is prerequisite or coregistration. Laboratory lecture (fall term only), Th 12:20. Laboratory, fall term, T 1:25-4:25 or F 1:25-4:25; spring term, M T 1:25-4:25 or W F 1:25-4:25. Mr. Porter and assistants.

Experiments illustrating laboratory techniques as well as experiments in classical and modern physical chemistry.

### 410. INORGANIC CHEMISTRY

Spring term. Credit four hours. Prerequisite, Chemistry 290 or 391 or consent of the instructor. Chemistry majors are advised to take this course in their junior year. Lectures, M W F 9:05. Mr. Kostiner.

Lectures and assigned readings with emphasis on the application of thermodynamic, kinetic, and structural considerations to inorganic systems.

### [411. INORGANIC CHEMISTRY LABORATORY]

Fall term. Credit four hours. Prerequisite or parallel course, Chemistry 387, or consent of the instructor. Hours to be arranged. Not offered in 1968-69.

### 421. INTRODUCTION TO INORGANIC RESEARCH

Either term. Credit two or four hours. Prerequisites, Chemistry 387-388 or 285-286 at an average of B or better and consent of the instructor. Hours to be arranged. Messrs. Burlitch, Fay, Kostiner, Plane, Porter, and Sienko.

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

### 433. INTRODUCTION TO ANALYTICAL RESEARCH

Either term. Credit two or four hours. Prerequisite, Chemistry 388 with an average of B- or better or consent of the instructor. Hours to be arranged. Messrs. Cooke, and Morrison.

Informal research in the field of analytical chemistry involving both laboratory and library work.

[457. ADVANCED ORGANIC-ANALYTICAL LABORATORY]

Spring term. Credit four hours. Primarily for seniors and graduate students in chemistry. Prerequisites, Chemistry 358 and Chemistry 426, or Chemistry 525, or consent of the instructor. Discussion, T Th 8. Laboratory, three of the following periods: T Th 8-11, M T W Th F 1:25-4:25, S 10:10-1:10. Not offered in 1968-69.

461. INTRODUCTION TO ORGANIC RESEARCH

Either term. Credit two to four hours. Prerequisites, 456 or 457 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 B- or better in prerequisite courses. Laboratory and weekly discussion meeting, hours to be arranged. Messrs. Blomquist, Caldwell, Goldstein, Meinwald, Miller, Muxfeldt, Semmelhack, Usher, and Wilcox.

465-466. ORGANIC CHEMISTRY

Throughout the year. Credit four hours a term. Prerequisite, Chemistry 358. Chemistry 465 is prerequisite to 466. Primarily for juniors, seniors, and graduate students. Enrollment limited for undergraduates to those having a record of B- or better in previous courses in organic chemistry. Lectures, M W F 12:20. Discussion, to be arranged. Fall term, Mr. Wilcox; spring term, Mr. Muxfeldt.

Fall term: structural theory; resonance; methods of structure determination; conformational analysis and other aspects of stereo-chemistry; introduction to reaction mechanisms; synthesis and characteristic reactions of hydrocarbons. Spring term: synthesis and reactions of the principal classes of organic compounds, with an emphasis on newer developments; the application of mechanistic reasoning to synthetic problems; multi-step syntheses.

477. INTRODUCTION TO RESEARCH IN PHYSICAL CHEMISTRY

Either term. Credit two to four hours. Prerequisite, Chemistry 390 at an average of B- or better and consent of instructor. Hours to be arranged. Messrs. Albrecht, Bauer, Elson, Fisher, Freed, Hammes, Hoard, Hoffmann, Hughes, Long, Porter, Scheraga, and Widom.

Informal advanced laboratory and library work in physical chemistry, planned individually in consultation with a staff member.

481. ADVANCED PHYSICAL CHEMISTRY

Fall term. Credit four hours. Prerequisite, Chemistry 288 or 390. Lecture, M W F 9:05. Discussion section to be arranged. Mr. Widom.

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

497-498. HONORS SEMINAR AND RESEARCH

Throughout the year. Credit four hours a term. Prerequisite, admission to the Honors program. Seminar, W 2:30. Laboratory hours to be arranged. Messrs. Blomquist and Hughes.

The seminar will be an informal presentation and discussion of selected topics in which all members participate. Individual research will be on advanced problems in chemistry under the guidance of a staff member. A written report on the research results is required.

## 505-506. ADVANCED INORGANIC CHEMISTRY

Throughout the year. Credit four hours a term. Prerequisite or parallel course, Chemistry 389-390 or 287-288, or consent of the instructor. Chemistry 505 is prerequisite to Chemistry 506. Open to juniors, seniors, and graduate students. Lectures, M W F 11:15. Fall term, Mr. Burlitch; spring term, Mr. Sienko.

For description see the *Announcement of the Graduate School: Physical Sciences*.

## 515-516. SELECTED TOPICS IN ADVANCED INORGANIC CHEMISTRY

Throughout the year. Credit two hours a term. Students may register for either term separately. Prerequisite, Chemistry 390. Lectures, T Th 12:20. Messrs. Hoard and Lipscomb. Only grades of S or U will be given.

## 525. ADVANCED ANALYTICAL CHEMISTRY

Fall term. Credit four hours. Prerequisite, Chemistry 288 or 390. For graduate students only except by consent of the instructor. Lectures, M W F 8. Examinations, T 7:30 p.m. Mr. Cooke.

For description see the *Announcement of the Graduate School: Physical Sciences*.

## [527. ADVANCED ANALYTICAL CHEMISTRY]

Spring term. Credit four hours. Prerequisite, Chemistry 288 or 390. Primarily for graduate students. Lectures, M W F 8. Offered in alternate years. Not offered in 1968-69.

## 565. PHYSICAL ORGANIC CHEMISTRY

Fall term. Credit four hours. Prerequisite, Chemistry 465-466 or consent of the instructor. Primarily for graduate students. Lectures, M W F 12:20. Mr. Caldwell.

For description see the *Announcement of the Graduate School: Physical Sciences*.

## [566. PHYSICAL ORGANIC CHEMISTRY]

Spring term. Credit three hours. Prerequisite, Chemistry 565 or consent of the instructor. Primarily for graduate students. Lectures, T Th 12:20. Not offered in 1968-69.

## 568. CHEMICAL ASPECTS OF BIOLOGICAL PROCESSES

Fall term. Credit four hours. Prerequisites, Chemistry 358 and 388, or their equivalents. Primarily for graduate students. Lectures, M W F 9:05. Mr. Usher.

Bioenergetics, metabolic pathways, origin of life. This course forms the chemical basis for the graduate program in molecular biology.

## [570. SELECTED TOPICS IN ORGANIC CHEMISTRY]

Fall term. Credit three hours. Prerequisites, 465-466 or consent of instructor. Primarily for graduate students. Not offered in 1968-69.

## 572. ORGANIC MECHANISMS AND ENZYME CATALYSIS

Spring term. Credit four hours. Prerequisites, Chemistry 357-358 or equivalent, and a course in general biochemistry. Primarily for graduate students in chemistry and biochemistry. Lectures, M W F 11:15. Mr. Usher.

Enzymes, coenzymes and model systems.

## 574. CHEMISTRY OF NATURAL PRODUCTS

Fall term. Credit three hours. Prerequisites, Chemistry 456 or 457, and 465-466. Primarily for graduate students. Lectures, T Th 12:20 and discussion period, M 4:30. Mr. Muxfeldt.

## 577. CHEMISTRY OF NUCLEIC ACIDS

Fall term. Credit four hours. Prerequisites, Chemistry 358 and 390, or their equivalents. Primarily for graduate students. Lectures, T Th S 8. Mr. Elson. Properties, synthesis, and reactions of nucleic acids.

## 578. THERMODYNAMICS

Spring term. Credit four hours. Prerequisite, 288 or 390. Primarily for graduate students. Lectures, T Th S 9:05, and a discussion period to be arranged. Mr. Hoard.

For description see the *Announcement of the Graduate School: Physical Sciences*.

## [580. KINETICS OF CHEMICAL REACTIONS]

Fall term. Credit four hours. Prerequisites, Chemistry 481 and 578, or consent of the instructor. Lectures, M W F 9:05. Not offered in 1968-69.

## 582. SPECIAL TOPICS IN MOLECULAR BIOLOGY

Spring term. Credit four hours. Prerequisite, Chemistry 568 or consent of the instructor. Primarily for graduate students. Topics to be announced. Lectures, T Th S 11:15. Only grades of S or U will be given.

For description see the *Announcement of the Graduate School: Physical Sciences*.

## 586. PHYSICAL CHEMISTRY OF PROTEINS

Spring term. Credit four hours. Prerequisite, Chemistry 288 or 390. Primarily for graduate students. Lectures, M W F 8 and S 10:10; occasional lectures, W 7:30 P.M. Mr. Scheraga.

Chemical constitution, molecular weight, and structural basis of proteins; thermodynamic, hydrodynamic, optical, and electrical properties; protein and enzyme reactions; statistical mechanics of helix-coil transition in biopolymers; conformation of biopolymers.

## [589. X-RAY CRYSTALLOGRAPHY]

Fall term. Credit four hours. Prerequisite, Physics 322 or consent of the instructor. M W F 12:20. Offered in alternate years. Not offered in 1968-69.

## 593. QUANTUM MECHANICS I

Fall term. Credit four hours. Prerequisites, Chemistry 279 and Physics 303 (or coregistration in Physics 319) or their equivalents, and coregistration in Mathematics 421 (or equivalent), or consent of the instructor. Lectures, T Th 8:00-9:55. Mr. Fisher.

Schrödinger's equation, wave packets, uncertainty principle, WKB theory. Matrix mechanics, orbital and spin angular momentum, exclusion principle, perturbation theory, variational principle, Born-Oppenheimer approximation. At the level of Bohm, *Quantum Theory*.

## 594. QUANTUM MECHANICS II

Spring term. Credit four hours. Prerequisite, Chemistry 593 or its equivalent. Lectures, M W F 11:15. Mr. Freed.

Time-dependent phenomena in quantum mechanics and interaction with radiation. Group theory and applications. Topics in molecular quantum mechanics. At the level of Tinkham, *Group Theory and Quantum Mechanics*.

#### 596. STATISTICAL MECHANICS

Spring term. Credit four hours. Prerequisite, Chemistry 593 or equivalent is desirable but not required. Primarily for graduate students. Lectures, T Th 8:00-9:55. Mr. Fisher.

Ensembles and partition functions. Thermodynamic properties of ideal gases and crystals. Third law of thermodynamics, equilibrium constants, vapor pressures, imperfect gases, and virial coefficients. Distribution and correlation functions. Lattice statistics and phase transitions. Bose-Einstein and Fermi-Dirac ideal gases. Maxwell theory of viscosity and heat conduction. At the level of T. L. Hill, *Statistical Thermodynamics*.

#### 598. SELECTED TOPICS IN PHYSICAL CHEMISTRY

Fall term. Credit two hours. Lectures, T Th 12:20. Mr. Hoard. Only grades of S or U will be given.

Detailed consideration is given to special topics selected from the field of theoretical and experimental physical chemistry. Topics are varied from year to year.

#### 600. GENERAL CHEMISTRY SEMINAR

Throughout the year. No credit. Th 4:40. A series of talks representative of all fields of current research interest in chemistry, given by advanced graduate students, research associates, faculty members, and distinguished visitors. Only grades of S or U will be given.

#### 601-602. INTRODUCTORY GRADUATE SEMINAR IN ANALYTICAL, INORGANIC AND PHYSICAL CHEMISTRY

Throughout the year. No credit. Hours to be arranged. Required of all first-year graduate students majoring in analytical, inorganic, physical, and theoretical chemistry, and molecular biology. Messrs. Bauer and Kostiner. Only grades of S or U will be given.

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

#### 650-651. GRADUATE SEMINAR IN ORGANIC CHEMISTRY

Throughout the year. No credit. Open to qualified juniors, seniors, and graduate students. Required of all graduate students majoring in organic chemistry. M 8:15 p.m. Mr. Gurowitz. Only grades of S or U will be given.

#### 700. BAKER LECTURES

No credit. T Th 11:15. Fall term: G. Herzberg, National Research Council, Ottawa, Canada; spring term: W. Lipscomb, Harvard University. Only grades of S or U will be given.

## THE CLASSICS

Mr. G. M. Kirkwood, Chairman; Messrs. J. Hutton, G. M. Messing, Miss Elizabeth Milburn, Messrs. P. Pucci, N. Robertson, M. Schofield, E. W. Spofford, J. Tyler, F. O. Waage.

Those whose major study is in the Classics must complete twenty-four hours of advanced courses in Greek and Latin (Greek courses numbered above 201 or Latin courses numbered above 202) and fifteen hours, selected after conference with the adviser, in related subjects. Related subjects for this purpose are all courses listed below under Classical Linguistics and Classical Civilization, also ancient philosophy and selected courses in comparative literature, linguistics, modern foreign languages and literatures, and Semitic studies.

Those whose major study is in Classical Civilization must complete (a) eighteen hours in Latin or Greek; (b) twenty hours selected from the courses listed below under Classical Civilization; and (c) twelve 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 Bachelor of Arts with Honors in Classical Civilization must fulfill the requirements of the appropriate major study, as prescribed in the foregoing paragraphs, and must also complete successfully the special Honors Courses 370, 371, and 372. Credit for Honors courses may be included in the hours required for the major study. Students who wish to become candidates for Honors and who have a cumulative average of B- or better should consult some member of the Department before preregistering for the second term of the junior year.

The Distribution requirement in the Humanities is satisfied in Classics by any two courses in Greek beginning with 201 or in Latin beginning with 202 that form a reasonable sequence; but no course may be used for this requirement if it has been used for the language requirement.

## Greek

### 101. GREEK FOR BEGINNERS

Either term. Credit three hours. M W F 12:20. Fall term, Mr. Kirkwood. Spring term, Mr. Tyler.

Introduction to Attic Greek. Designed to enable the student to read the ancient authors as soon as possible.

### 103. ATTIC GREEK

Either term. Credit three hours. Prerequisite, Greek 101. M W F 12:20. Fall term, Mr. Messing. Spring term, Miss Milburn.

Continuation of Greek 101, and readings in Plato.

### 201. ATTIC AUTHORS: PLATO, APOLOGY; EURIPIDES, MEDEA

Fall term. Credit three hours. Prerequisite, Greek 103. T Th S 9:05. Mr. Schofield.

Attention is given both to the exact understanding of the Greek texts and to relevant broad literary and historical questions.

203. HOMER

Spring term. Credit three hours. Prerequisite, Greek 103. T Th S 9:05. Mr. Pucci.

Readings in Homeric epic, study of Homeric dialect, and consideration of such literary problems as the authorship, unity, and style of the epics and their relation to oral and literary epic.

209-210. GREEK COMPOSITION

Throughout the year. Credit one hour a term. Prerequisite, Greek 103 or the equivalent. W 2:30. Fall term, Miss Milburn. Spring term, Mr. Pucci.

An exercise course, meeting once a week, to provide review and further study of the forms and, more especially, the syntax of ancient Greek. Recommended as a companion course to Greek 201 and 203.

[301. HERODOTUS AND SOPHOCLES]

Fall term. Credit four hours. Prerequisite, Greek 203. Not offered in 1968-69. Will be offered in 1969-70.

[302. THUCYDIDES AND THE GREEK ORATORS]

Spring term. Credit four hours. Prerequisite, Greek 203. Not offered in 1968-69. Will be offered in 1969-70.

305. AESCHYLUS, ARISTOPHANES, LYRIC POETS

Fall term. Credit four hours. Prerequisite, Greek 203. T Th S 9:05. Mr. Schofield.

306. PHILOSOPHICAL WRITERS

Spring term. Credit four hours. Prerequisite, Greek 203. T Th S 10:10. Mr. Robertson.

401-402. INDEPENDENT STUDY

For qualified majors.

407. GRADUATE READING COURSE

Fall term. Credit four hours. M W F 9:05. Mr. Pucci.

A reading course, primarily for graduate students, in a major author or genre. Subject for 1968: Euripides.

408. GREEK EPIC: HOMER AND HESIOD

Spring term. Credit four hours. Primarily for graduate students. M W F 9:05.

409-410. ADVANCED GREEK COMPOSITION

Throughout the year. Credit one hour a term. Prerequisite, Greek 209-210 or the equivalent. Th 12:20. Mr. Messing.

442. GREEK PHILOSOPHY

Spring term. Credit four hours. Prerequisite, two terms of Greek at the 300 level. T Th S 11:15. Mr. Schofield.

Topic for 1969: A study of some important types of argument used by Greek philosophers. Texts to be read and discussed will include: Parmenides, Zeno, Plato, *Charmides* and *Phaedo*, Aristotle, *Physics*, Book I.

501-502. INDEPENDENT STUDY FOR GRADUATE STUDENTS

## 571-572. SEMINAR

Throughout the year. Credit four hours a term. For graduate students. Th 3:35-5:30. Fall term, Mr. Hutton. Spring term, Mr. Kirkwood.

Fall term: Topic to be announced. Spring term: Sappho and Alcaeus.

## Latin

Final placement in freshman Latin courses, other than beginning Latin, is determined by an examination administered by the Department of Classics approximately a week after the beginning of the fall term. Tentative placement is made on the basis of the previous training listed below as prerequisite for each course and of College Board Achievement Test scores.

## 105-106. LATIN FOR BEGINNERS

Throughout the year. Credit three hours a term. T Th S 11:15.

An introductory course in the essentials of the Latin language, designed for rapid progress toward reading the principal Latin authors. Readings in the second term from Caesar and short selections from various prose authors.

## 107. FRESHMAN COURSE: SELECTIONS FROM VIRGIL AND CICERO

Fall term. Credit three hours. Prerequisite, Latin 106 or two units of entrance Latin. T Th S 9:05, 10:10.

Begins with a comprehensive but rapid review of the fundamentals of Latin, but is principally a reading course. An oration of Cicero and selections from the *Aeneid*.

## 108. FRESHMAN COURSE: SALLUST AND TACITUS

Spring term. Credit three hours. Prerequisite, Latin 107 or three units of entrance Latin. T Th S 9:05, 10:10.

Tacitus' *Agricola* or *Germania*; readings from Sallust's *Catiline* or *Jugurtha*.

## 201. CATULLUS, CICERO, HORACE

Fall term. Credit three hours. Prerequisite, Latin 108 or three or (preferably) more units of entrance Latin. M W F 9:05, 11:15. Miss Milburn and Mr. Robertson.

Primarily intended for freshmen, and constituting, with 202, an introduction to Latin literature in its greatest epoch, at the end of the Republic and the beginning of the Empire. Reading consists of selections from the lyric poetry of Catullus and Horace, and either letters or an essay of Cicero.

## 202. THE AUGUSTAN AGE

Spring term. Credit three hours. Prerequisite, Latin 201. M W F 9:05, 11:15. Mr. Schofield and another member of the faculty.

Selections from Suetonius' *The Deified Augustus*, Ovid's *Ars Amatoria* or *Metamorphoses*, and Virgil's *Ecloques*.

## 205. ROMAN COMEDY

Fall term. Credit three hours. Prerequisite, Latin 202 or the equivalent; open to freshmen by departmental placement examination or by Advanced Placement Examination. M W F 10:10. Mr. Spofford.

Plautus and Terence; at least one comedy of each playwright.

206. VIRGIL AND LIVY

Spring term. Credit three hours. Prerequisite, Latin 205. M W F 10:10.

A book, or selections, of Livy's history of Rome; readings in Virgil's *Georgics*.

221-222. LATIN COMPOSITION

Throughout the year. Credit one hour a term. Prerequisite, Latin 202 or special permission. F 2:30.

An exercise course, meeting once a week, to provide review and further study of the forms and, more especially, the syntax of Latin. Recommended as a companion course to Latin 205-206.

315. LUCRETIUS' *DE RERUM NATURA* AND CICERO'S PHILOSOPHICAL WORKS

Fall term. Credit four hours. Prerequisite, Latin 206. M W F 11:15. Mr. Schofield.

316. VIRGIL'S *AENEID*

Spring term. Credit four hours. Prerequisite, Latin 315 or the equivalent. M W F 11:15. Mr. Robertson.

[317. TACITUS AND SENECA]

Fall term. Credit four hours. Prerequisite, Latin 206. Not offered in 1968-69. Will be offered in 1969-70.

[318. ELEGIAC POETS, PETRONIUS, APULEIUS]

Spring term. Credit four hours. Prerequisite, Latin 317 or the equivalent. Not offered in 1968-69. Will be offered in 1969-70.

367-368. MEDIEVAL LATIN LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, three years of high school Latin or consent of the instructor. Hours to be arranged. Mr. Wetherbee.

415. SILVER AGE LITERATURE

Fall term. Credit four hours. Prerequisite, two terms of Latin at the 300 level. M W F 9:05. Mr. Pucci.

Selections from Juvenal, Martial, Pliny the Younger, Quintilian and Seneca.

416. THE WORKS OF HORACE

Spring term. Credit four hours. Prerequisite, two terms of Latin at the 300 level. Mr. Spofford.

431-432. LATIN COMPOSITION: ADVANCED COURSE

Throughout the year. Credit one hour a term. For undergraduates who have completed Latin 221-222 and for graduate students. T 12:20. Fall term, Mr. Hutton. Spring term, Mr. Messing.

451-452. INDEPENDENT STUDY

For qualified majors.

551-552. INDEPENDENT STUDY FOR GRADUATE STUDENTS

581-582. SEMINAR

Throughout the year. Credit four hours a term. For graduate students. T 3:35-5:30. Fall term, instructor to be announced. Spring term, Mr. Hutton.

Topics for 1968-69 to be announced.

## Honors Courses

### 370. HONORS COURSE

Spring term. Credit four hours. To be taken in the junior year.

A program of readings and conferences centered in an author or a topic chosen in accordance with the special interests of the students and instructor.

### 371. HONORS COURSE

Fall term. Credit four 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 four hours. For students who have successfully completed Course 371. Topics must be approved by the Honors adviser at the end of the first term of the senior year.

## Classical Linguistics

### [421-422. HISTORICAL GRAMMAR OF GREEK AND LATIN]

Throughout the year. Credit four hours a term. Not offered in 1968-69.

### 423. VULGAR LATIN

Fall term. Credit four hours. Prerequisite, consent of the instructor. T Th S 10:10. Mr. Messing.

An introduction via selected Late Latin texts to the popular Latin from which the Romance languages are derived.

### 424. ITALIC DIALECTS

Spring term. Credit four hours. Prerequisite, consent of the instructor. T Th S 10:10. Mr. Messing.

Selected texts in Oscan and Umbrian will be studied both for their own interest and for their bearing on historical Latin and Indo-European linguistics.

## Classical Civilization

### 119. FRESHMAN SEMINAR IN GREEK LITERATURE

Fall term. Credit three hours. Mr. Spofford.

For description see Freshman Humanities Program, page 25.

### 120. FRESHMAN SEMINAR IN LATIN LITERATURE

Spring term. Credit three hours.

For description see Freshman Humanities Program, page 25.

### INTRODUCTION TO ARCHAEOLOGY

(Archaeology 200.)

### [220. INTRODUCTION TO CLASSICAL ARCHAEOLOGY]

Not offered in 1968-69.

### 319. PRECLASSICAL GREECE

Fall term. Credit four hours. M W F 10:10. Miss Milburn.

Aegean archaeology from the Neolithic period to the eighth century B.C.

## 90 COMPARATIVE LITERATURE

### 320. ARCHAEOLOGY OF CLASSICAL GREECE

Spring term. Credit four hours. M W F 10:10. Miss Milburn.

Study of select monuments of ancient Greece from the eighth century to the Hellenistic period.

### GREEK SCULPTURE

(History of Art 321.)

Not offered in 1968-69.

### NUMISMATICS

(History of Art 521.)

### [CERAMICS AND THE TECHNIQUES OF EXCAVATION]

(History of Art 523.)

Not offered in 1968-69.

### FOUNDATIONS OF WESTERN THOUGHT

(Comparative Literature 323.)

### HUMANISM AND THE RENAISSANCE

(Comparative Literature 332.)

### ANCIENT AND RENAISSANCE LITERARY CRITICISM

(Comparative Literature 401)

### GREEK AND ROMAN DRAMA

(Comparative Literature 404.)

### ANCIENT HISTORY

(History 301-302.)

### THE ROMAN REPUBLIC, 133-30 B.C.

(History 431.)

### GREEK HISTORY, 500-336 B.C.

(History 432.)

### THE ROMAN EMPIRE, 30 B.C.-A.D. 180

(History 433.)

Not offered in 1968-69.

### THE HELLENISTIC AGE

(History 434.)

Not offered in 1968-69.

### ORIGINS OF WESTERN POLITICAL THOUGHT

(Government 462.)

## COMPARATIVE LITERATURE

Messrs. M. H. Abrams, B. B. Adams, H. D. Albright, G. P. Biasin, E. A. Blackall, B. Boeschstein, A. Caputi, Miss Patricia Carden, Mr. M. A. Carlson, C. M. Carmichael, Miss Alice Colby, Messrs. D. Connor, J. B. Dallet, H. Deinert, H. Dieckmann, J. M. Echols, S. B. Elledge,

J. Freccero, H. J. Frey, A. Gelley, G. Gibian, P. A. Gottschalk, D. I. Grossvogel, T. D. Hill, M. Horwitz, J. Hutton, Mrs. Carol Kaske, R. E. Kaske, G. M. Kirkwood, J. W. Marchand, E. P. Morris, M. Muschg, B. E. Pike, I. Rabinowitz, K.-L. Selig, H. Shadick, E. W. Spofford, B. O. States, W. Wetherbee III.

The Department of Comparative Literature offers no major program; certain of its courses may, however, be counted toward the major requirements of other departments, at their option. For information consult the English, Classics, French, Russian, and German sections in this Announcement. Distribution requirements in the Humanities may be satisfied by any of the 200 or 300 courses in literature which form a sequence.

Related courses: consult the offerings in Classics, English, German, Romance Studies, Russian, Semitic Studies, Asian Studies, History, Philology, the Fine Arts, Music, and Theatre Arts.

#### 101-102. FRESHMAN SEMINAR IN WESTERN LITERATURE

Credit three hours a term.

For description see Freshman Humanities Program, page 25.

#### FRESHMAN SEMINAR IN GERMAN LITERATURE

(German 103-104.)

Credit three hours a term.

For description see Freshman Humanities Program, page 28.

#### FRESHMAN SEMINAR IN GREEK LITERATURE

(Classics 119.)

Fall term. Credit three hours. Mr. Spofford.

For description see Freshman Humanities Program, page 25.

#### FRESHMAN SEMINAR IN LATIN LITERATURE

(Classics 120.)

Spring term. Credit three hours.

For description see Freshman Humanities Program, page 25.

#### 201-202. WESTERN LITERATURE

Throughout the year. Credit three hours a term. May not be taken by students who have had Comparative Literature 101-102. Each section limited to 20 students. M W F 9:05, 10:10, 11:15, 12:20. T Th S 9:05, 10:10, 11:15. Staff.

Study and discussion in small sections of selected great books of the Western tradition. Fall term: the *Iliad*, and *Aeneid*, selections from the Bible, *The Divine Comedy*, *Paradise Lost*, and *Faust*. Spring term: Greek tragedies, *Don Quixote*, *King Lear*, plays by Molière, *Madame Bovary*, *Notes from the Underground*, stories by Kafka, and *The Stranger*.

#### 207-208. RUSSIAN LITERATURE

Throughout the year. Credit three hours a term. M W F 12:20. Miss Carden.

Readings in English translation. Fall term: Russian legends, chronicles, studies, and works by Griboedov, Pushkin, Gogol, Leskov, Aksakov, and Turgenev. Spring term: Dostoevsky, Tolstoy, Saltykov, Chekhov, Babel, and Sholokhov.

## 301. THE LITERATURE OF THE OLD TESTAMENT

Fall term. Credit four hours. M W F 9:05. Mr. Rabinowitz.

Readings, in translation, from books of the Old Testament composed during the pre-exilic period of Israel's history (to c. 520 B.C.). The various genres of classical Hebrew literature, and the ancient Israelite ideas and institutions essential to comprehension of the texts will be studied.

## [302. THE LITERATURE OF POST-EXILIC ISRAEL]

Spring term. Credit four hours. For sophomores, juniors, and seniors. M W F 9:05. Mr. Rabinowitz. Not offered in 1968-69.

## 303. THE LITERATURE OF THE NEW TESTAMENT

Throughout the year. Credit four hours a term. T Th 9:05 and an hour to be arranged. Mr. Carmichael.

Readings, in translation, mainly from the Gospels. Discussion of literary forms, concepts, conventions, and history writing in the New Testament.

## [313-314. ENGLISH TRANSLATION OF GREEK AND LATIN CLASSICS]

Throughout the year. Credit four hours a term. First term prerequisite to the second. For juniors and seniors only. Not offered in 1968-69.

## 323. FOUNDATIONS OF WESTERN THOUGHT: GREEK RELIGIOUS THOUGHT

Fall term. Credit four hours. For sophomores, juniors and seniors. T Th S 11:15. Mr. Robertson.

An examination of the historical origins of religious attitudes and beliefs which have been influential in later times; some emphasis is put on the social and material circumstances predisposing men to various kinds of religion. Not only forms of worship and open expressions of belief, but also patterns of myth, are traced through a selection of Greek writings in translation. These include Homer, Hesiod, Pindar, Aeschylus, Euripides, Aristophanes, and Plato.

## 327-328. MEDIEVAL LITERATURE

Throughout the year. Credit four hours a term. M W F 12:20. Fall term, Mr. Hill. Spring term, Mr. Kaske.

Fall term: analysis and interpretation of great medieval literary works in translation. Though readings will vary somewhat from year to year, a typical program would be *Beowulf*; *Chanson de Roland*; *Njassaga*; a romance of Chrétien: Wolfram's *Parzival*; Gottfried's *Tristan*, and/or *Sir Gowain and the Green Knight*; *Pearl*; *Piers Plowman*. Spring term: To be announced.

## 332. HUMANISM AND THE RENAISSANCE

Spring term. Credit four hours. M W F 10:10. 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.

## 337-338. THE LITERATURE OF EUROPE

Throughout the year. Credit four hours a term. First term not a prerequisite to the second. T Th S 10:10. Fall term, Mr. Wetherbee. Spring term, Mr. Gottschalk.

Fall term: reading of such representative authors as Chaucer, Boccaccio, Malory, Erasmus, Castiglione, Machiavelli, Rabelais, Montaigne, Shakespeare,

and Donne. Spring term: reading of such representative authors as Fielding, Diderot, Goethe, Byron, Stendhal, Dostoevsky, Nietzsche, Mallarme, Chekhov, and Shaw.

### 345-346. WORLD DRAMA

Throughout the year. Credit four hours a term. M W F 10:10. Fall term, Mr. Caputi. Spring term, Mr. States.

An introduction to representative types and forms of drama, designed to increase appreciation of the drama as literature and of the theater as an art form. Fall term: readings from Greece, Rome, the Middle Ages, the Renaissance, and the seventeenth Century. Spring term: readings from the eighteenth, nineteenth, and twentieth centuries.

### 351-352. THE MODERN EUROPEAN NOVEL

Throughout the year. Credit four hours a term. M W F 12:20. Fall term, Mr. Pike. Spring, Mr. McConkey.

Readings by such authors as Richardson, Sterne, Austen, Balzac, Stendhal, Goethe, Flaubert, Dostoevsky, Tolstoy, Proust, Kafka, and Mann.

### 354. DON QUIXOTE

Spring term. Credit four hours. Enrollment limited to 50 students. M W F 2:30. Mr. Selig.

A critical examination of Don Quixote (in translation) with particular consideration of various kinds of novels (pastoral, sentimental, picaresque, novels of chivalry) in their relationship to the early history and development of the genre.

### 358. IDEA AND FORM IN TWENTIETH-CENTURY EUROPEAN LITERATURE

Spring term. Credit four hours. Enrollment limited to 50 students. T Th S 10:10. Mr. Pike.

An experimental examination of the modern consciousness in literature. Readings will include Gertrude Stein, *Three Lives*, Rilke, *Malte Laurids Brigge*; Gide, *Lafcadio's Adventures*; Sartre, *Nausea*; Musil, *Five Women*; and stories by Borges, Flannery O'Connor, and others.

### 367. THE RUSSIAN NOVEL

Fall term. Credit four hours. T Th S 9:05. Mr. Horwitz.

Works by Turgenev, Dostoevsky, and Tolstoy.

### 368. SOVIET LITERATURE

Spring term. Credit four hours. M W F 10:10. Mr. Horwitz.

An introduction to selected works of Russian literature, from 1917 to date, examined as social and historical documents and as works of art.

### 371. CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION

Fall term. Credit three hours. M W F 10:10. Mr. Shadick.

### 372. CHINESE IMAGINATIVE LITERATURE IN TRANSLATION

Spring term. Credit three hours. M W F 10:10. Mr. Shadick.

### [380. SOUTHEAST ASIAN LITERATURE IN TRANSLATION]

Fall term. Credit four hours. T 2:30-4:25. Mr. Echols. Not offered in 1968-69.

## 400. MEDIEVAL ARTHURIAN LITERATURE

Spring term. Credit four hours. T Th S 10:10. Mr. Weatherbee.

A survey of Arthurian literature from the twelfth to the fifteenth century. Special attention will be given to the formation of the Arthurian "cycle," and to the relations of the English and French Arthurian traditions. Reading will include selections from the *Mabinogion*, the Didot *Perceval*, the Middle English alliterative *Morte Arthure*, *Sir Gawain and the Green Knight*, and works of Marie de France, Chrétien de Troyes, Chaucer and Sir Thomas Malory.

## 401. ANCIENT AND RENAISSANCE LITERARY CRITICISM

Fall term. Credit four hours. Hours to be announced. Mr. Williams.

A study of ancient and Renaissance poetic and rhetorical theory, with special reference to Plato, Aristotle, Horace, Quintilian, and Longinus, and to Scaliger and Castelvetro as Renaissance interpreters of the classical formulations.

## 402. ALLEGORY AND SYMBOLISM

Spring term. Credit four hours. M W F 10:10. Mrs. Kasko.

Definitions and models drawn from the *Divine Comedy* will be related to a reading of works ranging from classical to modern, such as Ovid's *Metamorphoses*, Prudentius' *Psychomachia*, the *Romance of the Rose*, mystical lyrics of St. John of the Cross and others, the *Faerie Queene*, *Faust Part II*, and selected works of Kafka.

## 404. GREEK AND ROMAN DRAMA

Spring term. Credit four hours. T Th 10:10-11:20. Mr. Kirkwood.

A study, by lecture and discussion, of the evolution of forms and meanings in ancient tragedy and comedy as exemplified by the works of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence, and Seneca. Representative plays are read in translation. Consideration is given also to the origins of tragedy and comedy, and to the ancient theater.

## [406. THE ENLIGHTENMENT IN GERMANY, FRANCE AND ENGLAND]

Spring term. Credit four hours. Mr. Dieckmann. Not offered in 1968-69.

## [409. POST-SYMBOLIST POETRY]

Fall term. Credit four hours. M W F 10:10. Not offered in 1968-69.

## 411. MODERN GERMAN LITERATURE

Fall term. Credit four hours. M W F 11:15. Mr. Deinert.

An intensive study of Franz Kafka. All readings in English translation.

## 414. MODERN ITALIAN LITERATURE

Spring term. Credit four hours. M 2:30-4:25. Mr. Biasin.

A thematic study of such authors as Verga, Svevo, Pirandello, Tomasi di Lampedusa, Basani, Pavese, and Moravia. Readings, lectures, and discussion in English.

## 415. MYTH AND LITERATURE

Fall term. Credit four hours. Enrollment limited to juniors, seniors, and graduate students. T Th S 12:20. Mrs. Siegel.

An examination of the meaning assigned to myth by imaginative writers

of the nineteenth and twentieth century. Readings in mythology, literature, and criticism.

#### 442. MODERN DRAMATISTS

Spring term. Credit four hours. M W F 10:10. Mr. Connor.

Topic for 1968-69: Bertolt Brecht. All readings in English translation. Reading of representative plays followed by a study of Brecht's theoretical writings on the theater and their relation to the plays.

#### 460. UTOPIAS AND IMAGINARY VOYAGES IN THE BAROQUE AGE AND THE ENLIGHTENMENT

Spring term. Credit four hours. M W F 11:15. Mr. Dallett.

Visions of the self, society, and the world as projected in the fictional modes of the dream, the Utopia, the allegory, and the novel of travel and shipwreck. The authors to be given special attention are Francis Gadwin (*The Man in the Moone*), Johann Valentin Andreae (*Christianapolis*), Kepler (*The Dream*), Quevedo (*Visions*), Cyrano de Bergerac, Athanasius Kircher, Grimmelshausen (*Simplicissimus*, I-VI), Bynyan, Defoe, J. G. Schnabel (*Die Insel Felsenburg*), Swift, and Samuel Johnson (*Rasselas*). Lectures and discussion.

#### [GREAT MOMENTS OF GERMAN LITERATURE]

(German 417-418.)

Throughout the year. Credit four hours a term. Mr. Blackall. Not offered in 1968-69.

#### LITERARY SOURCES IN THE ITALIAN RENAISSANCE

(History of Art 446.)

Spring term. Credit four hours. Mr. Selig.

#### SPACE IN THE NOVEL

(Society for the Humanities 405.)

Credit four hours a term. Open, by invitation, to seniors and graduate students. Mr. Gelley.

#### 501-502. TOPICS IN COMPARATIVE LITERATURE

Throughout the year. Credit four hours a term. Primarily for graduate students in comparative literature. Fall term, W 2:30-4:25. Mr. Pike.

Topic: Problems in and of the modern novel. Spring term: Mr. Boeschenstein. Topic: Holderlin.

#### [506. STUDIES IN RENAISSANCE MYTHOGRAPHY]

Spring term. Credit four hours. Permission of instructor required. Mr. Selig. Not offered in 1968-69.

#### [520. EIGHTEENTH-CENTURY AESTHETICS]

Spring term. Credit four hours. T 2:30-4:25. Mr. Dieckmann. Not offered in 1968-69.

#### TEXTUAL CRITICISM AND LITERARY INTERPRETATION

(Society for the Humanities 505.)

Fall term. Credit four hours. Open, by invitation, to seniors and graduate students. Mr. Dieckmann.

A THEORY OF POETICAL INFLUENCE AND MODERN REVISIONISM  
(Society for the Humanities 601-602.)

Throughout the year. Credit four hours a term. Open, by invitation, to seniors and graduate students. Mr. Harold Bloom.

## COMPUTER SCIENCE

### Colleges of Arts and Sciences and Engineering

Mr. J. Hartmanis, Chairman; Messrs. K. M. Brown, R. W. Conway, P. C. Fischer, J. E. Hopcroft, C. Pottle, G. Salton, R. Sweet, R. J. Walker, P. Wegner and W. Worley.

Computer science is a relatively new field of study that draws on and contributes to a number of existing disciplines such as mathematics, engineering, linguistics, and psychology, among others. Developments in this field are also used to make important contributions in research, development, design, and management activities in the various functional areas of engineering and applied science.

At Cornell, computer science is concerned with fundamental knowledge in automata, computability, and language structure, as well as with subjects such as numerical analysis and information processing which underlie broad areas of computer applications. Because of the wide implications of research in the field, the Department of Computer Science is organized as an intercollege department in the College of Arts and Sciences and the College of Engineering.

There is as yet no formal undergraduate major in this department. The student who is interested in the mathematical aspects of computer science can major in mathematics and choose mathematics Option I or Option II, including Computer Science 421-422 (Numerical Analysis), and then select fifteen hours of computer science courses including 401.

#### 201. SURVEY OF COMPUTER SCIENCE

Spring Term. Credit three hours. M W F 8:00.

Introduction to the structure and use of the modern digital computer. This course is intended to be a nonmathematical treatment of the material, and emphasis is on nonnumeric computer applications such as information retrieval, language processing, and artificial intelligence. A limited introduction to programming in a problem-oriented language is included.

#### 311. INTRODUCTION TO COMPUTER PROGRAMMING

Either term. Credit two hours. T Th 11:15.

Notations for describing algorithms, analysis of computational problems. Application of the (FORTRAN IV, PL/I) programming language to solve simple numerical and nonnumerical problems using a digital computer.

#### 385. AUTOMATA

Spring term. Credit three hours. Prerequisite, Mathematics 294 or 222 or equivalent. M W F 10:10.

The capabilities, limitations and structures of finite automata, Turing

machines and other abstract computing devices will be studied. Applications to questions of undecidability and artificial intelligence.

#### 401. COMPUTER ORGANIZATION AND PROGRAMMING

Either term. Credit four hours. Prerequisite, Mathematics 221 or 293 or equivalent. T Th 11:15, W 2:30-4:25.

Characteristics and structure of digital computers. Programming in assembly and higher-order languages. Representation of data, index registers and indirect addressing, program organization, macro operations, recursive procedures, interpretive routines, auxiliary storage and input-output, operating systems.

#### 404. ADVANCED COMPUTER PROGRAMMING

Spring term. Credit four hours. Prerequisite, 401 or consent of instructor. T Th 1:25, F 2:30.

This course is intended for students who wish to learn computer programming for eventual use in professional systems programming or advanced applications. To develop this ability, the basic logical and physical structure of digital computers is considered and the applicability and limitations of this structure is studied through many examples and exercises. The approach, therefore, is not a theoretical one, but rather an engineering one, in which techniques are emphasized. The students are expected to participate in a large systems programming design and implementation effort.

#### 411. INFORMATION AND COMPUTER STRUCTURES

Fall term. Credit four hours. Prerequisite, 401 or equivalent. T Th 9:05, W 2:30.

Fundamentals of computer organization and representation of structured operands in computers. Information flow during instruction execution; addressing structures, symbol table techniques. Algorithms for the manipulation of arrays, trees, strings, lists. Programming language structure; recognition and analysis systems. Time-sharing computer organization, paging, segmenting and core management.

#### 412. COMPUTER LANGUAGES AND COMPILERS

Spring term. Credit four hours. Prerequisite, 411 or consent of instructor. M W F 1:25.

Concerned with the theory and techniques of programming languages and systems for large scale digital computer systems. Topics include comparison of structure and form of assemblers, interpreters, compilers and list processors; formal definition of algorithmic languages and techniques used in compilation. Students will design and implement several simple languages during the term.

#### 413. SYSTEMS PROGRAMMING

Fall term. Credit four hours. Prerequisite, 412 or consent of instructor. M W F 1:25.

Brief review of batch process programming systems, their components, operating characteristics, user services and their limitations. Implementation techniques for parallel processing of I/O and interrupt handling. Overall structure of multiprogramming systems on large-scale multiprocessor hardware configuration. Details on addressing techniques, core management, file system design and management, system accounting, and other user-related services. Command languages and the embedding of subsystems. Operating characteristics (parameters) or large-scale systems.

**[417. ADVANCED INFORMATION PROCESSING]**

Fall term. Credit four hours. Prerequisite, 401 or equivalent experience. T Th 9:05, W 2:30. Not offered in 1968-69.

**420. COMPUTER APPLICATIONS OF NUMERICAL ANALYSIS**

Fall term. Credit four hours. Prerequisites, Mathematics 222 or 294 and Computer Science 311 or equivalent programming experience. M W F 9:05.

Modern computational algorithms for the numerical solution of a variety of applied mathematics problems are presented and students solve current representative problems by programming each of these algorithms to be run on the computer. Topics include numerical algorithms for the solution of linear systems; finding determinants, inverses, eigenvalues and eigenvectors of matrices; solution of a single polynomial or transcendental equation in one unknown; solution of systems of nonlinear equations; acceleration of convergence; Lagrangian interpolation and least squares approximation for functions given by a discrete data set; differentiation and integration; solution of ordinary differential equations: initial value problems for systems of nonlinear first order differential equations, two-point boundary value problems; partial differential equations: finite difference grid technique for the solution of the Poisson equation.

**421-422. NUMERICAL ANALYSIS.**

Throughout the year. Credit four hours a term. Prerequisite, Mathematics 412 or 416 or 422. M W F 9:05.

A mathematically rigorous treatment of numerical analysis. Covers the topics of Computer Science 420 in a more complete fashion with emphasis on careful analytical derivation of algorithms, proofs of convergence and error analysis. Includes some computer programming projects.

**435. INFORMATION ORGANIZATION AND RETRIEVAL**

Spring term. Credit four hours. Prerequisite, 401 or equivalent. T Th 9:05, occasionally W 2:30.

Covers all aspects of automatic language processing on digital computers, with emphasis on applications to information retrieval. Analysis of information content by statistical, syntactic and logical methods. Dictionary techniques. Automatic retrieval systems, question-answering systems. Evaluation of retrieval effectiveness.

**[441. HEURISTIC PROGRAMMING]**

Spring term. Credit four hours. Prerequisites, 401 and 411. Not offered in 1968-69.

**485. THEORY OF AUTOMATA I**

Fall term. Credit four hours. Prerequisite, Computer Science 401, or consent of instructor. M W F 11:15.

Automata theory is the study of abstract computing devices; their classification, structure and computational power. Topics include finite state automata, regular expressions, decomposition of finite automata and their realization, Turing machines and their computational power.

**486. THEORY OF AUTOMATA II**

Spring term. Credit four hours. Prerequisite, 485 or consent of instructor. M W F 11:15.

Topics include context-free and context-sensitive languages and their relation to push-down and linearly bounded automata. Quantitative aspects of Turing machine computations: time and memory bounded computations with

applications to language processing and classification of other automata and computations.

#### 487. FORMAL LANGUAGES

Fall term. Credit four hours. Prerequisite 486 or consent of instructor. M W F 2:30.

A study of formal languages, their processing and processors. Topics include regular, context-free, and context-sensitive languages; their recognition, parsing, algebraic properties, decision problems, recognition devices, and applications to computer and natural languages.

#### [488. THEORY OF EFFECTIVE COMPUTABILITY]

Spring term. Credit four hours. Prerequisite, Computer Science 401, 485, Mathematics 481, or consent of instructor. Not offered in 1968-69.

#### 521. NUMERICAL ANALYSIS OF LINEAR AND NONLINEAR SYSTEMS OF EQUATIONS

Spring term. Credit four hours. Prerequisites, Mathematics 521 and Computer Science 422. M W F 9:05.

Topics include recent methods for the solution of linear systems and eigenvalue, eigenvector determination; global convergence theorems for nonlinear systems, Newton-Kantorovich theory and its variations; function minimization.

#### 523. NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS AND INTEGRAL EQUATIONS

Fall term. Credit four hours. Prerequisites, Mathematics 427 and Computer Science 422. M W F 11:15.

Topics include solution of  $n$ th order nonlinear initial value problems and boundary value problems; single step methods; predictor-corrector techniques; stability, accuracy and precision of methods; eigenvalue problems; solution of integral equations having constant or variable limits: finite difference and iterative methods; singular and nonlinear integral equations.

#### 525. NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS

Spring term. Credit four hours. Prerequisites, Mathematics 428 and 521, and Computer Science 523. M W F 11:15.

General classification; solution by method of characteristics; finite-difference methods for hyperbolic and elliptic equations; parabolic equations in two dimensions; direct solution of elliptic finite-difference equations; iterative methods for the solution of elliptic equations; block methods for large systems; singularities in elliptic equations; stability in relation to initial value problems and nonlinear discretization algorithms.

#### [527. NUMERICAL METHODS IN APPROXIMATION THEORY]

Spring term. Credit four hours. Prerequisites, Mathematics 521 and Computer Science 422. M W F 9:05. Not offered in 1968-69.

#### 587. COMPUTATIONAL COMPLEXITY

Fall term. Credit four hours. Prerequisite, 486 or 488 or consent of instructor. T Th 9:05.

General measures of computational complexity and methods of classifying computable (recursive) functions. Examples of topics include restricted Turing machines, time and memory bounded computations as well as quantitative results about formal languages.

**590. SPECIAL INVESTIGATIONS IN COMPUTER SCIENCE**

Throughout the year. Credit and sessions to be arranged.

Offered to qualified students individually or in small groups. Directed study of special problems in the field of computer science. (Register only with the registration officer of the department.)

**591. COMPUTER SCIENCE GRADUATE SEMINAR**

Throughout the year. Credit one hour. For graduate students interested in computer science. Th 4:30-6:00. Staff, visitors and students.

A weekly meeting for the discussion and study of important topics in the field.

**611. SEMINAR IN PROGRAMMING**

Spring term. Credit four hours. Prerequisite 411 or consent of instructor.

**621. SEMINAR IN NUMERICAL ANALYSIS**

Fall term. Credit four hours. Prerequisite, consent of instructor.

**635. SEMINAR IN INFORMATION ORGANIZATION AND RETRIEVAL**

Fall term. Credit four hours. Prerequisite, Computer Science 435.

**681. SEMINAR IN AUTOMATA THEORY**

Spring term. Credit four hours. Prerequisite 486 or consent of instructor.

**DIGITAL SYSTEMS SIMULATION**

(Industrial Engineering 9580.)

Fall term. Credit four hours. Prerequisite, Computer Science 401 and Operations Research 9470, or consent of instructor.

**DATA PROCESSING SYSTEMS**

(Industrial Engineering 9589.)

Fall term. Credit three hours. Prerequisite, Computer Science 401 or consent of instructor.

**SWITCHING SYSTEMS I**

(Electrical Engineering 4487.)

Fall term. Credit three hours. Prerequisite, Electrical Engineering 4322 or consent of instructor.

**SWITCHING SYSTEMS II**

(Electrical Engineering 4488.)

Spring term. Credit three hours. Prerequisite, Electrical Engineering 4487 or equivalent.

## ECONOMICS

Mr. T. E. Davis, Chairman; Messrs. G. P. Adams, Jr., M. G. Clark, M. G. de Chazeau, D. F. Dowd, W. D. Evans, J. C. H. Fei, H. Fleisig, W. Galenson, F. H. Golay, G. H. Hildebrand, J. G. B. Hutchins, A. E. Kahn, R. W. Kilpatrick, T. C. Liu, W. F. Long, C. Morse, R. T. Selden, T. Sowell, G. J. Staller, J. Vanek, G. M. von Furstenberg.

Students wishing to major in economics must have completed both Economics 103 and Economics 104, or their equivalents, and, moreover,

must have averaged at least C in these courses. Economics 103-104 will be replaced by Economics 101-102 beginning in the fall term, 1968. Students who have completed only Economics 103 may be provisionally accepted as majors, but only if they have obtained a grade of B- or better. Freshmen intending to major in economics are advised to begin the course sequence, Economics 101-102, no later than their second term in residence. The Distribution requirements should be completed by the end of the sophomore year. Prospective majors are advised to consider as possible electives Principles of Accounting (Business and Public Administration 110S), Introductory Statistics (Agricultural Economics 314), and courses in calculus. These courses will contribute materially to preparation for advanced work in economics. Students proposing to major in economics should report to the secretary of the Department of Economics with a transcript of courses.

To complete the major, twenty-eight hours of economics courses in addition to Economics 103-104 or 101-102 must be completed, including Economics 311 and 312. Industrial and Labor Relations 241 and 445 and Business and Public Administration 375, 575, and 576 may be included. In addition, majors in economics are expected to complete a minimum of three advanced courses in subjects related to economics, selected with the approval of their major advisers, from the offerings in American Studies, Anthropology, Asian Studies, Government, History, Mathematics, Philosophy, (Social) Psychology, and Sociology. Prospective majors should therefore anticipate any prerequisites these advanced courses may require, and complete them in their freshman and sophomore years. Programs of related subjects should complement programs of courses in economics, and both must be arranged in consultation with advisers.

Candidates for the degree of Bachelor of Arts with Honors in Economics will enroll in the Honors seminar. Honors candidates are expected to complete thirty-two hours of advanced courses in economics, including the Honors seminar, and all courses required of majors.

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

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

The Distribution requirement in social sciences is satisfied in economics by Economics 103-104 (superseded by Economics 101-102 beginning with fall term 1968).

## I. Introductory

### 101. MODERN ECONOMIC SOCIETY

Either term. Credit three hours. Large lectures, plus two additional discussion sections (scheduled throughout the week). Fall term: M W 9:05, T

## 102 ECONOMICS

Th 9:05, 11:15. Messrs. Dowd, Fleisig, Staller, and assistants. Spring term: T Th 9:05. Mr. Galenson and assistants. Honors sections, hours to be arranged. Staff.

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

## 102. MODERN ECONOMIC SOCIETY

Either term. Credit three hours. Large lectures, plus two additional discussion sections (scheduled throughout the week). Fall term: T Th 10:10. Mr. Adams and assistants. Spring term: M W 9:05, 11:15, T Th 11:15. Messrs. Fei, Morse, Sowell, and assistants.

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

# II. Advanced Undergraduate Courses

## A. GENERAL

### 300. MAJOR SEMINARS

Either term. Credit four hours a term. Hours to be arranged.

Seminars limited to fifteen students. Seminars will be offered in selected topics. Majors will be given preference with respect to assignment to particular seminars. Titles, principal topics, and instructors will appear in the Supplementary Announcement.

### 311. INTERMEDIATE MICROECONOMIC THEORY

Either term. Credit four hours. Required of all students majoring in economics. Prerequisite, Economics 103-104 or consent of the instructor. Fall term: M W F 9:05, 10:10, T Th S 11:15. Messrs. Chen, Long, and Sowell. Spring term: M W F 11:15, T Th S 10:10. Staff.

Analysis of the pricing processes in a private enterprise economy under varying competitive conditions, their role in the allocation of resources, and the functional distribution of national income.

### 312. INTERMEDIATE MACROECONOMIC ANALYSIS

Either term. Credit four hours. Required of all students majoring in economics. Prerequisite, Economics 103-104 or consent of the instructor. Fall term: M W F 9:05, T Th S 11:15. Mr. von Furstenberg and others. Spring term: M W F 9:05, 11:15, T Th S 10:10. Messrs. Chen, Kilpatrick, and others.

An introduction to the theory of national income determination and economic growth in alternative models of the national economy; the interaction and relation of aspects of these models to empirical aggregate economic analysis.

### [313. DISSENTING ECONOMIC DOCTRINES AND PROTEST MOVEMENTS]

(Formerly 413.) Not offered in 1968-69.

**315-316. HISTORY OF ECONOMIC THOUGHT**

Throughout the year. Credit four hours a term. With the consent of the instructor the first term need not be prerequisite to the second. Fall term: M W F 11:15. Spring term: M W F 11:15. Mr. Sowell.

A survey of the development of economic ideas from the early modern period to the twentieth century. Extensive readings from the Mercantilists, Smith, Ricardo, Mill, and Marshall, with class discussion of these.

**317. INTRODUCTION TO MATHEMATICAL ECONOMICS**

(Formerly 417.) Fall term. Credit four hours. Prerequisite, Economics 311 and consent of the instructor. M W 1:25-2:40. Mr. Evans.

Application of elementary mathematical techniques to economic analysis.

**319-320. QUANTITATIVE METHODS IN ECONOMICS**

Throughout the year. Credit four hours a term. Prerequisite, ILR 210 or AG 314 or consent of the instructor. Fall term: T Th S 11:15. Spring term: T Th S 11:15. Staff.

Application of elementary statistical techniques to economic analysis.

**321. ECONOMIC HISTORY OF ANCIENT AND MEDIEVAL EUROPE**

Fall term. Credit four hours. Open to upperclassmen with some background in economics or history, or with consent of the instructor. M W F 10:10. Mr. Dowd.

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

**322. ECONOMIC HISTORY OF MODERN EUROPE**

Spring term. Credit four hours. Prerequisite, same as for 321. M W F 10:10. Mr. Dowd.

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

**323. AMERICAN ECONOMIC HISTORY**

Fall term. Credit four hours. Prerequisites, Economics 103-104, or consent of the instructor. T Th S 10:10. Mr. Fleisig.

The course will concentrate on three lines of investigation: the use of economic and statistical analysis as an aid in answering historical questions, the use of historical experience in determining the validity of aspects of economic theory, and the extent to which historical economic experience is useful in resolving current economic problems. Problems selected from the period 1800-1900 will be discussed.

**324. AMERICAN ECONOMIC HISTORY**

Spring term. Credit four hours. Prerequisites, same as for 323. T Th S 10:10. Mr. Fleisig.

Continuation of 323. Problems selected from the period 1900-1939 will be discussed.

**325. ECONOMIC HISTORY OF LATIN AMERICA**

Fall term. Credit four hours. Open to upperclassmen with some background in economics or history, or with consent of the instructor. M W F 10:10. Mr. Davis.

A survey emphasizing the processes and problems of economic growth and the evolution of economic institutions.

[ECONOMIC AND BUSINESS HISTORY]  
(Business and Public Administration 375)

Fall term. Credit three hours. Limited to seniors who have completed Economics 103-104. M W F 9:05. Mr. Hutchins. Not offered in 1968-69.

## B. MONEY, BANKING, AND PUBLIC FINANCE

### 331. THE ECONOMICS OF MONEY AND CREDIT

Spring term. Credit four hours. Prerequisite, Economics 103-104. M W F 10:10. Mr. Selden.

A systematic treatment of the determinants of the money supply and the volume of credit. Economic analysis of credit markets and financial institutions in the United States.

### 335. PUBLIC FINANCE: RESOURCE ALLOCATION

Fall term. Credit four hours. Prerequisite, Economics 103-104. T Th S 9:05. Mr. von Furstenberg.

An analysis of the role of government in allocating resources through taxes and expenditures. Criteria for evaluation will be developed and applied to specific policies. Attention will focus on the federal government.

### 338. MACROECONOMIC POLICY

Spring term. Credit four hours. Prerequisite, Economics 312. T Th S 9:05. Mr. Kilpatrick.

A study of the use of fiscal and monetary policies for achieving economic stability and growth.

## C. LABOR ECONOMICS

### ECONOMICS OF WAGES AND EMPLOYMENT (Industrial and Labor Relations 241)

Spring term. Credit three hours. Prerequisite, Economics 103-104. Mr. Hildebrand and others.

An introduction to the characteristics of the labor market and to analysis of wage and employment problems. Among topics studied are the composition of the labor force, job-seeking and employment practices, methods of wage determination, theories of wages and employment, economic effects of unions, the nature and causes of unemployment, and programs to combat joblessness and poverty.

### 342. ECONOMICS AND PROBLEMS OF LABOR

Fall term. Credit four hours. Prerequisite, Economics 103-104. I&LR 241 recommended. M W F 11:15. Mr. Hildebrand.

An advanced course concerning the institutional organization of labor markets, economic analysis of their operation, and major policy questions involved. Principal topics include wage and employment theory, determinants of wage level and structure, technological change, unemployment, poverty and income distribution, inflation and income policy. (Formerly 442)

## D. ORGANIZATION, PERFORMANCE, AND CONTROL OF INDUSTRY

### 351. PRIVATE ENTERPRISE AND PUBLIC POLICY

Fall term. Credit four hours. Prerequisite, Economics 103-104. M W F 9:05. Mr. Kahn.

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

[352. PUBLIC REGULATION OF BUSINESS]

Spring term. Credit four hours. Prerequisite, Economics 351 or consent of the instructor. M W F 9:05. Mr. Long. Not offered in 1968-69.

[TRANSPORTATION: RATES AND REGULATIONS]

(Business and Public Administration 575)

Fall term. Credit three hours. Limited to seniors who have taken Economics 103-104 or the equivalent. M W F 10:10. Mr. Hutchins. Not offered in 1968-69.

[TRANSPORTATION: ORGANIZATION, ADMINISTRATION, AND PUBLIC POLICIES]

(Business and Public Administration 576)

Spring term. Credit three hours. Limited to seniors who have completed Economics 103-104. M W F 10:10. Mr. Hutchins. Not offered in 1968-69.

## E. INTERNATIONAL AND COMPARATIVE ECONOMICS

### 361. INTERNATIONAL TRADE THEORY AND POLICY

Fall term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. M W F 11:15. Mr. Staller.

Survey of the principles that have served as guides in the formulation of international trade and commercial policies. The evolution of the theory of international trade, principles and practices of commercial policy, problems of regional integration and customs unions, and institutions and practices of state trading will be emphasized.

### 362. INTERNATIONAL MONETARY THEORY AND POLICY

Spring term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. M W F 11:15. Mr. von Furstenberg.

Survey of the principles that have served as guides in the formulation of international financial policies. The evolution of the theory of balance of payments adjustment, international monetary standards, the nature of conflicts arising out of the relationship between domestic economic policies and external economic relations, international capital movements, economic aid, international monetary institutions, and proposals for international monetary reforms will be emphasized.

### [364. THE UNITED STATES IN THE WORLD ECONOMY]

Spring term. Credit four hours. Prerequisites, Economics 103-104 or consent of the instructor. M W F 9:05. Mr. Golay. Not offered in 1968-69.

### 365. ECONOMIC POLICY AND DEVELOPMENT IN SOUTHEAST ASIA

Fall term. Credit four hours. Prerequisite, consent of the instructor. M W F 9:05. Mr. Golay.

Survey of colonial policy and development and current processes of economic growth in Southeast Asia. Examination of the role of the state in capital

formation, agricultural development, monetary management, and economic planning. Interaction of cultural and technological change, role of international specialization, and the potential for outside participation in Southeast Asian economic development are emphasized.

### 367. COMPARATIVE ECONOMIC SYSTEMS: SOVIET UNION AND EUROPE

Fall term. Credit four hours. Prerequisites, Economics 103-104 and I&LR 445 or consent of the instructor. M W F 10:10. Mr. Staller.

Discussion of the rationality and feasibility of economic planning (von Mises, Hayek, Lange). Examination of the various approaches to planning, including the discussion of the planning techniques in France, Yugoslavia, and the Soviet Union (with emphasis on the last country). Comparison of economic performance of various free and planned economies. Consideration of economic competition between the free and the planned systems.

### 369. INTRODUCTION TO THE ECONOMY OF CHINA

Fall term. Credit four hours. Prerequisite, consent of the instructor. T Th S 9:05. Mr. Chen.

A survey of modern Chinese economic development with special emphasis on the policies, performance, and problems of the mainland economy since 1949.

### COMPARATIVE ECONOMIC SYSTEMS: SOVIET RUSSIA (Industrial and Labor Relations 445)

Spring term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. T Th 2-3:30. Mr. Clark.

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

## F. ECONOMIC GROWTH AND DEVELOPMENT

### 371. PUBLIC POLICY AND ECONOMIC DEVELOPMENT

Fall term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. M W F 9:05. Staff.

Study of the role of the state in initiating and maintaining accelerated economic growth in less developed countries. Problems of capital accumulation, agricultural development, management of monetary and external disequilibria, interaction of culture change and economic growth, outside participation in economic modernization, and the role of international specialization are emphasized.

### 372. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT

Spring term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. Nonmajors and students who have not completed the prerequisite should see Center for International Studies 372. T Th S 11:15. Mr. Morse and guest lecturers.

A consideration of various contributions by economists and others to an understanding of how societies undergo economic growth and institutional change. Developing countries are the main focus of attention, most detailed consideration being given to Africa. Some possibilities of combining elements from economics and other fields to form a broad approach to economic development are explored.

## G. HONORS PROGRAM

### 390. HONORS SEMINAR

Spring term. Credit four hours. Required of all juniors who plan to be candidates for Honors. Hours to be arranged. Mr. Adams.

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

### 391-392. HONORS SEMINAR

Throughout the year. Credit four hours in fall, four hours in spring. Required of all seniors who are candidates for Honors. Hours to be arranged. Messrs. Hildebrand and Adams and staff.

Continuation of Economics 390, together with the writing of an Honors thesis and preparation for the comprehensive Honors examinations.

### 399. READINGS IN ECONOMICS

Either term. Credit two hours each term. Any member of the Department.

## Graduate Courses and Seminars

For complete descriptions of graduate courses see the *Announcement of the Graduate School: Social Sciences*.

### 511. PRICE AND ALLOCATION THEORY

Either term. Credit four hours. Prerequisite, consent of the instructor. Fall term: T Th 1:25-2:40. Staff. Spring term: M W F 11:15. Mr. Hildebrand.

### 512. MACROECONOMIC THEORY

Either term. Fall term: T Th S 9:05. Mr. Kilpatrick. Spring term: M W F 10:10. Staff.

### 519-520. QUANTITATIVE METHODS

Either term. Credit four hours a term. Hours to be arranged. Mr. Long.

### 521-522. EUROPEAN ECONOMIC HISTORY

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Dowd.

### 523. AMERICAN ECONOMIC HISTORY

Fall term. Credit four hours. Hours to be arranged. Mr. Fleisig.

### 561-562. INTERNATIONAL ECONOMIC THEORY AND POLICY

Throughout the year. Credit four hours a term. Hours to be arranged. Fall term: Mr. Staller. Spring term: Mr. von Furstenberg.

### 565. ECONOMIC PROBLEMS OF LATIN AMERICA

Spring term. Credit four hours. Hours to be arranged. Mr. Davis.

### 571-572. ECONOMIC GROWTH AND DEVELOPMENT

Throughout the year. Credit four hours a term. Hours to be arranged. Fall term: staff to be announced. Spring term: Mr. Morse.

### 611. ADVANCED MICROECONOMIC THEORY

Fall term. Mr. Fei.

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612. ADVANCED MACROECONOMIC THEORY

Spring term. Mr. Vanek.

613-614. HISTORY OF ECONOMIC THOUGHT

Throughout the year. (Offered only in fall term in 1968-69.) M 2:00-4:00.  
Mr. Adams.

[615. BUSINESS CYCLES AND GROWTH]

Not offered in 1968-69.

616. INTERMEDIATE MATHEMATICAL ECONOMICS

Spring term. M W 1:25-2:40. Mr. Evans.

617-618. MATHEMATICAL ECONOMICS

Throughout the year. Staff.

619-620. ECONOMETRICS

Throughout the year. Mr. Liu.

SEMINAR IN ECONOMIC STATISTICS

(Industrial and Labor Relations 610)

Fall term. Mr. Evans.

621-622. EUROPEAN ECONOMIC HISTORY

Throughout the year. (Offered only in spring term in 1968-69.) Mr. Dowd.

623. AMERICAN ECONOMIC HISTORY

Fall term. Mr. Fleisig.

625. SELECTED PROBLEMS IN THE HISTORY OF THE  
INTERNATIONAL ECONOMY, 1800-1939

Spring term. Mr. Fleisig.

[631-632. MONETARY THEORY AND POLICY]

Not offered in 1968-69.

635-636. PUBLIC FINANCE: RESOURCE ALLOCATION AND FISCAL  
POLICY

Throughout the year. Messrs. Kilpatrick and von Furstenberg.

641-642. LABOR ECONOMICS

Throughout the year. Messrs. Galenson and Hildebrand.

651-652. INDUSTRIAL ORGANIZATION AND REGULATION

Throughout the year. Fall term: Mr. Kahn. Spring term: Mr. Long.

[661-662. INTERNATIONAL ECONOMICS: PURE THEORY AND  
POLICY]

Not offered in 1968-69.

663-664. INTERNATIONAL ECONOMICS: BALANCE OF PAYMENTS  
AND INTERNATIONAL FINANCE

Throughout the year. Mr. Vanek.

## 671-672. ECONOMICS OF DEVELOPMENT

Throughout the year. Fall term: Mr. Golay. Spring term: Mr. Morse.

## 673. THEORY AND PRACTICE OF DECENTRALIZED SOCIALIST SYSTEMS

Fall term. Credit four hours. Prerequisite, Economics 311 and 312 or consent of the instructor. Hours to be arranged. Mr. Vanek.

Using tools of Western economic analysis, the first and principal aim of the course is to develop a comprehensive micro and macro theory of socialist market economics together with the related theory of planning and economic policy. The presentation will be illustrated by cases and examples from the Yugoslav and other socialist economies.

## 674. ECONOMIC PLANNING

Spring term. Mr. Staller.

## 675. ECONOMIC GROWTH MODELS

Fall term. Mr. Fei.

## 676. THE ECONOMY OF CHINA

Spring term. Mr. Chen.

## [678. ECONOMIC GROWTH IN SOUTHEAST ASIA]

Not offered in 1968-69.

## 679. THEORY OF ECONOMIC DEVELOPMENT

Spring term. Prerequisite, Economics 675. Mr. Fei.

## [685. SEMINAR IN MATHEMATICAL ECONOMICS]

Not offered in 1968-69.

## ENGLISH

Mr. E. G. Fogel, Chairman; Messrs. M. H. Abrams, B. B. Adams, C. B. Adams, A. R. Ammons, Miss Judith Anderson, Mr. D. N. Archibald, Miss Evelyn Barish, Mr. J. P. Bishop, Mrs. Jean Blackall, Messrs. M. D. Blehert, J. D. Boyd, M. R. Brownell, S. M. Budick, A. F. Caputi, V. A. De Luca, D. D. Eddy, J. P. Eichholz, R. H. Elias, S. B. Elledge, R. T. Farrell, D. H. Finlay, P. A. Gottschalk, B. L. Hathaway, G. H. Healey, N. H. Hertz, Mrs. Judith Herz, Mr. T. D. Hill, Mrs. Carol Kaske, Messrs. R. E. Kaske, M. Kaufman, H. Kaye, C. S. Levy, P. L. Marcus, Miss Carol Marks, Messrs. J. H. Matlack, D. E. McCall, J. R. McConkey, F. D. McConnell, H. S. McMillin, Jr., F. E. Mineka, A. M. Mizener, D. Novarr, A. R. Parker, J. S. Parker, S. M. Parrish, E. Rosenberg, Miss Joanna Russ, Messrs. D. R. Schwarz, W. D. Shaw, Mrs. Sandra Siegel, Messrs. W. J. Slatoff, B. O. States, Jr., C. S. Strout, W. Wetherbee, R. G. Williams.

Students who plan to major in English should secure from the Department's office, 245 Goldwin Smith, a brochure containing suggestions for prospective majors. All students who are candidates for

the major in English and all who are considering the possibility of a major in English will be assigned, if they wish, to a major adviser in the second term of the freshman year. Such students should apply to the chairman of the Department in the ten-day period before registration. Early assignment to a major adviser commits neither the student nor the Department. A student is a provisional major until he has completed English 251-252, the Distribution requirements, and six hours of study in a foreign language (preferably in literature) in courses for which Qualification is prerequisite.

Majors take a minimum of eight courses in English, or in other subjects approved for the major, numbered 300 or higher. The Department of English does not require specific upperclass courses, but it advises students to select courses in both the older and more recent periods and to avoid overconcentration on a single genre. Courses at the 300 level (many of which are lectures) are, in the main, surveys of the major areas of English and American literature; they are open to sophomores who have completed English 251-252. Courses at the 400 level (most of which are discussions) are, in the main, more limited in focus and more specialized in content; discussion courses are restricted to about fifteen students and seniors are given preference in electing them. Eight hours of work in writing at the 300 level or higher may be included in the minimum requirement for the major. Eight hours of work in satisfaction of the major may be taken outside the Department in courses numbered 300 or above in Comparative Literature, in a foreign literature, or in American Studies, provided that these are approved by the student's adviser as correlating with courses elected within the Department.

For the class of 1970 and for succeeding classes, the Honors program differs from the regular major primarily in requiring that a student include among his major courses an Honors seminar, English 491 or 492 (normally in his junior year, but, on occasion, in his senior year), and an Honors essay course, English 493, in the fall term of his senior year. Permission to enroll in any course in English which is numbered 491, 492, or 493 will be granted by the Chairman of the Honors Committee in the ten days preceding preregistration. Applicants for Honors courses must have demonstrated achievement at the high level described in the Department's brochure.

The Distribution requirement in the humanities is satisfied in English by English 225-226, 237-239, 243-245, 251-252, or 255-256. The Distribution requirement in the expressive arts is satisfied in English by English 203-204 or 205-206.

For students not majoring in English, the Department makes available a variety of courses at all levels: some courses at the 200 level are open to freshmen and all of them are open, without prerequisite, to sophomores; courses at the 300 level are open to juniors and seniors and to sophomores who have completed English 251-252; courses at the 400 level, most of which require the permission of the instructor, are open to specially qualified juniors and seniors.

Prospective teachers of English in secondary schools who seek temporary certification in New York State must fulfill all the requirements

of the major. In addition, they elect a special program of three professional courses offered in the Department and in Education. A detailed statement about programs for teachers is available in the office of the Department of English.

## Courses for Freshmen

As part of the Freshman Humanities Program, the Department of English offers a large number of one-semester courses, each conducted in small sections with limited enrollment. The courses are concerned with various forms of writing (narrative, biographical, expository), with the study of specific areas in English and American literature, and with the relation of literature to culture. Students may elect any two of these courses during their first year to satisfy the Freshman Humanities requirement. Descriptions of these courses are found in the section called "Freshman Humanities Program" (page 26). See also English 237 and 239.

## English as a Second Language

The following courses are offered by the Division of Modern Languages. Foreign students should consult a member of that Division in 106 Morrill Hall.

### 102. ENGLISH AS A SECOND LANGUAGE

Fall term. Credit three hours. Prerequisite, placement by the instructor. Hours to be arranged.

### 131-132. ENGLISH AS A SECOND LANGUAGE

Throughout the year. Credit three hours a term. Prerequisite, placement by the instructor. M W F 10:10 or 11:15.

## Intermediate Courses

### 203-204. SPECIAL FORMS OF WRITING

Throughout the year. Credit three hours a term. English 203 or consent of the instructor prerequisite to English 204. Sections limited to 15. M W 12:20, T Th 10:10 or 2:30, and conferences to be arranged. Mr. McConkey and others.

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

### 205-206. ADVANCED COMPOSITION

Throughout the year. Credit three hours a term. English 205 or consent of the instructor prerequisite to English 206. Sections limited to 18. M W 9:05 or T Th 10:10, and conferences to be arranged. Mr. Mineka and others.

For sophomores, juniors, and seniors who, having performed creditably in the Freshman Humanities Program (or in equivalent courses elsewhere), desire to carry on work in expository, critical, and personal essays.

### 225-226. THE TWENTIETH CENTURY

Throughout the year. Credit three hours a term. First term not prerequisite to the second. Not open to freshmen. M W F 1:25. Fall term, Mr. McCall. Spring term, Mr. Marcus.

An examination of important works of fiction and poetry by Dickinson, James, Conrad, Lawrence, Joyce, Fitzgerald, Stevens, and Hemingway in the fall term, and by Hardy, Yeats, Woolf, Forster, Eliot, Huxley, and others in the spring term.

### 237. THE READING OF FICTION

Either term. Credit three hours. Strongly recommended for prospective English majors; open to freshmen. May be used to satisfy either the Freshman Humanities requirement or the Distribution requirement in Humanities, but not both. Sections limited to 22. Fall term, M W F 11:15. Spring term, M W F 2:30. Mr. Rosenberg and others.

Forms of modern fiction, with emphasis on the short story and novella. Critical studies of works by English, American, as well as Continental writers from 1880 to the present: Chekhov, James, Conrad, Faulkner, Mann, Kafka, and others.

### 239. THE READING OF POETRY

Either term. Credit three hours. Strongly recommended for prospective English majors; open to freshmen. May be used to satisfy either the Freshman Humanities requirement or the Distribution requirement in Humanities, but not both. Sections limited to 22. Fall term, M W F 2:30. Spring term, M W F 11:15. Mr. Caputi and others.

Study of English and American poems, intended to help students speak and write articulately about poetry.

### 243. SHAKESPEARE

Either term. Credit three hours. Primarily for students who do not expect to major in English. Limited to 25. Fall term, M W F 2:30. Mr. Kaufman. Spring term, M W F 3:35. Mr. Gottschalk.

A critical study of representative plays from the principal periods of Shakespeare's career.

### 245. STUDIES IN AMERICAN LITERATURE

Either term. Credit three hours. Primarily for students who do not expect to major in English. Limited to 25. Fall term, M W F 3:35. Mr. McCall. Spring term, M W F 2:30. Mr. Matlack.

Intensive study of major works by such writers as Melville, Poe, Whitman, James, Twain, Hemingway, Faulkner, Baldwin, Wright, and Ellison.

### 251. GREAT ENGLISH WRITERS

Either term. Credit three hours. Open only to prospective majors in English. Available in the Fall term to sophomores and to those freshmen who have been given advanced standing credit; available in the Spring term to freshmen and sophomores. Sections limited to 25. M W F 1:25 or T Th S 11:15. Mr. Mizener and others.

Studies in selected works of great English writers from Chaucer through Milton, with some consideration of the English literary tradition.

### 252. GREAT ENGLISH WRITERS

Spring term. Credit three hours. Prerequisite, English 251. Sections limited to 25. (Will be offered either term in 1969-70.) M W F 1:25 or T Th S 11:15. Mr. Mizener and others.

Studies in selected works of great English writers from Dryden to the twentieth century, with some consideration of the English literary tradition.

## 255-256. BRITISH LITERATURE

Throughout the year. Credit three hours a term. First term not prerequisite to the second. T Th S 11:15. Mr. Healey.

A study of works by notable English, Scottish, and Irish authors from the time of Chaucer to that of Yeats. First term: from Chaucer to Boswell. Second term: from Burns to Yeats.

## Courses for Upperclassmen

These courses are mainly intended for juniors and seniors. Courses numbered 300 are open to sophomores who have completed English 251-252.

## 306. THE EARLIEST ENGLISH LITERATURE

Spring term. Credit four hours. M W F 12:20. Mr. Hill.

Cultural backgrounds, reading, and critical analysis of Anglo-Saxon poetry in translation, pagan and Christian epic, elegy, heroic legend, and other forms. Attention will be given to the relations of this literature to that of later periods.

## 309. THE SIXTEENTH CENTURY

Fall term. Credit four hours. M W F 9:05. Mr. Levy.

The main traditions in English poetry from 1530 to 1603, with some attention to the prose of the period. Special emphasis on such figures as Wyatt, Sidney, Spenser, Marlowe, and Shakespeare.

## 310. THE SEVENTEENTH CENTURY

Spring term. Credit four hours. M W F 9:05. Mr. Finlay.

The poetry of Donne, Herbert, Jonson, Herrick, and Marvell; selected prose of Bacon, Browne, and Burton.

## 315. THE AGE OF POPE

Fall term. Credit four hours. M W F 2:30. Mr. Brownell.

Readings: Dryden, Congreve, Pope, Gay, Swift, Thomson, and Young; Law, Locke, Shaftesbury, and Mandeville; Addison, Steele, and Lady Mary Wortley Montagu; Defoe, Richardson, Fielding, and Smollett. Topics: art, religion, philosophy, politics, manners, and taste in an age of elegance.

## 316. THE AGE OF JOHNSON

Spring term. Credit four hours. M W F 2:30.

A study of the poetry, criticism, biography, and fiction of Johnson and his circle; the poetry of Gray, Burns, and others; the decline of neoclassicism.

## 317. THE ROMANTIC POETS

Fall term. Credit four hours. T Th S 11:15. Mr. A. R. Parker.

A critical study of the poetry of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

## 320. THE VICTORIANS

Spring term. Credit four hours. T Th S 11:15. Mr. Mineka.

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

321. THE TWENTIETH CENTURY

Fall term. Credit four hours. M W F 10:10. Mr. Mizener.

The character of twentieth-century literature, as shown by the work of eight or ten major poets and novelists, from Yeats to Robert Lowell.

329. THE GROWTH OF AMERICAN LITERATURE

Fall term. Credit four hours. M W F 1:25. Mr. Elias.

A literary history of America from Puritan beginnings to the Civil War.

330. MAJOR AMERICAN WRITERS SINCE THE CIVIL WAR

Spring term. Credit four hours. M W F 1:25. Mr. Bishop.

A study of selected works by important American writers from Whitman to Faulkner.

336. THE MODERN AMERICAN NOVEL

Spring term. Credit four hours. M W F 10:10. Mr. Slatoff.

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

337. THE NINETEENTH-CENTURY NOVEL

Fall term. Credit four hours. M W F 12:20. Mr. Rosenberg.

A critical study of English fiction from Jane Austen to Conrad.

339. REPRESENTATIVE ENGLISH DRAMAS

Fall term. Credit four hours. M W F 11:15. Mr. Kaufman.

A study of the evolution of the principal traditions of English drama through selected plays from the Middle Ages to the present century.

346. MODERN DRAMA

Spring term. Credit four hours. M W F 11:15. Mr. McMillin.

A study of drama from Ibsen to the present day, including major continental playwrights, and giving special attention to Shaw, O'Casey, O'Neill, and Miller.

365. CHAUCER

Fall term. Credit four hours. T Th S 12:20. Mr. Farrell.

Reading and critical analysis: *Troilus* and a large selection from the *Canterbury Tales*.

368. SHAKESPEARE

Spring term. Credit four hours. M W F 11:15. Mr. Caputi.

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.

371. MILTON

Fall term. Credit four hours. T Th S 10:10. Mr. Novarr.

Study of Milton's poetry and selected prose, with emphasis on *Paradise Lost*.

383. THE ENGLISH LANGUAGE

Fall term. Credit four hours. T Th S 9:05. Mr. Farrell.

A historical and topical analysis of the development of English, from its beginnings to the present.

## 385-386. NARRATIVE WRITING

Throughout the year. Credit four hours a term. Prerequisite, English 204 or 206 or consent of the instructor. T Th 12:20 and conferences to be arranged. Fall term, Messrs. Slatoff and McCall. Spring term, Messrs. McConkey and Rosenberg.

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

## 387. VERSE WRITING

Fall term. Credit four hours. Prerequisite, consent of the instructor. T Th 1:25-3:20. Mr. Ammons.

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

## 402. LITERARY CRITICISM

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 3:35. Mr. Boyd.

Study of some major critics in the English tradition, from Sidney and Dryden to Kenneth Burke and Northrop Frye.

## 406. SPENSER

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 9:05. Miss Anderson.

The realms of actuality and imagination in the poetry of Edmund Spenser. Emphasis on *The Faerie Queene*.

## 408. PROBLEMS IN THE RENAISSANCE

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 12:20. Mr. Eichholz.

The interplay of private consciousness and public virtue in various kinds of Renaissance literature. Montaigne's *Essays*, Castiglione's *The Courtier*, and Machiavelli's *The Prince* will provide the set of themes to be explored in Sidney, Spenser, Shakespeare, Jonson, Milton, and Marvell.

## 412. ELIZABETHAN AND JACOBEAN DRAMA

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 9:05. Mr. Barry Adams.

Critical study of plays by Marlowe, Marston, Jonson, Beaumont, Fletcher, Webster, Ford, and others.

## 413. SHAKESPEARE

Fall term. Credit four hours. *Discussion*. Prerequisite, English 368 and consent of the instructor. M W F 11:15. Mr. Caesar Adams.

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

## 417. THE SCHOOL OF DONNE

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 11:15. Miss Marks.

The mind and poetic art of Donne, Marvell, and related poets.

## 419. THE SCHOOL OF JONSON

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 9:05. Mr. McConnell.

The poetry and criticism of Ben Jonson, and studies in the Jonsonian tradition: Herrick, Carew, and the sons of Ben; Milton and Marvell; the Cavalier poets; the Restoration wits.

## 424. DRYDEN AND HIS TIME

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 11:15. Mr. Budick.

The major poetry, drama, and criticism of Dryden and his contemporaries, and the ways in which the English literary tradition was modified by Restoration science, politics, philosophy, and theology.

## 433. THE ENGLISH NOVEL IN THE EIGHTEENTH CENTURY

Fall term. Credit four hours. T Th S 9:05. Mr. Eddy.

The rise of the English novel. Critical study of works by major novelists from Defoe to Austen.

## 436. ENGLISH POETRY AND THE SUBLIME

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 10:10. Mr. Hertz.

Some theoretical works on the notion of sublime (Longinus, Burke, Kant) will be considered. Emphasis on poems of the eighteenth and early nineteenth century (by Thomson, Collins, Gray, Young, Akenside, Wordsworth) which were considered "sublime" by contemporary readers.

## 437. THE EARLY ROMANTICS

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 10:10. Mr. De Luca.

Intellectual and artistic development among the early Romantic poets, with emphasis on the major poetry of Blake and Wordsworth.

## 438. MASTERWORKS OF THE ROMANTIC PERIOD

Spring term. Credit four hours. T Th S 10:10. Mr. Abrams.

A critical study of major Romantic achievements in various forms: Blake's *The Four Zoas*, Wordsworth's *Prelude*, Shelley's *Prometheus Unbound*, Keats's *Fall of Hyperion*, and Byron's *Don Juan*.

## 442. THE OLD WORLD AND THE NEW

Spring term. Credit four hours. T Th S 9:05. Mr. Strout.

The American experience of Europe, as reflected in literature, studied in relation to historical development. Selected writings of Irving, Hawthorne, Melville, Twain, James, Hemingway, and others.

## 444. HAWTHORNE AND MELVILLE

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 1:25 or 2:30. Messrs. Bishop and Kaye.

Emphasis on critical study of the major works of fiction.

## 447. JAMES AND TWAIN

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 1:25 or 2:30. Messrs. Matlack and Schwarz.

Intensive examination of selected texts, with special attention to fictional methods and to portrayal of the American character.

## 448. STUDIES IN NINETEENTH-CENTURY AMERICAN LITERATURE

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 11:15. Mr. Matlack.

Emphasis on such major writers as Emerson, Thoreau, and Whitman.

## 451. MAJOR VICTORIAN POETS

Fall term. Credit four hours. M W F 3:35. Mr. Shaw.

The poetry of Tennyson, Browning, and Arnold, and a brief survey of the Pre-Raphaelites.

## 455. LATE VICTORIAN AND EDWARDIAN LITERATURE (1890-1914)

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 11:15. Mr. Parrish.

The ways in which such writers as Hopkins and Housman, Hardy and Moore, Wilde and Shaw, Beerbohm and Wells changed Victorian attitudes and influenced our own.

## 457. STUDIES IN THE NOVEL

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 11:15. Mr. Schwarz.

Topic for 1968-69: Hardy, Conrad, and others.

## 459. MODERN AMERICAN POETRY

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 10:10. Mr. Kaye.

The relationship between "modern" and "traditional" poetry in the work of Wallace Stevens, William Carlos Williams, Yvor Winters, and J. V. Cunningham.

## 463. STUDIES IN MODERN DRAMA

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 10:10. Mr. Kaufman.

A study of themes and dramatic form in T. S. Eliot, O'Casey, Tennessee Williams, and the postwar English playwrights, such as Pinter and Osborne.

## 464. STUDIES IN MODERN FICTION

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 10:10. Mr. Blehert.

Emphasis on the involuted novel by such writers as Nabokov, Joyce, Kafka, Beckett, and Robbe-Grillet.

## 465. TWENTIETH-CENTURY POETS

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 12:20. Mr. Marcus.

Study of major poets, with emphasis on Yeats.

## 466. THE ANGLO-IRISH LITERARY TRADITION

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 2:30. Mr. Archibald.

Concentration on Jonathan Swift and James Joyce: a study of their major works, of some relationships between them, and of what this suggests about the Irish situation.

## 472. MODERN THEORIES OF POETRY

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of instructor. M W 11:15. Mr. Ammons.

Each student will select a poet and examine the relations between his theory and practice.

[482. MODERN ENGLISH GRAMMAR AND USAGE]

Spring term. Credit four hours. Mr. Hathaway. Not offered in 1968-69.

485-486. SEMINAR IN WRITING

Throughout the year. Credit four hours a term. *Discussion*. Prerequisite, English 385-386 or consent of the instructor. W 1:25-3:20. Fall term, Mr. Ammons. Spring term, Mr. Slatoff.

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

489. THE TEACHING OF ENGLISH

Fall term. Credit four hours. W 2:30-4:25. Mr. Barry Adams.

Emphasis on the teaching of reading, writing, and language. Undergraduates accepted for the English-teaching program take this course in their senior year; all others must secure consent of the instructor.

ALLEGORY AND SYMBOLISM

(Comparative Literature 402)

LITERARY CRITICISM: ANCIENT TO RENAISSANCE

(Comparative Literature 401)

MEDIEVAL ARTHURIAN LITERATURE

(Comparative Literature 400)

MEDIEVAL LITERATURE

(Comparative Literature 327-328)

MYTH AND LITERATURE

(Comparative Literature 415)

SEMINAR IN AMERICAN STUDIES

(American Studies 401-402)

THE MODERN EUROPEAN NOVEL

(Comparative Literature 351-352)

THE LITERATURE OF EUROPE

(Comparative Literature 337-338)

WORLD DRAMA

(Comparative Literature 345-346)

## Honors Courses

Open only to juniors and seniors who have secured prior permission from the Chairman of the Honors Committee. English 493 and 494 are limited to seniors who have received permission.

491B. THE MODE OF ROMANCE IN CHAUCER AND SHAKESPEARE

Fall term. Credit four hours. T Th 1:25-3:20. Mrs. Herz.

A reading of selected tales and the *Troilus and Criseyde* of Chaucer and selected plays of Shakespeare (including *A Midsummer Night's Dream*, *The Winter's Tale*, and *The Tempest*) in a study of the mode of romance.

**491C. THREE ENGLISH POETS**

Fall term. Credit four hours. T Th 1:25-3:20. Mr. McConkey.

A study of the poetry of Dryden, Tennyson, and Yeats against the background of their contemporaries.

**491G. THE CRITICISM OF POETRY**

Fall term. Credit four hours. T Th 1:25-3:20. Mr. Abrams.

Lyric and narrative poems from the Elizabethan age to the present, together with recent essays in the criticism of these poems. One undertaking will be to define and resolve the causes of disagreement in interpretation and evaluation.

**491H. READINGS IN ROMANTICISM**

Fall term. Credit four hours. T Th 1:25-3:20. Mr. A. R. Parker.

Emphasis on methods and problems of critical interpretation in works by various romantic and post-romantic poets and prose writers, from Wordsworth and Shelley through Hardy and Hopkins.

**492H. DOCTRINE AND DISCIPLINE: THE POET-CRITICS**

Spring term. Credit four hours. T Th 1:25-3:20. Mrs. Mermin.

A study of some poet-critics, exploring in particular the relation between their critical theories and their poetry. The chief emphasis will be on Matthew Arnold and T. S. Eliot, with briefer consideration of other writers, such as Sidney, Dryden, and Wordsworth.

**492J. THE NOVEL OF MANNERS**

Spring term. Credit four hours. T Th 1:25-3:20. Mr. Mizener.

A study of the ways of presenting experience and expressing values in the novel of manners and a consideration of the sense of reality that leads writers to adopt this form. Examples of the novel of manners will be chosen from the work of such writers as Jane Austen, Edith Wharton, James Gould Cozzens, Anthony Powell, and Kingsley Amis.

**492K. STUDIES IN DRAMATIC FORM**

Spring term. Credit four hours. T Th 1:25-3:20. Mr. States.

A study of dramatic theory and form. Selected readings in criticism and in English drama from Elizabethan times to the present.

**493. HONORS ESSAY TUTORIAL**

Fall term. Credit four hours. Hours and instructor by arrangement.

**494. INDEPENDENT STUDY**

Spring term. Credit four hours. Hours and instructor by arrangement.

## Graduate Courses

These courses are for graduate students, but a few especially qualified undergraduates may enroll in 500-level courses. All students must secure the consent of the instructor before registering.

**500. INTRODUCTION TO ADVANCED RESEARCH**

Spring term. Credit four hours. Mr. Novarr.

A study of methods and materials relevant to the solution of problems in

scholarly and critical interpretation. For candidates for the Ph.D. degree; normally to be taken in the Spring semester of the first year of graduate study.

501. READINGS IN OLD ENGLISH

Fall term. Credit four hours. Mr. Farrell.

Elements of Old English grammar and readings in the shorter literary texts.

502. BEOWULF

Spring term. Credit four hours. Prerequisite, English 501. Mr. Hill.

A reading of the poem in Old English and discussion of the literary problems which it presents.

503. MIDDLE ENGLISH

Fall term. Credit four hours. Mr. Kaske.

Reading and critical analysis of major works, excluding Chaucer and the drama.

504. CHAUCER

Spring term. Credit four hours. Mr. Kaske.

Reading and critical analysis, with emphasis on *Troilus* and *Canterbury Tales*.

[505. GRAMMATICAL ANALYSIS]

Fall term. Credit four hours. Mr. Hathaway. Not offered in 1968-69.

506. PHILOLOGICAL PROBLEMS IN THE STUDY OF ENGLISH LITERATURE

Spring term. Credit four hours. Mr. Farrell.

An examination of major developments in the English language from Middle English to the present and a consideration of the problems which these changes present in the reading of literary texts.

[507. THEORY OF PROSE]

Fall term. Credit four hours. Mr. Elledge. Not offered in 1968-69.

[509. MEDIEVAL DRAMA]

Fall term. Credit four hours. Mr. Barry Adams. Not offered in 1968-69.

513. ELIZABETHAN AND JACOBAN DRAMA

Fall term. Credit four hours. Mr. McMillin.

A study of major plays by Marlowe, Kyd, Shakespeare, Jonson, Webster, and others, with particular attention to the importance of repertory drama.

517. EPIC AND ALLEGORY IN THE ENGLISH TRADITION

Fall term. Credit four hours. Miss Anderson.

*Piers Plowman*, *The Faerie Queene*, and *Paradise Lost*: the relation of satire to allegory, the development of characterization, the changing nature of the dream-world, and the function of the narrative voice. Emphasis will be on the poetry of Spenser.

[519. STUDIES IN ELIZABETHAN LITERATURE]

Fall term. Credit four hours. Mr. Levy. Not offered in 1968-69.

## [520. JONSON AND DRYDEN]

Spring term. Credit four hours. Mr. Novarr. Not offered in 1968-69.

## 522. MILTON

Spring term. Credit four hours. Mr. Levy.

Studies in Milton's English poetry, with some related consideration of the prose.

## [530. THE NEW ENGLAND MIND, 1620-1860]

Spring term. Credit four hours. Not offered in 1968-69.

## [533. THE INTELLECTUAL ORIGINS AND DEVELOPMENT OF THE ROMANTIC MOVEMENT IN AMERICA]

Fall term. Credit four hours. Mr. Strout. Not offered in 1968-69.

## 535. THE INTELLECTUAL ORIGINS OF THE MODERN CONSCIOUSNESS IN AMERICAN LITERATURE AND THOUGHT

Fall term. Credit four hours. Mr. Strout.

## 538. STUDIES IN AMERICAN LITERATURE

Spring term. Credit four hours. Mr. Elias.

American novelists between wars: a study of the concern of such writers as Lewis, Dos Passos, Hemingway, and Cozzens with the relation of the individual to society.

## 549-550. CREATIVE WRITING

Throughout the year. Credit four hours a term. Fall term, Mr. McConkey. Spring term, Mr. Ammons.

## [561. DRAMATIC LITERATURE: TRAGEDY]

Fall term. Credit four hours. Mr. Caputi. Not offered in 1968-69.

## 562. SHAKESPEARE

Spring term. Credit four hours. Mr. Barry Adams.

Studies in the interpretation of Shakespearean comedy, with special attention to *Twelfth Night*, *Measure for Measure*, and *The Winter's Tale*.

## 564. DRAMATIC LITERATURE: SHAW AND O'NEILL

Spring term. Credit four hours. Mr. Caputi.

A detailed study of the plays of Bernard Shaw and Eugene O'Neill and of their backgrounds.

## [571. ROMANTIC POETRY]

Fall term. Credit four hours. Mr. A. R. Parker. Not offered in 1968-69.

## 572. THE ROMANTIC PERIOD

Spring term. Credit four hours. Mr. Abrams.

Structure and imagery in the longer Romantic poems.

## 575. VICTORIAN PROSE

Fall term. Credit four hours. Mr. Mineka.

Major emphasis upon writers of non-fictional prose, but with some attention to the novel.

576. VICTORIAN POETRY

Spring term. Credit four hours. Mr. Mineka.

Major emphasis upon Tennyson, Browning, and Arnold, but with some study of other Victorian poets.

577. ARNOLD AND CLOUGH

Fall term. Credit four hours. Miss Barish.

An exploration of the dialectic between two central Victorian poets whose differences reflect major issues and conflicts in the era's aesthetics and ideas.

581. STUDIES IN MODERN FICTION

Fall term. Credit four hours. Mr. Slatoff.

In 1968-69, the course will concentrate on the novels of Conrad and Faulkner.

583. BOSTON AND AMERICAN LITERATURE

Fall term. Credit four hours. Mr. Bishop.

A review of some of the principal works expressive of Boston culture from the midnineteenth century to the present, using Martin Green's *The Problem of Boston* as starting point. Research on historical, literary, or cultural topics of individual interest will be encouraged.

[584. FORMS OF THE NOVEL]

Spring term. Credit four hours. Mrs. Blackall. Not offered in 1968-69.

[591. TWENTIETH-CENTURY LITERATURE: YEATS]

Fall term. Credit four hours. Mr. Archibald. Not offered in 1968-69.

594. STUDIES IN TWENTIETH-CENTURY AMERICAN LITERATURE

Spring term. Credit four hours. Mr. Mizener.

An examination of the work of two or three representative poets of the twentieth century (such as Frost or Stevens or Williams) and two or three representative writers of fiction (such as Faulkner or Fitzgerald or Hemingway).

597. LITERARY CRITICISM

Fall term. Credit four hours. Mr. Shaw.

The study and application to literary analysis of modern critical theories (including historical criticism, formalism, and rhetorical criticism), treated against a background of traditional theories.

598. MASTER'S ESSAY

Spring term. Credit four hours. Members of the Department.

[602. ADVANCED OLD ENGLISH]

Spring term. Credit four hours. Mr. Farrell. Not offered in 1968-69.

608. STUDIES IN MEDIEVAL LITERATURE

Spring term. Credit four hours. Mr. Kaske.

Advanced research in English (and other) medieval literature.

[616. STUDIES IN THE SIXTEENTH CENTURY: SIR PHILIP SIDNEY]

Spring term. Credit four hours. Mr. Fogel. Not offered in 1968-69.

## [617. STUDIES IN THE SEVENTEENTH CENTURY: JOHN DONNE]

Fall term. Credit four hours. Mr. Novarr. Not offered in 1968-69.

## 643. AUGUSTAN LITERATURE: POPE

Fall term. Credit four hours. Mr. Brownell.

Studies in the poetry of Alexander Pope, with special consideration of Pope's interest in and debt to the fine arts.

## 672. WORDSWORTH

Spring term. Credit four hours. Mr. Parrish.

Critical and textual studies based upon the Dove Cottage manuscript archive.

## 675. ROMANTIC POETRY AND ROMANTIC CRITICISM

Fall term. Credit four hours. Mr. Abrams.

Coleridge's *Biographia Literaria*, in the context of the major works Coleridge discusses, especially the poetry and criticism of Wordsworth.

## 678. DICKENS

Spring term. Credit four hours. Mr. Rosenberg.

A study of the major novels. The seminar will stress Dickens's aesthetics and politics within the larger framework of Victorian thought. Some attention will be paid to Dickens's nonfictional works.

## [684. STUDIES IN AMERICAN FICTION: FAULKNER]

Spring term. Credit four hours. Mr. Slatoff. Not offered in 1968-69.

## FRENCH

For complete course listings and for details of the major, see the heading "French" under *Modern Foreign Languages and Literatures*.

## GEOLOGICAL SCIENCES

(Geology, Geochemistry, Geophysics, Geobiology,  
Physical Geography, Applied Fields)

Mr. G. A. Kiersch, Chairman; Messrs. A. L. Bloom, L. Y. Chang, K. F. Clark, W. E. LeMasurier, E. D. McKee, S. S. Philbrick, J. W. Wells.

For admission to a major in geological sciences, students should complete Geology 101-102, Mathematics 111-112, and Chemistry 107-108, and should be officially accepted by the departmental major adviser. Students majoring in geological sciences in addition complete the following: Physics 207-208; a three-credit-hour course in mechanical drawing; and a two-credit-hour course in plane surveying. Recommended as further courses are Mathematics 113 and physical chemistry.

After admission to the major, the minimum requirements are: (1) Geology 351-352, 322, 441, 471-472, and 490; (2) two elective courses in geology numbered 300 or higher; and (3) eight semester hours' credit at a designated summer camp in field geology. The classical aspects of

geology, including field mapping, are integrated with experimental and theoretical studies to give a balanced view of geological science.

Students considering graduate study in the physical branches of geological science should select a Distribution sequence from mathematics, physics, chemistry, or engineering; whereas those planning graduate study in aspects of geobiology should elect a Distribution sequence of four courses in biological science.

The Distribution requirement in physical sciences is satisfied in geological sciences by Geology 101-102.

Students wishing certification as earth science teachers must take courses in geological sciences in their Science Education program. Some appropriate groupings are: Geology 212, 312, 314 and 441; Geology 202, 441, 471, 472; Geology 351, 352 and 461, 462 or 451, 452; Geology 322, 421, 441, 542.

## Geography, Physical

### FRESHMAN AND SOPHOMORE COURSES

#### 111. EARTH SCIENCE

Fall term. Credit three hours (but see Earth Science Laboratory 113). Combine with Geography 212 for a survey of physical geography. Lectures, M W F 9:05. Mr. Bloom.

Physical geography, including the spatial relationships of the earth, moon, and sun that determine the figure of the earth, time, seasons, atmospheric and oceanic circulation, and climates.

#### 113. EARTH SCIENCE LABORATORY

Fall term. Credit one hour. To be taken concurrently with Earth Science 111. Laboratory, W or Th 2-4:25. Mr. Bloom.

Observation and calculation of daily, monthly, and seasonal celestial events; topographical mapping and map interpretation; world climatic regions.

#### 212. MINERAL RESOURCES

Spring term. Credit three hours. Lectures, M W F 9:05, Mr. Clark.

Utilization of and our dependence upon mineral resources; their nature, occurrence, distribution, and availability at home and abroad. Political and economic aspects of their availability and control.

### JUNIOR, SENIOR, AND GRADUATE COURSES

#### [312. GEOGRAPHY OF ANGLO-AMERICA]

Spring term. Credit four hours. Prerequisite, Geography 111, or Geology 102. Lectures, M W F 9:05 and additional assigned problems. Staff. Alternate-year course. Not offered in 1968-69.

#### 314. CONTINENTAL GEOGRAPHY

Spring term. Credit four hours. Prerequisites, Geography 111 or Geology 102. Lectures, M W F 9:05 and additional assigned problems. Staff. Alternate-year course; offered in 1968-69.

Physical geography, regional climatology, land use, and natural resources of a selected continent or region.

**610. SPECIAL WORK**

Throughout the year. Credit two hours a term. Prerequisite, consent of instructor. Staff.

Special or original investigations in physical geography on the graduate level.

**General Geology****FRESHMAN AND SOPHOMORE COURSES****Principles and Processes****101. INTRODUCTORY GEOLOGICAL SCIENCE**

Fall term. Credit three hours. Lectures, T Th 11:15. Two scheduled preliminary examinations will be held at 7:30 P.M. during the term. Laboratory, M T W Th or F 2-4:25, S 10:10-12:35. Field trips. Mr. Philbrick and staff.

Designed to give general students a comprehensive understanding of the earth processes, features, and history. Provides the basic knowledge necessary for more specialized courses or a major in geological science.

Study of the earth, particularly materials, structure, internal condition, and the physical and chemical processes at work. Principles of interpretation of earth history, evolution of continents, oceans, mountain systems, and other features; development of its animal and plant inhabitants.

**102. INTRODUCTORY GEOLOGICAL SCIENCE**

Spring term. Credit three hours. Prerequisite, Geology 101. Lectures, T Th 11:15. Two scheduled preliminary examinations will be held at 7:30 P.M. during the term. Laboratory, M T W Th or F 2-4:25, S 10:10-12:35. Field trips. Mr. Philbrick and staff.

A continuation of Geology 101.

**202. ANCIENT LIFE**

Spring term. Credit three hours. No prerequisite, but Geology 102 is desirable. Lectures, M W F 11:15. Mr. Wells.

A cultural course devoted to a review of the fossil remains of life in the geologic past as the main basis of the concept of organic evolution. Vertebrate forms from fish to man are stressed.

**203. GEOLOGY FOR ENGINEERS**

Fall term. Credit three hours. Lectures, T Th 9:05. Laboratory, T W or Th 1:25-4:25. A scheduled laboratory examination will be held at 7:30 P.M. the last week of the term. Field trips. Mr. Kiersch.

The principles of geological science with emphasis on the physical phenomena, rock properties, natural environments, and historical events important in applied science. The cause and effect of geological problems encountered in the planning, construction, and operation of engineering works are analyzed in the laboratory along with the influence of environmental factors.

**JUNIOR, SENIOR, AND GRADUATE COURSES****Physical Processes****322. STRUCTURAL GEOLOGY**

Spring term. Credit four hours. Prerequisite, Geology 102 (or 203) and 351;

352 recommended. Lectures, M W 11:15. Laboratory, M 2-4:25, and additional assigned problems. Field trips. Mr. Kiersch.

Nature, origin, and recognition of geologic structures. Behavior of geologic materials, stresses, geomechanical and tectonic principles applied to the solution of geologic problems. Analysis of structural features by three-dimensional methods.

#### [421. SEDIMENTATION]

Fall term. Credit four hours. Prerequisite: Geology 352; Geology 441 recommended. Lectures, M W 9:05. Laboratory, T 2-4:25, and additional laboratory work. Field trips. Messrs. Philbrick and Kiersch. Alternate-year course. Not offered in 1968-69.

#### 522. FLUVIAL PROCESSES

(Also Civil Engineering 2333)

Spring term. Credit two hours. Prerequisite, consent of instructors. Seminar, hours to be arranged. Field trips. Course offered jointly with the School of Civil Engineering on demand. Messrs. Graf and Kiersch.

The common problems of fluvial processes, hydraulics, and sediment transport are studied along with the appropriate analytical methods and experimental techniques.

#### 441. GEOMORPHOLOGY

Fall term. Credit four hours. Prerequisite, Geology 102. Lectures, T Th 9:05. Laboratory, T 2-4:25, and additional assigned problems. Mr. Bloom.

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

#### 542. GLACIAL AND PLEISTOCENE GEOLOGY

Spring term. Credit three hours. Prerequisite, Geology 441 or consent of instructor. Lectures, T Th 9:05. Laboratory, T 2-4:25. Several Saturday field trips. Mr. Bloom.

Glacial processes and deposits and the stratigraphy of the Pleistocene.

#### 444. GEOLOGICAL OCEANOGRAPHY

Spring term. Credit three hours. Prerequisite, Geology 102 or Biological Sciences 461. Lectures, M W F 9:05. Field trips. Mr. Bloom.

Shoreline erosion, transportation and deposition; origin and structure of continental shelves and ocean basins. Geologic processes and geomorphic development in the marine environment.

## Geochemistry

### Mineral Materials and Processes

#### 351. MINERALOGY

Fall term. Credit four hours. Prerequisite, Geology 102, Chemistry 108. Lecture, M 10:10. Laboratory, W F 2-4:25, and additional assigned problems. Mr. Chang.

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

#### 352. PETROLOGY

Spring term. Credit four hours. Prerequisite, Geology 351. Lectures, M F

10:10. Laboratory, Th 2-4:25 and additional assigned problems. Mr. LeMasurier.

Composition, classification, and origin of igneous, sedimentary, and metamorphic rocks.

#### 451. OPTICAL MINERALOGY

Fall term. Credit four hours. Prerequisite, Geology 351. Lecture, T Th 11:15. Laboratory, F S 9:05-12:20, and additional assigned problems. Mr. LeMasurier.

Optical properties of crystals and their application to the determination and study of common rock-forming minerals with the petrographic microscope.

#### 452. OPTICAL PETROGRAPHY

Spring term. Credit four hours. Prerequisites, Geology 352 and 451. Lecture, T Th 11:15. Laboratory, F S 9:05-12:20, and additional assigned problems. Mr. LeMasurier.

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

#### 551. GEOCHEMISTRY

Fall term. Credit three hours. Prerequisite, Geology 352. Lectures, M W F 8. Mr. Chang.

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

#### 554. X RAY ANALYSIS

Spring term. Credit two hours. Prerequisite: Geology 352 or consent of the instructor. Lecture, W 12:20. Laboratory, F 2-4:25. Mr. Chang.

Theory and use of x ray diffraction and spectroscopy in identification and analysis of minerals, rocks, and soils.

#### 653. ADVANCED PETROLOGY

Fall term. Credit three hours. Prerequisite: Geology 452. Lectures, T Th 9:05. Laboratory, Th 2-4:25. Mr. LeMasurier.

Methods of study, geologic and geochemical relationships, and petrogenesis of igneous and metamorphic rocks.

#### 656. ADVANCED MINERALOGY

Spring term. Credit three hours. Prerequisite: Geology 452 and 554. Lectures, T Th 9:05. Laboratory, Th 2-4:25. Mr. Chang.

Methods of study, advanced crystal chemistry, and genetic significance of major mineral groups.

## Mineral Deposits

#### 461. MINERAL DEPOSITS: METALS

Fall term. Credit four hours. Prerequisite: Geology 352. Lectures, M W F 10:10. Laboratory, F 2-4:25. Field trips. Mr. Clark.

Principles and processes involved in the formation of mineral deposits. Modes of occurrence, origin, distribution, and utilization of the major, rare, and minor metals.

#### 462. MINERAL DEPOSITS: NONMETALS

Spring term. Credit four hours. Prerequisite: Geology 461 or consent of the instructor. Lectures, M W F 10:10. Laboratory, F 2-4:25. Field trips. Mr. Clark.

Properties, occurrence, associations, distribution, and economic utilization of the industrial minerals and rocks.

#### 563. ORE MICROSCOPY

Fall term. Alternate-year course; offered in 1968-69. Credit two hours. Prerequisites: Geology 451 and 461. Laboratory, F S 7:30-9:55 A.M. Mr. Clark.

Identification of ore-minerals in polished sections which reflect light by etching and microchemical reactions; study and interpretation of mineral relationships.

## Geophysics

#### 581. EXPLORATION GEOPHYSICS

Fall term. Credit three hours. Prerequisites, Physics 208, Geology 102 or 203; recommended, Geology 322. Lectures, T Th 9:05, Laboratory S 10:10-12:35. Mr. Clark. Alternate-year course; offered in 1968-69.

Elementary theory and interpretation of data from exploration geophysical methods. Environmental geology and selection of techniques for important applied fields.

## Applied Geological Science

#### [532. HYDROGEOLOGY]

Spring term. Credit three hours. Prerequisites, Geology 322, 352; recommended, Geology 441. Lectures, M W 9:05. Laboratory, T 2-4:25 and field trips. Mr. Philbrick. Alternate-year course. Not offered in 1968-69.

#### [533. ENGINEERING GEOLOGY—THEORY AND ENVIRONMENTS]

Fall term. Credit three hours. Prerequisites, Geology 322, 352; recommended, Geology 441. Lectures, M W 11:15. Laboratory, M 2-4:25 and field trips. Mr. Kiersch. Alternate-year course. Not offered in 1968-69.

#### 535. ENGINEERING GEOLOGY—PRACTICE

Fall term. Credit three hours. Prerequisites, Geology 533 or Geology 322-352, and 441. Lectures, M W 9:05. Laboratory, T 2-4:25 and field trips. Mr. Philbrick. Alternate-year course; offered in 1968-69.

Application of geological principles in the planning-design, construction, and operation of engineering works. Case histories, analysis, and evaluation of physical environment factors, remedial treatment, and reports.

#### [561. FUNDAMENTALS OF MINING GEOLOGY]

Fall term. Credit three hours. Prerequisites, Geology 461, 462. Lectures, M W F 10:10. Assigned problems. Field trips. Mr. Clark. Alternate-year course. Not offered in 1968-69.

#### [562. ECONOMICS OF MINERAL DEPOSITS]

Spring term. Credit three hours. Prerequisites, Geology 461 and 462; recommended, Geology 561. M W F 10:10. Assigned problems. Mr. Clark. Alternate-year course. Not offered in 1968-69.

#### 582. EXPLORATION GEOLOGY

Spring term. Credit three hours. Recommended for all graduate students in geological sciences. Prerequisites, graduate standing and field geology.

Lectures, M W 9:05. Laboratory, T 2-4:25. Mr. Philbrick. Alternate-year course; offered in 1968-69.

Methods of exploration and appraisal of geologic data from both field and laboratory investigations. Assessment of environmental geology and the presentation of direct and indirect information for professional purposes and applied fields.

## Geobiology

### PALEONTOLOGY AND STRATIGRAPHY

#### 471. INVERTEBRATE PALEONTOLOGY

Fall term. Credit four hours. Prerequisites, Geology 102, and, if possible, invertebrate zoology. For those interested in fossil evidence of the development of organisms. Lectures, T Th 10:10. Laboratory, W Th 2-4:25. Mr. Wells.

Paleobiology and classification of important fossil invertebrates.

#### 472. PRINCIPLES OF HISTORIC GEOLOGY

Spring term. Credit four hours. Prerequisites, Geology 322 and 471. Lectures, T Th 10:10. Laboratory, W 2-4:25, and additional assigned problems. Mr. Wells.

Application of geologic principles to interpretation of earth history: development of the geologic column; geochronology and geochronometry; correlation and the zone concept; sedimentary environments and provinces; geosynclines and platforms; problems of the Pre-Cambrian and continental evolution.

#### 571. STRATIGRAPHY: PALEOZOIC

Fall term. Credit three hours. Prerequisite, Geology 472. Lectures, T Th 9:05 and W 7:30 p.m. Mr. Wells. Alternate-year course; offered in 1968-69.

Principles of stratigraphy developed by detailed study of selected American and European systemic examples.

#### 572. STRATIGRAPHY: MESOZOIC AND CENOZOIC

Spring term. Credit three hours. Prerequisite, Geology 472. Lectures, T W Th 9:05. Mr. Wells.

Principles of stratigraphy developed by detailed study of selected American and European systemic examples.

#### 671. MICROPALAEONTOLOGY

Spring term. Credit two hours. Prerequisite, Geology 472, 572. Lecture, W 9:05. Laboratory, W 2-4:25, and additional assigned problems. Staff.

Microfossils, chiefly Foraminifera.

#### [672. STRATIGRAPHY OF NEW YORK STATE]

Spring term. Credit three hours. Prerequisite, Geology 571. Lectures, T Th 12:20 early in the term, followed by all-day and weekend field trips. Mr. Wells. Alternate-year course. Not offered in 1968-69.

## Seminars and Special Work

#### 490. SENIOR THESIS

Either term. Credit one hour. Staff.

**GEOLOGY 673. SEMINAR IN THE HISTORY OF GEOLOGY**

Fall term. Credit two hours. Hours to be arranged. Mr. Wells.

Part of the graduate program in the history of science.

**SEMINAR IN GEOLOGICAL SCIENCES**

Each term. No credit. For majors and required of graduate students, but open to all who are interested. T 4:45. Staff and visiting lecturers.

Reports and discussion of current research in the geological sciences.

**690. SPECIAL WORK**

Throughout the year. Credit two hours a term. Prerequisite: consent of the instructor. Staff.

Advanced work on original investigations in geological sciences on the graduate level.

690-a. Analytical geochemistry, crystallography, and mineralogy. Mr. Chang.

690-b. Volcanic petrology and geochemistry: Mr. LeMasurier.

690-c. Coastal geomorphology and Pleistocene geology: Mr. Bloom.

690-d. Engineering geology, geomechanics, and hydrogeology: Mr. Kiersch. Seismology, crustal and marine geophysics.

690-e. Geophysics, heat flow and other topics.

690-f. Invertebrate paleontology and paleoecology: Mr. Wells.

690-g. Sedimentology and primary structures.

A special lecture seminar by Mr. E. D. McKee, fall term. Credit one hour. Hours to be arranged.

690-h. Physical and engineering geology, water resources: Mr. Philbrick.

690-i. Mineral deposits and resources, exploration, geophysics. Mr. Clark.

**GERMAN LITERATURE**

Mr. O. J. Matthijs Jolles, Chairman; Messrs. E. A. Blackall, E. Catholy, D. Connor, J. W. Marchand, J. B. Dallett, H. Deinert, Messrs. A. Muschg, B. E. Pike, and Staff.

For complete course listings and for details of the major, see the heading "German" under *Modern Foreign Languages and Literatures*.

**GOVERNMENT**

Mr. A. P. Sindler, Chairman; Messrs. B. R. Anderson, D. E. Ashford, W. F. Berns, A. D. Bloom, M. J. Brenner, H. W. Briggs, W. J. Dannhauser, A. T. Dotson, M. Einaudi, A. Hacker, R. I. Hofferbert, G. McT. Kahin, E. G. Kenworthy, A. J. Milnor, D. P. Mozingo, S. Muller, C. Rossiter, A. W. Rovine, M. Rush, P. Sharfman, A. Shulsky.

For a major in government the following courses must be completed: (1) Government 101, Government 104, and Government 203; (2) a mini-

imum of twenty-four additional hours in the Department at 300 or above; (3) in related subjects, a minimum of twelve hours selected with the approval of the adviser from courses numbered 300 or above in anthropology, economics, history, philosophy, and sociology. Of the related hours, at least six must be in history.

Juniors and seniors majoring in the Department of Government who have superior grade records may apply for supervised study in government with a particular instructor, whose consent is required. See the description for Government 498 and 499 (Supervised Study).

Candidates for the degree of Bachelor of Arts with Honors in Government will complete Government 101, 104, 203, and a minimum of twenty-four additional hours of work in the Department, including Government 492, 493, and 494, as well as twelve hours in related subjects.

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

The Distribution requirement in social sciences is satisfied in government by taking two of the following three courses: Government 101, 104, and 203.

## Introductory Courses

### 101. AMERICAN GOVERNMENT

Fall term. Credit three hours. Open to all students (with first preference for students in the College of Arts and Sciences). Lectures, T Th 1:25. Discussion sections, Th 2:30; F 10:10, 11:15, 1:25, 2:30; S 10:10, 11:15. Messrs. Berns, Hacker, and Staff.

A general introduction to American national government and politics.

### [101. AMERICAN GOVERNMENT]

Spring term. Credit three hours. Primarily for students who are not in the College of Arts and Sciences. Lectures, T Th 9:05. Discussion sections, Th 2:30; F 8, 11:15. Not offered in 1968-69.

### 104. COMPARATIVE GOVERNMENT

Spring term. Credit three hours. Open to all students. Lectures, T Th 2:30. Discussion sections, Th 3:35; F 10:10, 11:15, 1:25, 2:30; S 10:10, 11:15. Mr. Brenner.

A comparative study of major contemporary political movements and of governmental institutions and processes. Great Britain, France, Germany, Russia, as well as some of the newly emerging countries, will provide the materials for the discussion of key issues.

### 203. INTRODUCTION TO POLITICAL THEORY

Fall term. Credit three hours. Open to all students. Prerequisite, Government 101 and 104, or consent of the instructor. Lectures, M W 11:15. Discussion sections to be arranged. Mr. Dannhauser.

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

## FRESHMAN SEMINARS

As part of the Freshman Humanities Program, the Department of Government will offer the following two courses. Since they are equivalents of Government 101 and 104 they may be counted toward the major.

### 101S. AMERICAN GOVERNMENT

Spring term. Credit three hours.

A seminar version of Government 101. (See above, or see Freshman Humanities Program, page 28.)

### 104S. COMPARATIVE GOVERNMENT

Fall term. Credit three hours.

A seminar version of Government 104. (See above, or see Freshman Humanities Program, page 29).

## MAJOR SEMINARS

### 300. MAJOR SEMINARS

Either term. Credit four hours. Hours to be arranged. Messrs. Anderson, Berns, Brenner, Dannhauser, Hacker, Hofferbert, Milnor, Mazingo, Rovine, Sharfman, and Shulsky.

Every major in the Department is encouraged to take at least one major seminar during his junior and senior years. The topics of the seminars and the names of the professors offering them each semester will be announced prior to the registration period. Majors should, when registering with their advisers, indicate their preferential choices among the seminars being offered. Nonmajors may be admitted as space is available and should apply through the Department's secretary.

## American Government and Institutions

*Prerequisite* for all courses in this section: Government 101, or consent of the instructor, unless the course description indicates otherwise. Open to sophomores, juniors, and seniors unless specified otherwise.

### 312. URBAN POLITICS

Spring term. Credit four hours. M W F 1:25.

Analysis of relationships between governmental activities and political power, making use of systematic studies of selected problems in large urban centers and their suburban satellites.

### 313. AMERICAN CONSTITUTIONAL LAW

Fall term. Credit four hours. Open to juniors and seniors only. T Th S 10:10. Mr. Berns.

A study of the law of the Constitution as this has been expounded by the Supreme Court.

**314. POLITICS AND SOCIETY**

Spring term. Credit four hours. T Th S 11:15. Mr. Hacker.

An analysis of the social institutions and patterns of behavior that contribute to the shaping of American political life.

**315. INTEREST GROUPS AND INFORMAL REPRESENTATION IN AMERICAN POLITICS**

Spring term. Credit four hours. M W F 11:15. Mr. Milnor.

Role of groups in the Congress and bureaucracy. Special attention to the limits of the group system, to the group system and social reform, and to the problems of representation for the poor.

**316. THE AMERICAN PRESIDENCY**

Spring term. Credit four hours. No prerequisite, but Government 101 and History 215-216 are recommended preliminary courses. T Th S 10:10. Mr. Rossiter.

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

**317. AMERICAN POLITICAL PARTIES**

Fall term. Credit four hours. M W F 11:15. Mr. Sindler.

The nature and operation of American national and state party systems and politics, related to the broad setting of the governmental system and prevailing political values.

**318. THE AMERICAN CONGRESS**

Fall term. Credit four hours. M W F 10:10. Mr. Milnor.

An intensive study of politics and policy formation in Congress. Special emphasis on the problems of the representative assembly in the twentieth century.

**320. MINORITY GROUP POLITICS**

Spring term. Credit four hours. M W F 10:10. Mr. Sindler.

The behavior of ethnic, religious, and racial minorities in politics, elections, and interest group activity. Special attention will be given to Negro political life in both the North and the South.

**323. PUBLIC ADMINISTRATION: THE FOURTH BRANCH**

Fall term. Credit four hours. M W F 9:05. Mr. Dotson.

An examination of the national administrative branch, including the Executive Office of the President, departments, regulatory commissions, government corporations, and other agencies. Particular attention will be given to the constitutional and political problems which result from the rise of administrative power.

**325. AMERICAN STATE POLITICS**

Fall term. Credit four hours. T Th S 9:05. Mr. Hofferbert.

A study of the relationships between the social setting, patterns of partisanship, and governmental processes in the American states.

**326. POLITICS AND POLICY MAKING IN THE AMERICAN COMMUNITY**

Spring term. Credit four hours. M W F 9:05. Mr. Hofferbert.

An analysis of the processes of political decision making in communities of varying size and social composition. Special attention is given to the relationship between formal governmental institutions and informal structures of political influence.

## Comparative Government

*Prerequisite* for all courses in this section: Government 104, or consent of the instructor, unless course description indicates otherwise. Open to sophomores, juniors, and seniors unless specified otherwise.

### 333. GOVERNMENT AND POLITICS OF THE SOVIET UNION

Fall term. Credit four hours. Open to juniors and seniors only. M W 2:30-4. An introduction to the Soviet political system.

### 336. POLITICAL ATTITUDES AND PARTICIPATION

Fall term. Credit four hours. Prerequisite, Government 101 or 104 or consent of the instructor. T Th 10:10 and a third hour to be arranged. Mr. Ashford.

A comparative analysis of participation and involvement in the political process at the local level in United States, and in selected European and developing countries. An analysis of attitudinal and personality factors as they relate to political life in the community.

### 338. POLITICS AND MODERNIZATION

Spring term. Credit four hours. Open to juniors and seniors only. M W F 10:10. Mr. Dotson.

A comparative study of political development and social change.

### 340. GOVERNMENT AND POLITICS OF LATIN AMERICA

Spring term. Credit four hours. M W F 1:25. Mr. Kenworthy.

A general introduction to problems of political analysis in this region, focusing upon the distribution of national power and its relationship to the nominally political institutions.

### 341. CONSTITUTIONAL GOVERNMENT IN EUROPE

Fall term. Credit four hours. Open to juniors and seniors only. T Th S 9:05.

### 343. GOVERNMENT AND POLITICS IN THE COMMONWEALTH

Spring term. Credit four hours. M W F 2:30. Mr. Anderson.

Comparative analysis of the adaptations of the British model of parliamentary government to contrasting social, economic, and historical environments in selected member states of the Commonwealth.

### 344. GOVERNMENT AND POLITICS OF SOUTHEAST ASIA

Fall term. Credit four hours. T Th 2:30-4. Mr. Anderson.

Analysis of the organization and functioning of the political systems of Southeast Asia, with special attention to the problems of postcolonial social and political development.

### 347. CHINESE GOVERNMENT AND POLITICS

Fall term. Credit four hours. M W F 10:10.

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

**349. POLITICAL ROLE OF THE MILITARY**

Spring term. Credit four hours. T Th 2:30-4. Mr. Anderson.

Comparative study of selected modern states and types of political systems in which the military have played a major role in domestic politics. Attention will be given to the social and ideological character of the "politicized" military and various forms of military government.

**442. POLITICAL AND ECONOMIC CHANGE IN CONTEMPORARY EUROPE**

Spring term. Credit four hours. Open to juniors and seniors only. M W 2:30-4. Mr. Einaudi.

Emphasis will be placed on the key manifestations of change since the war. The crisis of parties and of social and political institutions. New instruments of public policy. The varieties of public corporations and of planning agencies. The social and technological revolutions and private enterprise. The search for new dimensions of government: regionalism and the supra-national communities.

## Political Theory

*Prerequisite* for all courses in this section: Government 203, or consent of the instructor, unless course description indicates otherwise. Open to sophomores, juniors, and seniors unless specified otherwise.

**[351. DEVELOPMENT OF MODERN POLITICAL THOUGHT]**

Spring term. Credit four hours. Open to juniors and seniors only. T Th S 11:15. Mr. Einaudi. Not offered in 1968-69.

**353. THEORETICAL ROOTS OF MODERN POLITICS**

Spring term. Credit four hours. M W F 9:05. Mr. Dannhauser.

A study of the nineteenth-century philosophic sources of the contemporary Left, Right, and Center, concentrating on Marx, Nietzsche, and Mill.

**355. AMERICAN POLITICAL THOUGHT**

Fall term. Credit four hours. Open to juniors and seniors only. Prerequisite, Government 101, Government 203, and History 215, or consent of the instructor. T Th 1:25-3. Mr. Rossiter.

Survey of the development of American political thought, with emphasis on the origins and uses of ideas. Other kinds of thought—constitutional, social, religious, economic, educational, cultural—are considered in their relations to political thought.

**462. ORIGINS OF WESTERN POLITICAL THOUGHT**

Spring term. Credit four hours. M W F 12:20. Mr. Shulsky.

A survey of the classical political teachings in their development from the pre-Socratics through Greek and Roman antiquity and in their transformation by the revealed religions.

**[464. BASIC PROBLEMS IN POLITICAL THEORY]**

Spring term. Credit four hours. Open to juniors and seniors only, with the consent of the instructor. T Th 2:30-4:20. Mr. Berns. Not offered in 1968-69.

## International Relations

*Note:* all courses in this section are open, without prerequisites, to sophomores, juniors, and seniors, unless indicated otherwise.

### 334. FOREIGN POLICY OF THE U.S.S.R.

Spring term. Credit four hours. Open to juniors and seniors only. Prerequisite, Government 333 or Government 372. M W F 12:20.

A survey from the Revolution to the present.

### 372. INTERNATIONAL RELATIONS

Spring term. Credit four hours. M W F 10:10.

An analysis of the basic issues, concepts, contents, and methods which characterize relations among states. The overall frame of reference will consist chiefly of theories, practices, and institutions developed since World War II.

### 377. THE UNITED STATES AND ASIA

Spring term. Credit four hours. M W F 9:05. Mr. Kahin.

An analysis of the relations of the United States with the major states of Asia and with those smaller countries (especially Vietnam) with which it is particularly concerned; attention is also given to the relationship of American policy to the Asian policies of France, Great Britain, and Soviet Russia.

### 381. INTERNATIONAL ORGANIZATION

Fall term. Credit four hours. M W F 9:05. Mr. Briggs.

An analysis of some international governmental procedures and institutions. Particular attention will be given to the background, organization, and operation of the United Nations, with emphasis on political and legal problems.

### 383. INTERNATIONAL LAW AND WAR

Fall term. Credit four hours. T Th S 11:15. Mr. Rovine.

The role of international law and organization in creating minimum order in international relations; laws of war and neutrality and efforts to minimize resort to force and international armed conflict.

### 384. THE UNITED NATIONS AND PEACEKEEPING

Spring term. Credit four hours. T Th S 11:15. Mr. Rovine.

A history and analysis of UN efforts to maintain international peace and security. Emphasis on the politics, processes, and place in the international system of UN peacekeeping forces, and, within that context, on the UN decision-making process.

### 471-472. INTERNATIONAL LAW

Throughout the year. Credit four hours a term. Open to juniors and seniors only. M W F 11:15. Mr. Briggs.

A systematic study of the nature, development, and judicial application of international law. Attention will be given to the role of law in the relations of States. Cases, documentary analysis, and discussions.

### 478. THE FOREIGN POLICY OF CHINA

Spring term. Credit four hours. Open to juniors and seniors only. Prerequisite, Government 347. T Th 2:30-4. Mr. Mozingo.

An analysis of Chinese concepts of foreign relations and the policy making process in the People's Republic of China. Emphasis will be placed on such topics as the contemporary Chinese view of their position in the international

community and a comparison of the making and implementation of contemporary Chinese policies with respect to such areas as the Soviet bloc, Afro-Asian countries, and the West.

## Honors Program

The Honors Program provides three semesters of intensive and supervised study for government majors who have demonstrated their potentialities for advanced work in the field. An average of B+ in government courses is the normal requirement for admission to the Program. Prospective applicants are encouraged to take a Government 300 Seminar in the fall semester of their junior year. Applications should be submitted to the Department by November 15. Those accepted will have their academic programs reviewed to ensure that they have done sufficient course work in each of the general areas offered by the Department.

(1) *The Junior Honors Seminar* (Government 492: Spring term, credit four hours) reviews the various methods and approaches comprising the study of government. Over the summer, members of the Program are assigned reading and write papers which are mailed back to Ithaca.

(2) *Senior Tutorials* (Government 493: Fall term, credit four hours) involve weekly sessions with professors specializing in fields of the student's interests. The tutorials call for periodic papers and intensive reading. During this semester the student is also expected to draw up preliminary plans for his thesis.

(3) *The Honors Thesis* (Government 494: Spring term, credit eight hours) is the major academic obligation undertaken by the student during his final semester at the University. A first draft is due at the end of spring vacation; and the final thesis must be submitted by May 1. Theses normally run to about seventy-five pages.

Degrees with *cum laude*, *magna cum laude*, or *summa cum laude* designations in government are recommended for students who successfully complete the Program.

## Supervised Study

Juniors and seniors majoring in government who have superior grade records may apply for supervised study in government with a particular instructor. The applicant must present a well defined program of study that cannot be satisfied by the taking of regular courses. Emphasis will be placed on the capacity to subject a body of related readings to analysis and criticism. The consent of the instructor is required.

### 498. READINGS

Either term. Credit two hours. Any member of the department.

### 499. READINGS

Either term. Credit four hours. Any member of the department.

## Graduate Seminars

*Note:* the following applies to all graduate seminars: (1) credit four hours; (2) open to graduate students; (3) open to qualified seniors, by consent of the instructor, unless indicated otherwise; (4) hours to be arranged.

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511. SEMINAR IN AMERICAN POLITICAL PARTIES AND ELECTIONS  
Spring term. Mr. Sindler.

514. SEMINAR IN AMERICAN URBAN POLITICS  
Fall term.

516. SEMINAR IN AMERICAN CONSTITUTIONAL LAW AND  
JURISPRUDENCE  
Spring term. Seniors must have taken Government 313. Mr. Berns.

521. SEMINAR IN PROBLEMS OF PUBLIC ADMINISTRATION  
Fall term. Mr. Dotson.

527. SEMINAR IN AMERICAN POLITICAL INSTITUTIONS  
Fall term. Mr. Rossiter.

528. SEMINAR IN AMERICAN POLITICAL THOUGHT  
Spring term. Mr. Rossiter.

531. SEMINAR IN METHODS OF EMPIRICAL POLITICAL INQUIRY  
Fall term. Mr. Hofferbert.

532. SEMINAR IN AMERICAN STATE AND SOCIAL POLITICS  
Spring term. Mr. Hofferbert.

533. SEMINAR IN METHODOLOGICAL PROBLEMS OF CROSS-  
NATIONAL ANALYSIS  
(Also Center for International Studies 530.)  
Spring term. Mr. Teune.

534. SEMINAR IN THE POLITICS OF THE SOVIET UNION  
Fall term. Seniors must have taken Government 333.

[535. SEMINAR IN PROBLEMS OF POLITICAL SUCCESSION]  
Spring term. Seniors must have taken Government 333 or Government 347.  
Mr. Rush. Not offered in 1968-69.

537. SEMINAR IN POLITICAL CHANGE AND THE DEVELOPMENT  
PROCESS  
(Also Business and Public Administration 661.)  
Fall term. Mr. Ashford.

538. SEMINAR IN ADMINISTRATION AND DEVELOPMENT  
(Also Business and Public Administration 662.)  
Spring term. Messrs. Ashford and Dotson.

539. SEMINAR IN COMPARATIVE GOVERNMENT  
Fall term. Mr. Brenner.

540. SEMINAR IN LATIN AMERICAN POLITICS  
Spring term. Seniors must have taken Government 340 or History 320 or  
Economics 326, or equivalent background. Mr. Kenworthy.

541. SEMINAR IN COMPARATIVE POLITICAL PARTIES  
Fall term. Mr. Milnor.

542. SEMINAR IN POLITICAL AND ECONOMIC CHANGE IN  
CONTEMPORARY EUROPE

Spring term. Mr. Einaudi. Open to graduate students only.

[543-544. SEMINAR IN COMPARATIVE GOVERNMENT]

Throughout the year. Credit four hours each term. Mr. Muller. Not offered in 1968-69.

545. SEMINAR IN IDEOLOGY AND POLITICAL CHANGE  
(Also Business and Public Administration 561.)

Spring term. Mr. Ashford.

546. SEMINAR IN THE ADMINISTRATIVE PROCESS

Spring term. Mr. Dotson.

547. SEMINAR IN THE POLITICS OF CHINA

Spring term. Seniors must have taken Government 347.

[548. SEMINAR IN COMPARATIVE COMMUNISM]

Spring term. Seniors must have taken Government 333 and Government 347. Messrs. Mozingo and Rush. Not offered in 1968-69.

[555. SEMINAR IN POLITICAL THEORY]

Fall term. Mr. Bloom. Not offered in 1968-69.

556. SEMINAR IN POLITICAL THEORY

Fall term. Mr. Shulsky.

558. SEMINAR IN MODERN POLITICAL THEORY

Fall term. Mr. Dannhauser.

559. SEMINAR IN MODERN POLITICAL THEORY

Spring term. Mr. Dannhauser.

[562. SEMINAR IN POLITICAL THEORY]

Spring term. Mr. Einaudi. Not offered in 1968-69.

572. SEMINAR IN INTERNATIONAL POLITICS

Fall term. Seniors must have taken Government 372. Mr. Sharfman.

575. SEMINAR IN INTERNATIONAL ORGANIZATION AND  
RELATIONS

Fall term. Mr. Rovine.

576. SEMINAR IN INTERNATIONAL LAW AND INTERNATIONAL  
ORGANIZATION

Spring term. Open to graduate students and law students only. Mr. Briggs.

577. SEMINAR IN THE INTERNATIONAL RELATIONS OF ASIA

Fall term. Seniors must have taken Government 344 or 377 or 478. Mr. Kahin.

578. SEMINAR IN THE INTERNATIONAL RELATIONS OF ASIA: JAPAN  
AND SOUTHEAST ASIA

Spring term. Seniors must have taken Government 344 or 377 or 478. Mr. Allison.

**583. SEMINAR IN COMMUNIST CHINA IN INTERNATIONAL POLITICS**

Fall term. Seniors must have taken Government 478. Mr. Mozingo.

**644. SEMINAR IN POLITICAL PROBLEMS OF SOUTHEAST ASIA**

Spring term. Seniors must have taken Government 344. Mr. Kahin.

**HISTORY**

Mr. W. F. LaFeber, Chairman; Messrs. K. Biggerstaff, J. F. Boshier, D. B. Davis, E. W. Fox, P. W. Gates, H. Guerlac, J. J. John, D. Kagan, M. Kammen, H. Koenigsberger, F. G. Marcham, J. E. Martin, C. A. Peterson, W. M. Pintner, R. Polenberg, C. Rossiter, J. Silbey, J. M. Smith, B. Tierney, M. Walker, L. P. Williams, and O. W. Wolters.

For admission to the history major a student must have completed an Introduction to Western Civilization, and have earned grades of C or better in this and in any other history courses taken. Students who have completed only the first semester of the Introduction to Western Civilization, with a grade of C or better, may be provisionally admitted to the major. Prospective majors should apply for admission at the Department of History office.

In fulfillment of the major requirement a student must take twenty-eight hours of history courses numbered 200 or above. Of the twenty-eight hours, sixteen must be in courses numbered above 330, and, of these sixteen, eight must be in one particular field of history (e.g., American, ancient, Latin American, early modern European). To complete the major a student must also take two courses numbered 300 or above offered by other departments that relate to his eight-hour concentration in one particular field of history.

Candidates for the Bachelor of Arts with Honors in History will consult with Mr. Walker and enroll in the Honors program. (A description of the Honors program follows the list of undergraduate courses.)

The Distribution requirement in History is satisfied by any year course in history from History 105-106 to History 323-324 inclusive.

**105-106. INTRODUCTION TO WESTERN CIVILIZATION**

Throughout the year. Credit three hours a term. For freshmen and sophomores; open to juniors and seniors by permission only. First term prerequisite to second except by permission. (M) W F 9:05. Instructor to be appointed, and assistants.

A survey of European history since antiquity. Attention is given equally to the major political and social developments and to the intellectual heritage of the West. A considerable portion of the reading is in contemporary sources.

*Note:* Freshmen may count either term or both toward satisfaction of the Freshman Humanities requirement. (For description of the Freshman Humanities program see page 29.)

**215-216. AMERICAN HISTORY**

Throughout the year. Credit three hours a term. Either term of the course may be taken separately. T Th S 9:05. Messrs. Polenberg, Silbey and staff.

Several major topics will be considered each term, and different modes

of historical inquiry will be used: political, constitutional, diplomatic, economic, social, and intellectual. A primary purpose will be to give the student opportunities to make his own historical judgments and analyze those made by others. These aims will be pursued largely through weekly seminar work and frequent short essays.

*Note:* Freshmen may count either term or both toward satisfaction of the Freshman Humanities requirement. (For description of the Freshman Humanities program see page 29.)

### 301-302. ANCIENT HISTORY

Throughout the year. Credit three hours a term. Open to sophomores. History 301 is not prerequisite to History 302. M W F 11:15. Mr. Kagan.

A survey of ancient history from the beginnings of civilization in the valleys of the Near East to the decline of the Roman Empire. Two lectures and one discussion period each week.

### 303-304. MEDIEVAL HISTORY

Throughout the year. Credit three hours a term. Open to sophomores. History 303 is not prerequisite to History 304. Fall term, M W F 12:20, Mr. John. Spring term, T Th S 10:10, Mr. Tierney.

A survey of the main trends of political, economic, intellectual, and religious development in Europe from the fourth to the twelfth century in the fall term, and from the twelfth to the fifteenth century in the spring term.

### 307-308. ENGLISH HISTORY FROM ANGLO-SAXON TIMES TO THE PRESENT

Throughout the year. Credit three hours a term. Open to sophomores. Course 307 is not prerequisite to 308. T Th S 11:15. Mr. Marcham.

Traces the growth of government, economic life, religion, the arts, and society among the English people. Illustrates in the history of one nation some of the principal developments of Western civilization since early modern times, such as the nation-state, the late Renaissance, the industrial revolution, the overseas empire, and state socialism. Some of the written work is designed to give elementary training in the interpretation of documentary evidence. Work for the first term ends with the civil wars of the seventeenth century.

### 309. INTRODUCTION TO RUSSIAN HISTORY

Fall term. Credit three hours. Open to sophomores. M W F 9:05. Mr. Pintner.

A survey from the earliest times until the present day. The origin and development of the autocratic state, its relationship to the major segments of the population, and the unique features of Russian culture are stressed.

### 310. MAJOR PROBLEMS IN RUSSIAN HISTORY

Spring term. Credit four hours. Open to sophomores. History 309 is desirable but not a prerequisite for students willing to do additional background reading. M W F 9:05. Mr. Pintner.

An introductory course, using a topical approach. Important problems of political, cultural, social, and economic history will be studied in some detail using primary sources and specialized secondary works. Written work and discussion sections will be an important part of the course.

### 311-312. SCIENCE IN WESTERN CIVILIZATION

Throughout the year. Credit three hours a term. Open to sophomores. Prerequisite, one year of college science. History 311 or consent of the instructor

prerequisite to History 312. M W F 10:10. Fall term, Mr. Guerlac. Spring term, instructor to be appointed.

A survey of the development of science in its relation to the main currents of European and American civilization from classical antiquity to the present day.

### 319. LATIN AMERICAN HISTORY IN THE COLONIAL PERIOD

Fall term. Credit three hours. Open to sophomores. M W F 9:05.

A survey of the colonial period from the discovery of America to the wars of independence. Particular emphasis is placed on the following topics: the relationship of Spaniards and Indians; political, economic, and social institutions; intellectual and artistic achievements; and the distinctions between the Portuguese and Spanish colonial experience.

### 320. LATIN AMERICAN HISTORY SINCE INDEPENDENCE

Spring term. Credit three hours. Open to sophomores. M W F 9:05.

A survey of the nineteenth and twentieth centuries using a topical approach. Attention focuses upon political characteristics, economic developments, social change, and the influence of these factors upon intellectual life and international relations. Mexico, Brazil, and Argentina receive most emphasis.

### 323. HISTORY OF CHINESE CIVILIZATION PRIOR TO THE NINETEENTH CENTURY

Fall term. Credit three hours. Open to sophomores. T Th S 10:10. Mr. Peterson.

A rapid survey of Chinese history from the earliest times until the establishment of formal relations with the West.

### 324. HISTORY OF CHINESE CIVILIZATION: NINETEENTH AND TWENTIETH CENTURIES

Spring term. Credit three hours. History 323 not prerequisite to History 324. Open to sophomores. T Th S 10:10. Mr. Biggerstaff.

A detailed survey of the modernization of Chinese civilization under the impact of the West. After a brief examination of early nineteenth-century China, the Western political, economic, and ideological invasion is considered, followed by a more thorough study of the revolutionary changes that have culminated in the People's Republic.

### 401. SUPERVISED READING

Either term. Credit two hours. Prerequisite: permission of the chairman of the Department. Open only to seniors with grades of B- or better in virtually all courses in the humanities and social sciences.

### 402. SUPERVISED RESEARCH

Either term. Credit four hours. Prerequisite: permission of the chairman of the Department. Open only to seniors with grades of B- or better in virtually all courses in the humanities and social sciences.

### 431. THE ROMAN REPUBLIC, 133-30 B.C.

Fall term. Credit four hours. Prerequisite, History 302 or consent of the instructor. M W 3:35-5. Mr. Kagan.

### 432. GREEK HISTORY, 500-336 B.C.

Spring term. Credit four hours. Prerequisite, History 301 or consent of the instructor. M W 3:35-5. Mr. Kagan.

## [433. THE ROMAN EMPIRE, 30 B.C.—A.D. 180]

Fall term. Credit four hours. Prerequisite, History 302 or consent of the instructor, Mr. Kagan. Not offered in 1968-69.

## [434. HELLENISTIC AGE]

Fall term. Credit four hours. Prerequisite, History 301-302 or consent of the instructor. M W 1:25-3:20. Mr. Kagan. Not offered in 1968-69.

## [335. MEDIEVAL CULTURE, 400-1150]

Spring term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th 1:25-3:20. Mr. John. Not offered in 1968-69.

## 336. MEDIEVAL CULTURE, 1150-1300

Spring term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th 1:25-2:40. Mr. John.

## [437. CHURCH AND STATE DURING THE MIDDLE AGES]

Fall term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th S 12:20. Mr. Tierney. Not offered in 1968-69.

## [438. FRANCE IN THE HIGH MIDDLE AGES]

Spring term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th S 12:20. Mr. Tierney. Not offered in 1968-69.

341-342. EUROPE IN THE AGE OF THE RENAISSANCE,  
REFORMATION, AND COUNTER-REFORMATION

Throughout the year. Credit four hours a term. Prerequisite, six hours in European history or consent of the instructor. M W F 11:15. Mr. Koenigsberger.

## 343-344. EUROPE AND EUROPE OVERSEAS FROM 1660 TO 1783

Throughout the year. Credit four hours a term. Prerequisite, six hours in European history or consent of the instructor. T Th S 10:10. Mr. Boshier.

442. THE SPANISH MONARCHY AND THE REVOLT OF THE  
NETHERLANDS

Spring term. Credit four hours. Prerequisite, six hours of European history and consent of the instructor. M W F 9:05. Mr. Koenigsberger.

## [444. THE CENTURY OF ENLIGHTENMENT]

Spring term. Credit four hours. A reading knowledge of French is required. Prerequisite, six hours in European history. M W F 10:10. Mr. Guerlac. Not offered in 1968-69.

## 347. ENGLISH CONSTITUTIONAL HISTORY I: TO 1485

Fall term. Credit four hours. Prerequisite, History 303-304, History 307, or consent of the instructor. T Th S 12:20. Mr. Tierney.

## 348. ENGLISH CONSTITUTIONAL HISTORY II: SINCE 1485

Spring term. Credit four hours a term. Prerequisite, History 307-308, History 347 or consent of the instructor. T Th S 9:05. Mr. Marcham.

450. HISTORY OF ENGLAND IN THE NINETEENTH AND  
TWENTIETH CENTURIES

Fall term. Credit four hours. Prerequisite, History 307-308 or consent of the instructor. T Th S 9:05. Mr. Marcham.

**351. EUROPE IN THE NINETEENTH CENTURY**

Fall term. Credit four hours. Prerequisite, History 106 or consent of the instructor. W F 1:25-3:20. Mr. Fox.

An intermediate level course in European history from the beginning of the French and Industrial Revolutions to 1900, stressing the influence of those two revolutions on the political and social development of European civilization. Conducted by informal lectures and discussions, it will assume some familiarity with the narrative history of the period.

**352. EUROPE IN THE TWENTIETH CENTURY**

Spring term. Credit four hours. Prerequisite, History 106 or 351, or consent of the instructor. W F 1:25-3:20. Mr. Fox.

An intermediate level course in European history from 1900 to the present, stressing the efforts of European states to adjust to the rapidly evolving political, economic, and technological development in Europe and the rest of the world. Conducted by lectures and discussion.

**551. EVOLUTION OF THE FRENCH REPUBLIC**

Spring term. Credit four hours. Open to juniors, seniors, and graduate students with the consent of the instructor. A reading knowledge of French is required. T Th 3:35-5:30. Mr. Fox.

A critical survey of the politics of the Second, Third, Fourth, and Fifth Republics. There will be a consideration of different interpretations of such developments as Boulangism, the Popular Front, the Resistance, and Gaullism.

**553. THE EUROPEAN REVOLUTION, 1789-1848**

Fall term. Credit four hours. Open to seniors and graduate students with the consent of the instructor. A reading knowledge of French is required. T Th 3:35-5:30. Mr. Fox.

**[554. THE MODERNIZATION OF EUROPE]**

Spring term. Credit four hours. Open to seniors and graduate students with the consent of the instructor. Mr. Fox. Not offered in 1968-69.

**355-356. MODERN GERMAN HISTORY**

Throughout the year. Credit four hours a term. Either term may be taken independently and without prerequisite. T Th S 10:10. Mr. Walker.

In the fall term the period 1648-1848 will be treated; in the spring term, the period 1848 to the present.

**456. GERMAN PROBLEMS IN HISTORICAL PERSPECTIVE**

Spring term. Credit four hours. Prerequisite: History 355 or 356, or approval of the instructor. Th 1:25-3:20. Mr. Walker.

A conference course, with intensive study of selected strands of German history, on the theme: How have recent changes modified persistent problems in German public life?

**457. THE ANCIEN REGIME IN FRANCE, 1660-1789**

Spring term. Credit four hours. Prerequisite, History 343-344 or consent of the instructor and a reading knowledge of French. T Th S 12:20. Mr. Boshier.

**461. ECONOMIC AND SOCIAL HISTORY OF RUSSIA**

Fall term. Credit four hours. Prerequisite, History 309 or permission of the instructor. M 1:25-2:15, W 1:25-3:20. Mr. Pintner.

Emphasizes the role of the peasantry throughout the entire course of Russian history, from the Kievan period to the present day. Special attention will be devoted to the various methods used by the state in the economic exploitation and political control of the population.

#### 462. HISTORY OF RUSSIAN FOREIGN RELATIONS FROM THE FIFTEENTH CENTURY

Spring term. Credit four hours. Prerequisite, History 309 or permission of the instructor. M 1:25-2:15, W 1:25-3:20. Mr. Pintner.

Deals with the nature of Russia's relationships with other powers, particularly with the question of what extent these relationships have changed in the past 500 years.

#### 466. ORIGINS OF MODERN SCIENCE: THE CHEMICAL REVOLUTION

Fall term. Credit four hours. Prerequisite, History 311-312 or consent of the instructor. Th 2:30-4:25. Another session to be arranged. Mr. Guerlac.

Reading and discussion of scientific classics important for understanding the chemical revolution of the eighteenth century.

#### 467. INTELLECTUAL CURRENTS OF THE SEVENTEENTH CENTURY

Spring term. Credit four hours. Prerequisite, History 311-312 or consent of the instructor. Mr. Guerlac.

#### [369-370. SCIENCE SINCE 1850]

Throughout the year. Credit four hours a term. Prerequisite, either an intense interest in the history of modern science (see the instructor) or two years of college science. Course 369 is not prerequisite to 370. Mr. Williams. Not offered in 1968-69.

#### 371. COLONIZATION FROM ANTIQUITY UNTIL THE EIGHTEENTH CENTURY

Fall term. Credit four hours. M W F 9:05.

An examination of why and how societies at certain points in time developed colonies overseas. Particular attention will be given to the relationship between social structure and the sources of colonization; theories of colonization; relations between colonizers and native peoples; colonization and entrepreneurship, economic nationalism and the transfer of cultural institutions. After considering colonization in the ancient Mediterranean world, the Orient, and northern Europe in the Middle Ages, more than half of the course will be devoted to the great age of European colonization in the sixteenth and seventeenth centuries.

#### 372. THE COLONIAL PERIOD OF AMERICAN HISTORY, 1607-1763

Spring term. Credit four hours. M W F 9:05.

The colonial origins of American society, with emphasis on the emergence of distinctive institutions, attitudes, and social patterns.

#### [373-374. THE STRUCTURE OF AMERICAN POLITICAL HISTORY]

Throughout the year. Credit four hours a term. History 373 is not a prerequisite to History 374. T Th S 10:10. Mr. Silbey. Not offered in 1968-69.

#### 470. THE UNITED STATES IN THE MIDDLE PERIOD, 1815-1850

Fall term. Credit four hours. T Th 10:10. Mr. Silbey.

[471. PROBLEMS IN AMERICAN POLITICAL HISTORY]

Spring term. Credit four hours. Th 1:25-3:20. Mr. Silbey. Not offered in 1968-69.

472. EUROPE AND THE ORIGINS OF AMERICAN CIVILIZATION

Spring term. Credit four hours. Open to graduate students and to undergraduates with permission of the instructor. T 1:25-3:20. Mr. Kammen.

A seminar concentrating on two objectives: a comparison of selected developments in Europe and America, 1550-1750, and an attempt to explain the origins of a unique American civilization and character.

473. AGE OF THE AMERICAN REVOLUTION, 1763-1783

Fall term. Credit four hours. M W F 1:25. Mr. Smith.

The transformation of the English colonies into the new American nation. The Old Colonial System and the new politics, the concepts of constitutionalism and sovereignty, the War for Independence, republicanism and democratic thought.

[474. THE NEW NATION, 1783-1815]

Spring term. Credit four hours. M W F 1:25. Mr. Smith. Not offered in 1968-69.

[376. AMERICAN CULTURAL AND INTELLECTUAL HISTORY, 1600-1820]

Credit four hours. M W F 10:10. Mr. Davis. Not offered in 1968-69.

377. AMERICAN CULTURAL AND INTELLECTUAL HISTORY 1820-1890

Fall term. Credit four hours. M W F 10:10. Mr. Davis. No prerequisite, but some background in nineteenth-century history and literature is taken for granted.

Topics include ante-bellum challenges to laissez-faire liberalism, romanticism in politics and culture, the impact of evolutionary thought, ferment and reorientation in philosophy and social theory.

378. AMERICAN CULTURAL AND INTELLECTUAL HISTORY, 1890 TO THE PRESENT

Spring term. Credit four hours. M W F 10:10. No prerequisite, but some background in twentieth-century history and literature is taken for granted, and it is recommended that History 377 be taken before History 378. Mr. Davis.

Topics include the response to science and technology, the erosion of traditional liberalism, and the continuing search for a new synthesis.

478. THE AMERICAN REFORM IMPULSE, 1800-1860

Spring term. Credit four hours. Open to juniors and seniors with consent of instructor. M W F 1:25. Mr. Davis.

Major emphasis will fall on abolitionism, women's rights, temperance, and prison reform. Specific reform movements will be related to changes in religion and social philosophy. Some attempt will be made to show the relevance of antebellum reforms to later reform movements of farmers and laborers, Progressives, New Dealers, and antisegregationists. Research paper and considerable reading in primary sources.

## SEMINAR IN AMERICAN STUDIES

(American Studies 401-402)

Fall term, Mr. Davis. Spring term, Mr. Elias.

## [379. AMERICAN HISTORY FROM 1890-1917]

Fall term. Credit four hours. T Th S 12:20. Mr. Polenberg. Not offered in 1968-69.

## [480. UNDERGRADUATE SEMINAR IN RECENT AMERICAN HISTORY]

Spring term. Credit four hours. Permission of the instructor is required. Hours to be arranged. Mr. Polenberg. Not offered in 1968-69.

## 380-381. RECENT AMERICAN HISTORY, 1917 TO THE PRESENT

Throughout the year. Four credit hours a term. T Th S 12:20. Mr. Polenberg.

Fall semester topics include: political and cultural conflict in the 1920's, the social impact of the depression, Franklin Roosevelt and the New Deal. Spring semester topics include: domestic and diplomatic aspects of World War II, social reform from the Fair Deal to the New Frontier, civil liberties and civil rights. Two lectures and one discussion period each week.

## 375. THE AMERICAN CIVIL WAR AND RECONSTRUCTION

Spring term. Credit four hours. T Th S 10:10. Mr. Silbey.

An analysis of the factors leading to the break-up of the union, the conduct of the war by the North and South, and the problems of restoring the seceded states to the union.

## 481-482. AMERICAN HISTORY: HISTORY OF THE WEST

Throughout the year. Credit four hours a term. The first term is not prerequisite to the second. M W F 12:20. Mr. Gates.

Western migration, Indian policies, internal improvements, transportation, agriculture, growth of democracy and nationalism, land problems, conservation, federal and state relations. The major part of the work will be a research paper.

## 383-384. HISTORY OF AMERICAN FOREIGN RELATIONS

Throughout the year. Credit four hours a term. T Th S 11:15. Mr. LaFeber.

A survey of American foreign policy, 1750 to the present. Special emphasis is placed on the domestic, economic, political, and social changes and how these changes influence the formulation of American foreign policy. The first semester covers the period to 1901. A term paper is optional for all students who receive a C or above on the six weeks' examination.

## [486. MOTIVATIONS OF AMERICAN FOREIGN POLICY]

Spring term. Credit four hours. Prerequisite, consent of the instructor. Mr. LaFeber. Not offered in 1968-69.

## [487. MEXICO IN THE TWENTIETH CENTURY]

Fall term. Credit four hours. Prerequisite, History 319-320 or consent of the instructor. M W F 11:15. Not offered in 1968-69.

## 488. BRAZIL SINCE INDEPENDENCE

Spring term. Credit four hours. Prerequisite, History 319 or 320 or consent of the instructor. M W F 11:15.

The political, economic, and social history of Brazil since 1808 with special attention to particular problems requiring critical examination in the light

of alternative interpretations. Requirements include active participation in discussions as well as oral reports based on term papers and shorter essays.

#### 489. LATIN AMERICA IN THE ERA OF INDEPENDENCE

Fall term. Credit four hours. Prerequisite, History 319 or 320 or consent of the instructor. A reading knowledge of Spanish or Portuguese is recommended. M W F 11:15.

An examination of Latin American history from 1750 to 1850 with major emphasis on the independence movements. Attention will be devoted first, to the external and internal causes of independence; then, to the independence movements in Mexico, northern South America, southern South America, and Brazil; and finally, to the elaboration of nationhood in the resulting republics. Social, economic, and intellectual factors will be given as much importance as political ones.

#### 492. CHINESE HISTORY: T'ANG AND SUNG PERIODS

Spring term. Credit four hours. Prerequisite, History 323 or consent of the instructor. T Th 1:25-3:20. Mr. Peterson.

Analytic study of the evolution of Chinese society between the seventh and thirteenth centuries.

#### HISTORY 593. MODERNIZATION OF CHINA

Fall term. Credit four hours. Open to graduate students and to seniors who have completed History 324 or its equivalent with a grade of B or better. M 3:35-5:30. Mr. Biggerstaff.

Seminar discussion of selected topics relating to the impact of Western civilization upon traditional China and the changes that occurred in China during the first half of the twentieth century.

#### HISTORY 594. MODERNIZATION OF CHINA

Spring term. Credit four hours. Prerequisite, History 593. M 3:35 to 5:30. Mr. Biggerstaff.

Research seminar on a selected period of recent Chinese history.

#### 495. SOUTHEAST ASIAN HISTORY TO THE FOURTEENTH CENTURY

Fall term. Credit four hours. T Th S 11:15. Mr. Wolters.

#### 496. SOUTHEAST ASIAN HISTORY FROM THE FIFTEENTH CENTURY

Spring term. Credit four hours. Prerequisite, History 495 or consent of the instructor. T Th S 11:15. Mr. Wolters.

## The Honors Program in History

Students wishing to enroll in the Honors program in history will consult with Mr. Walker. The minimum requirements for admission to candidacy for Honors are (1) a cumulative average of B- or better in all courses; (2) a cumulative average of B or better in courses in the humanities and social sciences; (3) enrollment and outstanding performance in at least one history course before the spring term of the sophomore year.

An Honors candidate will take the history proseminar (History 399) during the fall semester of his junior year. In the spring he will take at least one advanced history course entailing frequent discussions and considerable writing under supervision. A candidate will usually have three

options in the fall term of his senior year: (1) to take a course of directed reading or research (History 401 or 402); (2) to participate in a tutorial group under the direction of his major adviser; or (3) to take a graduate seminar. Whichever alternative is chosen, the student should begin to focus on a problem or body of material that will prepare him for writing the Honors essay in the spring (History 499).

The text of the Honors essay may not exceed sixty pages except by permission of the chairman of the Honors committee and the student's adviser. Two copies will be due during the first week of May. One copy will be returned with the readers' comments. Later in May, each Honors candidate will be given a thirty-minute oral examination, administered by his major adviser and one or both of the essay readers. The examination will ordinarily be concerned with the broad field of the essay (e.g., Periclean Athens, seventeenth-century science, nineteenth-century France).

The purpose of the Honors program is to give unusually able students an opportunity to do independent work under close faculty supervision. The progression of special courses taken during the junior and senior years (from History 399 through 499) all may be counted toward the twenty-eight hours in history required of a major. Evidence to be considered in awarding the Bachelor of Arts with Honors in History will include (1) grades earned in all history and related courses; (2) readers' reports on the Honors essay; and (3) performance on the senior oral examination.

#### 399. HONORS PROSEMINAR

Fall term. Credit three hours. Open only to juniors who have been accepted by the Department as candidates for Honors in history. Th 1:25-3:20. Mr. Walker.

Historical criticism and historical composition from different kinds of evidence, methods of research, and modes of explanation, in preparation for further work in the Honors program.

#### 499. HONORS GUIDANCE

Spring term. Credit four hours a term. Prerequisite, History 399.

## Graduate Seminars

#### 501. INTRODUCTION TO HISTORICAL THEORY AND PRACTICE

Fall term. Credit four hours. Required of all entering graduate students in history (exemption may be granted by the instructor to students who have already completed a satisfactory equivalent). Not open to undergraduates. T Th 3:35-5:30. Mr. Boshier.

Problems of historical thought, research, and writing as illustrated by historians representative of various cultures, periods, and schools. Intensive supervision in the preparation of a term paper.

#### 511-512. SUPERVISED READING

Throughout the year. Credit four hours a term. Hours to be arranged. For graduate students only. Staff.

#### 591. CHINESE HISTORIOGRAPHY AND SOURCE MATERIALS

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Peterson.

150 HISTORY

631-632. SEMINAR IN ANCIENT HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Kagan.

HISTORY 635-36. SEMINAR IN MEDIEVAL HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. John.

637-638. SEMINAR IN MEDIEVAL HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Tierney.

639-640. SEMINAR IN LATIN PALEOGRAPHY

Throughout the year. Credit four hours a term. First term prerequisite to the second. Hours to be arranged. Mr. John.

641-642. THE THEORY AND PRACTICE OF REASON OF STATE, FROM MACHIAVELLI TO RICHELIEU

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Koenigsberger.

647-648. SEMINAR IN TUDOR AND STUART HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Marcham.

649-650. SEMINAR IN THE FRENCH REVOLUTION

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Boshier.

651-652. SEMINAR IN MODERN EUROPEAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Fox.

657-658. SEMINAR IN MODERN GERMAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Walker.

661-662. SEMINAR IN RUSSIAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Pintner.

665-666. SEMINAR IN THE HISTORY OF EARLY MODERN SCIENCE

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Guerlac.

[667-668. SEMINAR IN THE HISTORY OF SCIENCE DURING THE NINETEENTH AND TWENTIETH CENTURIES]

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Williams. Not offered in 1968-69.

HISTORY 669-70. SEMINAR IN THE HISTORY OF COLONIZATION AND COLONIAL DEVELOPMENT

One or two terms. Credit four hours a term. Hours to be arranged.

HISTORY 671. SEMINAR IN EARLY AMERICAN HISTORY

Fall term. Credit four hours. Hours to be arranged. Mr. Smith.

**[HISTORY 672. SEMINAR IN EARLY AMERICAN HISTORY]**

Spring term. Credit four hours. Hours to be arranged. Mr. Smith. Not offered in 1968-69.

**675-676. SEMINAR IN AMERICAN CULTURAL AND INTELLECTUAL HISTORY**

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Davis.

**673-674. SEMINAR IN AMERICAN POLITICAL HISTORY AND THE ANTEBELLUM PERIOD**

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Silbey.

**679-680. SEMINAR IN THE HISTORY OF THE AMERICAN WEST**

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Gates.

**683-684. SEMINAR IN THE HISTORY OF AMERICAN FOREIGN RELATIONS**

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. LaFeber.

**685-686. SEMINAR IN RECENT AMERICAN HISTORY**

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Polenberg.

**[687-688. SEMINAR IN LATIN AMERICAN HISTORY]**

One or two terms. Credit four hours a term. Hours to be arranged. Not offered in 1968-69.

**691-692. SEMINAR IN MEDIEVAL CHINESE HISTORY**

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Peterson.

**693-694. SEMINAR IN MODERN CHINESE HISTORY**

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Biggerstaff.

**695-696. SEMINAR IN SOUTHEAST ASIAN HISTORY**

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Wolters.

**HISTORY OF ART**

Mr. M. W. Young, Chairman; Mrs. LeGrace Benson, Messrs. T. M. Brown, R. G. Calkins, A. H. Detweiler, Mrs. Esther Dotson, Messrs. A. B. Griswold, S. W. Jacobs, Mrs. Ernestine King, Messrs. T. W. Leavitt, W. C. Lipke, S. J. O'Connor, A. S. Roe, K. L. Selig, F. O. Waage.

Students who wish to major in the history of art should plan to have completed two courses in the Department of the History of Art by the end of their sophomore year. Students who have taken only one course

may petition to major in the Department if that course is at the 200 level or above and is completed with a grade of C or better. Students should also have completed the Distribution requirements, but exceptions will be considered upon petition to the Department chairman at the time of application to the major.

In their junior and senior years, students who are majoring shall work closely with their major advisers to determine acceptable programs of courses in the major field. Normally the program will include at least thirty additional hours of courses, of which twenty-four should be at the 300 or 400 level, chosen from those listed below, and a minimum of two additional courses in the Department or a related area approved by the major adviser. Courses at the 200 or 300 level taken in the Department during the freshman or sophomore years may be counted toward the major, providing such courses are in addition to the two courses offered in satisfaction of the prerequisite to the major. Students who are majoring are encouraged to take studio courses in painting and sculpture offered by Department of Fine Arts in the College of Architecture, but such courses will be considered electives and cannot count toward the basic thirty hours normally required in the major. However, those courses in architectural history taught in the College of Architecture and listed below can be counted toward the major requirement.

A student who wishes to become a candidate for the degree of Bachelor of Arts with Honors in the History of Art may indicate his intention at any time during his junior year to his major adviser. In order to be eligible for the Honors program, the student must have a cumulative average of at least B- and of B for courses in the Department of the History of Art. In his senior year he will include among the regular requirements Course 493-494, involving the preparation of a senior thesis under faculty supervision.

The Distribution requirement in expressive arts is satisfied in the history of art by a combination of 105 with any course at the 200 or 300 level (not necessarily in sequence), or by any two courses at the 200 or 300 level.

## General Courses

The following courses do not have prerequisites and are designed to introduce students to the process of art history by means of a careful and systematic examination of a closely related body of visual material. The 200-level courses are open to freshmen; 300-level courses are open to sophomores and upperclassmen, but freshmen who have had either 103, 105, or their equivalents, may be admitted.

### 103. FRESHMAN SEMINAR IN ART HISTORY

Either term. Credit three hours. Open only to freshmen who have not taken History of Art 105.

For description see Freshman Humanities Program, page 29.

**105. ANALYSIS OF WORKS OF ART**

Either term. Credit three hours. M W F 9:05, 10.10; T Th S 10:10. Mrs. Benson, Messrs. Brown, Calkins, Lipke, Mrs. King, and staff.

An introduction to the problems of experiencing works of art. Students will meet in small classes of approximately twenty for discussion and examination of works of art, largely through reproductions but with occasional museum study, in order to provide training in the techniques of visual analysis. Readings and a number of short papers will be assigned throughout the term, but emphasis will be placed on classroom participation and on the articulation of the visual experience.

Conceived as a preparation for the study of art history, the course will not, however, approach the works of art in the usual historical or chronological fashion. The course may be also regarded as of general interest with application outside the field of art history.

Open to freshmen and sophomores only; not open to students who have had History of Art 103.

**243. ITALIAN RENAISSANCE ART**

Fall term. Credit three hours. T Th S 10:10. Mr. Roe.

A consideration of the major developments in Italian painting during the fifteenth and sixteenth centuries. Emphasis will be placed on the contributions of such artists as Masaccio, Leonardo da Vinci, Michelangelo, Raphael, and Titian.

**262. EUROPEAN PAINTING OF THE NINETEENTH CENTURY**

Spring term. Credit three hours. M W F 12:20. Mr. Brown.

A study of major trends in European painting from Goya to Cezanne. Emphasis will be upon French painting from the era of the French Revolution to the post-Impressionists, but significant developments and major artistic personalities in other European countries will also be considered.

Formerly History of Art 362.

**263. MODERN EUROPEAN PAINTING**

Fall term. Credit three hours. M W F 12:20. Mr. Lipke.

A study of the major developments in European painting and new two-dimensional media from Cubism to the present day. While principal focus of the course will center upon such major figures as Matisse, Picasso, Kandinsky, Klee, and Mondrian, equal emphasis will be given to the new visual points of view which have emerged since World War II.

Formerly History of Art 363.

**281. SELECTED TRADITIONS IN ASIAN ART**

Spring term. Credit three hours. M W F 10:10. Mr. O'Connor.

A consideration of some of the major works produced by Asian artists and of the religious and aesthetic principles which influenced their creation. Painting, sculpture, and architecture will be covered.

**313. PREHISTORIC ART**

Fall term. Credit four hours. M W F 9:05. Mr. Waage.

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

**314. PRIMITIVE ART: THE ART OF TRIBAL SOCIETIES**

Spring term. Credit four hours. M W F 9:05. Mr. Waage.

The shaping and use of art forms to satisfy group needs in cultures where art was an indispensable element of everyday life. The lectures will cover the tribal arts of Africa; subjects for the term paper will involve also the primitive arts of Australia, the Pacific Islands, and North America.

**[321. GREEK SCULPTURE]**

Spring term. Credit four hours. Hours to be arranged. Mr. Waage. Not offered in 1968-69.

**322. ARTS OF THE ROMAN EMPIRE**

Spring term. Credit four hours. Hours to be arranged. 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.

**[ARCHITECTURE OF THE CLASSICAL WORLD]**

(Architecture 431, College of Architecture)

Fall term. Credit three hours. M W F 12:20. Mr. Detweiler. Not offered in 1968-69.

**331. ART OF THE MIDDLE AGES**

Fall term. Credit four hours. T Th S 9:05. Mr. Calkins.

A study of developments in painting and sculpture from the beginning of Christianity to about 1400 in Western Europe. Emphasis will be placed on the relationships between the various media particular to the period: mosaics, frescoes, manuscript illumination, monumental sculpture, ivory carving, and metal work.

**332. ARCHITECTURE OF THE MIDDLE AGES**

(Also Architecture 433, College of Architecture)

Fall term. Credit four hours. T Th S 11:15. Mr. Calkins.

A survey of the trends in architecture in Western Europe from the Late Antique Period through the Late Gothic, with emphasis on the Romanesque and Gothic.

**[341. FLEMISH ART]**

Spring term. Credit four hours. T Th S 9:05. Mr. Calkins. Not offered in 1968-69.

**[347. ART OF THE EARLY RENAISSANCE IN ITALY]**

Fall term. Credit four hours. M W F 10:10. Mr. Calkins. Not offered in 1968-69.

**[349. ITALIAN RENAISSANCE ARCHITECTURE]**

(Also Architecture 436, College of Architecture)

Spring term. Credit four hours. T Th S 9:05. Mr. Calkins. Not offered in 1968-69.

**356. ART OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES**

Spring term. Credit four hours. T Th S 9:05. Mr. Roe.

A survey of major painters in Western Europe from 1600 to 1800. Emphasis will be focused on the schools of painting in Holland, Flanders, Spain, and France.

## 365. MODERN SCULPTURE

Spring term. Credit four hours. T Th S 10:10. Mr. Lipke.

A study of new material and trends in sculpture in Europe and the United States from Rodin through Caro. Particular attention will be given to the iconographic and technical developments of the medium since 1945, including light and kinetic work.

## 367. MODERN EUROPEAN ARCHITECTURE

(Also Architecture 439, College of Architecture)

Fall term. Credit four hours. M W F 11:15. Mr. Brown.

A survey of nineteenth and twentieth century architecture in Europe.

## 375. AMERICAN ART OF THE EIGHTEENTH AND NINETEENTH CENTURIES

Spring term. Credit four hours. T Th S 11:15. Mr. Roe.

A consideration of art in the United States from its colonial beginnings through the early Republic to such masters as Cole, Durand, Homer, Eakins, and Ryder in the nineteenth century.

## 376. MODERN AMERICAN ART

Fall term. Credit four hours. T Th S 11:15. Mrs. Benson.

Art in America since 1900 with particular emphasis on the works of the last three decades. While the course will deal extensively with painting, other visual arts such as graphics, sculpture, objects, environments, and light will receive considerable attention. There will be opportunities to deal with original works.

## AMERICAN ARCHITECTURE

(Architecture 438, College of Architecture)

Spring term. Credit four hours. Mr. Jacobs.

Building in the United States from colonial times, with emphasis on the nineteenth and twentieth centuries.

## 383. ART OF CHINA

Fall term. Credit four hours. M W F 11:15. Mr. Young.

Major monuments in the history of Chinese art, from the early bronzes through Buddhist sculpture and later painting. The emphasis in the lectures will be on the development of painting, particularly landscape painting, in the Sung through Ming Dynasties. The role of Buddhism, Taoism, and Confucianism in shaping aesthetic expression of China will also be considered in some detail.

## 384. ART OF JAPAN

Spring term. Credit four hours. M W F 11:15. Mr. Young.

Painting, sculpture, and architecture from the Buddhist period through the development of national style to the modern age. Considerable attention will be paid to the various forms of folk art, tea arts, the great decorative traditions, and paintings and prints of the "floating world."

## 386. THE ARTS OF INDIA AND SOUTHEAST ASIA

Fall term. Credit four hours. M W F 10:10. Mr. O'Connor.

A survey of painting, sculpture, and architecture in India and Southeast Asia from the earliest times to the present. Both the physical and meta-physical aspects of the arts will be studied, with particular attention to the development of Buddhism and Hinduism and their influence in formulating the aesthetic expression in these countries.

## Advanced Courses and Seminars

The following courses are intended primarily for majors, graduate students, or other advanced students who can meet the prerequisites. Courses at the 400 level are primarily for upperclassmen and majors; seminars at the 500 level are for graduate students and qualified senior majors. All seminars involve the writing and presentation of research papers. Enrollments are limited in this group of courses, and consent of the department or instructor is normally required. The 500-level courses with announced topics may be repeated.

### 401. MAJOR TUTORIAL

Either term. Credit two hours. Prerequisite, consent of a Department member.

Individual investigation and discussion on special topics not covered in the regular course offerings, by arrangement with various members of the Department. The course may be repeated.

### 402. MAJOR TUTORIAL

Either term. Credit four hours. Prerequisite, consent of a Department member.

Individual investigation and discussion on special topics not covered in the regular course offerings, by arrangement with various members of the Department. The course may be repeated.

### 405. ORIGINAL WORKS OF ART

Spring term. Credit four hours. F 1:25-3:20. Prerequisite, at least four courses in the history of art and consent of the instructor or Department Chairman. Enrollment limited to twelve students. Mr. Leavitt.

Designed to acquaint the advanced student with original works of art, the course meetings will be in the White Art Museum and will consider a wide group of materials from the point of view of connoisseurship and quality. Lectures, discussions, and reports.

### [411. TECHNIQUES AND MATERIALS: PAINTING]

Fall term. Credit four hours. Prerequisite, at least four courses in the history of art and consent of the chairman of the department. Limited to fifteen students. T 1:25-3:20. Not offered in 1968-69.

### [412. TECHNIQUES AND MATERIALS: GRAPHICS]

Spring term. Credit four hours. Prerequisite, at least four courses in the history of art and consent of the chairman of the department. Limited to fifteen students. T 1:25-3:20. Not offered in 1968-69.

### 421. METHODS OF HISTORICAL AND CRITICAL WRITING ON ART

Spring term. Credit four hours. Hours to be arranged. Prerequisite, see below under topic for 1968-69. May be repeated for credit.

The general problems involved with writing about the visual arts from various viewpoints: the historian, chronicler, aesthetician, theorist, reporter, or critic. Given each year by different members of the Department.

Topic for 1968-69: Problems of Writing about Current Art. The central concern will be with the developing of viable modes of relating to and discussing highly innovative works. Prerequisite, History of Art 262, 376, or 263, and one other history of art course, plus consent of the instructor. Mrs. Benson.

## [446. LITERARY SOURCES IN THE ITALIAN RENAISSANCE]

Spring term. Credit four hours. Th 1:25-3:20. Mr. Selig. Not offered in 1968-69.

## 493. HONORS WORK

Fall term. Credit four hours. Hours to be arranged.

Intended for seniors who have been admitted to the Honors program. Basic methods of art historical research will be discussed and individual readings assigned leading to the selection of an appropriate thesis topic.

## 494. HONORS WORK

Spring term. Credit four hours. Prerequisite, History of Art 493.

The individual student, under faculty direction, will prepare a senior thesis.

## 531. PROBLEMS IN MEDIEVAL ART AND ARCHITECTURE

(Also Architecture 473, College of Architecture)

Spring term. Credit four hours. M 1:25-3:20. Prerequisite, History of Art 331 or 332 or equivalents and consent of the instructor. Mr. Calkins.

Topic for 1968-69: Romanesque Art and Architecture in Western Europe. A study of relationships between aesthetic, structural, and iconographic systems in the twelfth century.

## 548. STUDIES IN ITALIAN RENAISSANCE ART

Fall term. Credit four hours. T 1:25-3:20. Prerequisite, a course in the Italian Renaissance and consent of the department. Mr. Roe.

Topic for 1968-69: Italian Renaissance Sculpture of the Fifteenth and Sixteenth Centuries.

## 563. PROBLEMS IN TWENTIETH-CENTURY ART

Fall term. Credit four hours. Th 1:25-3:20. Prerequisite, History of Art 263 or 376 or equivalents and consent of the instructor. Mrs. Benson.

Topic for 1968-69: The Aesthetics of Reduced Means. An investigation of purist and minimalist tendencies in the visual arts from the "Precisionists" to "Primary Structures" as manifested in both rational and anti-rational constructs.

## 564. PROBLEMS IN TWENTIETH-CENTURY ART

Spring term. Credit four hours. Th 1:25-3:20. Prerequisite, History of Art 263 or 376 or equivalents and consent of the instructor. Mr. Lipke.

Topic for 1968-69: Popular Culture and Visual Arts. An investigation of the relationship between avant-garde and "kitsch" culture, with readings in Greenberg, MacDonald, Brooks, and Wolfe. Emphasis will be placed on the interdependence of commercial and formal expressions in the visual arts of the twentieth century.

## 565. PROBLEMS IN MODERN ARCHITECTURE

(Also Architecture 479, College of Architecture)

Spring term. Credit four hours. W 1:25-3:20. Prerequisite, consent of the instructor. Mr. Brown.

Topic for 1968-69: Historical Problems in European Architecture of the 1920's.

**SEMINAR IN THE HISTORY OF AMERICAN ARCHITECTURE**  
(Architecture 478, College of Architecture)

Fall term. Credit four hours. Hours to be arranged. Prerequisite, consent of the instructor. Mr. Jacobs.

Investigation by means of reading, lectures, and reports of historical problems in architecture of the nineteenth and twentieth centuries in the United States.

[572. PROBLEMS IN AMERICAN ART]

Spring term. Credit four hours. Prerequisite, History of Art 375 and consent of the instructor. W 1:25-3:20. Mr. Roe. Not offered in 1968-69.

584. PROBLEMS IN CHINESE ART

Spring term. Credit four hours. W 1:25-3:20. Prerequisite, consent of the instructor. Mr. Young.

Topic for 1968-69: Tradition and Innovation in Chinese Art. A general investigation of the underlying causes of change or conservatism in Chinese art, with special attention to style and iconography in the earlier periods of development. Comparative material drawn from the case of Japan will also be considered.

[586. STUDIES IN CHINESE PAINTING]

Spring term. Credit four hours. Prerequisite, History of Art 383 and consent of the instructor. W 1:25-3:20. Mr. Young. Not offered in 1968-69.

588. SOUTHEAST ASIAN ART AND ARCHAEOLOGY

Fall term. Credit four hours. W 1:25-3:20. Prerequisite, consent of the instructor. Mr. O'Connor.

Topic for 1968-69: The Symbolic Role of Aesthetic Objects in the Political Systems of pre-Colonial Southeast Asia.

591-592. SUPERVISED READING

Throughout the year. Credit four hours, but may be taken more than once in the same term. For graduate students only.

## Archaeology

Students who are interested in archaeology are directed especially to History of Art 313, 314, 322 and 588, all of which include archaeological material. The following specialized courses treat specific excavational material and procedures, and are therefore open only to a limited number of students who have some background in ancient history, ancient languages, anthropology, or art history.

521. NUMISMATICS

Fall term. Credit four hours. Hours to be arranged. Prerequisite, consent of the instructor. Mr. Waage.

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

[523. CERAMICS AND THE TECHNIQUES OF EXCAVATION]

Fall term. Credit four hours. Prerequisite, consent of the instructor. T 1:25. Mr. Waage. Not offered in 1968-69.

## ITALIAN

For complete course listings and for details of the major, see the heading "Italian" under *Modern Foreign Languages and Literatures*.

## MATHEMATICS

Mr. A. Rosenberg, Chairman; Messrs. J. B. Ax, M. Balch, J. M. Beck, I. Berstein, J. H. Bramble, L. D. Brown, J. M. Chaiken, S. U. Chase, C. J. Earle, J. Eells, Jr., B. Eisenberg, W. G. Faris, R. H. Farrell, M. E. Fisher, W. H. J. Fuchs, S. Garfunkel, L. Gross, R. A. Hager, R. Hamilton, D. W. Henderson, C. S. Herz, P. J. Hilton, P. J. Kahn, H. Kesten, J. Kiefer, A. W. Knapp, R. B. Lavine, S. A. Levin, S. Lichtenbaum, G. R. Livesay, M. D. Morley, A. Nerode, P. Olum, L. E. Payne, R. A. Platek, G. S. Rinehart, O. S. Rothaus, D. P. Sather, S. H. Schanuel, A. H. Schatz, R. B. Schneider, L. Silver, F. Spitzer, M. E. Sweedler, R. J. Walker, H. C. Wang, H. Widom, J. Wolfowitz, A. C. Zitronenbaum.

At all times a student at Cornell is urged to take the most advanced mathematics course for which he is prepared. Members of the Department are always available to discuss with students the appropriate courses for their levels of ability and interest, and students are urged to avail themselves of this help. However, a great deal of time may be saved by a careful reading of the following remarks.

**BASIC SEQUENCES.** These are two sequences in elementary calculus. They have 111 in common. The upper sequence continues with 122-221-222 while the standard one continues with 112-213. Students who desire more mathematics should take the upper sequence, which is prerequisite for most of the advanced courses. The standard sequence is designed for students whose programs do not permit more than three semesters of mathematics and for those who find the upper sequence too demanding. A student whose performance in 112 has been exceptional can (with the consent of his instructor) be admitted into 221. A student in the 111-213 sequence who wants the linear algebra material of 221 may obtain it at an appropriate level by taking 331. There are other special-purpose calculus sequences, namely 191-192-293-294, primarily for engineers, and 201-202, which is intended for social scientists and is available only to juniors and seniors.

Students who have received a grade of 3 or higher in the CEEB Advanced Placement Examination will automatically be offered one semester's advanced placement: to Mathematics 192 for engineering students, to Mathematics 112 for all other students with a grade of 3, and to Mathematics 122 for all other students with a grade of 4 or 5. If they desire placement for more than one semester, or if they have been placed in 112 and wish to enter 122 instead, they *must* also take the placement examination administered by the Department during orientation week (see page 8). All other students who plan to take

Calculus at Cornell and who want advanced placement and advanced standing credit must take this placement examination. Credit for one or two semesters may be awarded. A well prepared student who distinguishes himself on the Department's placement examination will be placed in 221 and may complete the upper sequence in the freshman year. In exceptional circumstances it is also possible to take 122 and 221 concurrently. Thus a student who has a very firm grounding in only the material of 111 may still be able to complete the upper sequence in one year. Such opportunities should be considered especially by students intending to major in mathematics or allied fields.

**MAJOR OPTIONS.** There are three options available for students intending to major in mathematics; the respective minimum requirements are listed below. In each case, a student will be accepted as a major by the Department only if he can reasonably be expected to have satisfied the prerequisite to his option by the end of the term in which he applies for admission to the major. This acceptance is contingent upon actual fulfillment of the prerequisites.

*Option I.* (This includes all prospective Honors candidates and all students who contemplate an eventual Ph.D. in pure or applied mathematics.) Prerequisite: Course 221-222. Requirements: (a) 411-412, (b) 431-432, (c) at least twelve additional hours of mathematics courses numbered 300 or above, other than 313, 315, 370; Computer Science 421, 422 may be included in these twelve hours.

The Department strongly recommends that all prospective Option I majors take Physics 207-208 in their freshman year. Those interested in the applications of mathematics should certainly do so and should also seriously consider the offerings in differential equations, probability and statistics, and numerical analysis.

*Option II.* (This includes those mainly interested in the application of mathematics who do not contemplate an eventual Ph.D. in mathematics or applied mathematics. It will not prepare a student for work at the Ph.D. level in the theoretical side of even such applied areas as statistics, numerical analysis, etc.) Prerequisites: (a) 221-222; (b) Physics 207-208. Requirements: (a) 421, 422; (b) 431; and either 332 or 432, (c) Computer Science 401; (d) an approved 8-hour sequence in statistics, numerical analysis (in the Department of Computer Science), or differential equations; (e) at least eight additional hours of courses numbered 300 or above in mathematics, computer science, or a physical science not including Mathematics 313, 315, 370.

*Option III.* (For prospective secondary school teachers and others who wish to major in mathematics but do not intend to become professional mathematicians, e.g., premedical and prelaw students. This option does not prepare for graduate work in mathematics.) Prerequisites: (a) 222 or (a') 213 and 200, both at a high level of performance; (b) Physics 101-102, or 207-208. Mathematics requirements: (a) 311-312; (b) 331 if 221 has not been taken, 332; (c) 451-452; (d) Computer Science 401 or Industrial Engineering 9381; and either (e) four additional hours of mathematics courses numbered above 300 plus

nine hours of Education courses (Mathematics 370 is recommended but not required) or (e') eight additional hours of mathematics courses numbered above 300. (Students planning to teach in secondary schools should make themselves familiar with state requirements. Students wishing to do student teaching must apply for this in Room 102, Stone Hall, by the end of their first term as juniors.)

The requirements for Honors in mathematics are: (1) satisfaction of the requirements of Option I at a high level of performance; (2) satisfactory performance in the Honors Seminar 401; (3) satisfactory performance on an oral examination. (A knowledge of the material of 421, 422 will be required for this examination.)

Students wishing to take any of the courses numbered 300 or above are invited to confer, before registering, with the instructor concerned.

Subject matter is indicated by the second digit thus: 0, general; 1,2, analysis; 3,4, algebra; 5,6, geometry; 7, probability and statistics; 8, logic; 9, other.

The Distribution requirement in mathematics is satisfied with any six hours in mathematics.

In all 600-level courses, as well as in Courses 502 and 515, the final grades will be only S or U.

## General

### 101-102. SELECTED TOPICS IN MATHEMATICS

Throughout the year. Credit three hours a term. First term prerequisite to second. T Th S 12:20.

A lecture course intended for students who do not plan to take many courses in mathematics, but who nevertheless wish to learn some of the principal ideas of the subject. This is not a review course to improve faulty preparation in elementary mathematics. Even though only a modest preparation is presupposed, a number of topics in genuine mathematics, stressing ideas and theory rather than mere manipulation, are treated. The course is not a preparation for any other course.

### 200. BASIC CONCEPTS OF MATHEMATICS

Spring term. Credit three hours. Prerequisite, 213 or, with consent of the instructor, 112. T Th S 9:05.

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

### 401. HONORS SEMINAR

Fall term. Credit four hours. Prerequisite, provisional acceptance as a candidate for Honors. Hours to be arranged.

Students will discuss selected topics under the guidance of one or more members of the staff. This seminar is required for Honors in mathematics.

### 502. GRADUATE PROSEMINAR

Spring term. Credit four hours. Prerequisite, candidacy for an advanced degree with a major in mathematics. M W F 2:30.

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

## Calculus

### 111. CALCULUS

Either term. Credit three hours. Prerequisite, *three years of high school mathematics, including trigonometry*. Fall term: lectures, M W 11:15, 12:20 plus one hour to be arranged. Spring term: M W F 8, 9:05, 10:10; T Th S 8, 11:15, 12:20. Preliminary examinations will be held at 7:30 p.m. Oct. 14, Nov. 11, Dec. 9.

Plane analytic geometry, differentiation and integration of algebraic and trigonometric functions, applications.

### 112. CALCULUS

Either term. Credit three hours. Prerequisite, 111. Fall term. M W F 9:05, 10:10; T Th S 9:05, 10:10. Spring term: lectures M W 11:15, 12:20 plus one hour to be arranged. Preliminary examinations will be held at 7:30 p.m. on Mar. 3, Mar. 24, May 5.

Differentiation and integration of elementary transcendental functions, the technique of integration, conic sections, polar coordinates, infinite series.

### 113. CALCULUS

Either term. Credit three hours. Prerequisite, 112. Fall term: lectures, T Th 10:10 plus one hour to be arranged. Spring term: M W F 8, 10:10. Preliminary examinations will be held at 7:30 p.m. on Oct. 14, Nov. 11, Dec. 9.

Solid analytic geometry and vectors, partial differentiation, multiple integrals, differential equations.

### 122. CALCULUS

Either term. Credit three hours. Prerequisite, recommendations of the lecturer in Course 111. (This will be based on exceptional performance in 111.) For fall term, admission by consent of the Department. Fall term: M W F 11:15; T Th S 9:05. Spring term: M W F 10:10, 11:15; T Th S 9:05, 10:10.

Covers content of 112 in more detail and includes more theoretical material.

### 221. CALCULUS

Either term. Credit four hours. Prerequisite, grade of B or better in 122 or (with consent of instructor) exceptional performance in 112. Fall term: M W F 8, 10:10; T Th S 8, 10:10. Spring term: M W F 11:15; T Th S 9:05.

Linear algebra and differential equations. Topics include vector algebra, linear transformations, matrices, linear differential equations, and systems of linear differential equations with constant coefficients.

### 222. CALCULUS

Either term. Credit four hours. Prerequisite, 221. Fall term: M W F 9:05. Spring term: M W F 8, 10:10; T Th S 10:10.

Vector differential calculus, calculus of functions of several variables, multiple integrals.

### 221H-222H. CALCULUS

Honors section of 221-222. Throughout the year. Credit two hours a term. Prerequisite, consent of the instructor. Open only to students simultaneously registered in 411-412. Hours to be arranged.

191. CALCULUS FOR ENGINEERS

Either term. Credit four hours. Prerequisite, *three years of high school mathematics, including trigonometry*. Fall term: lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Spring term: M W F S 9:05, 11:15. Preliminary examinations will be held at 7:30 p.m. on Oct. 9, Oct. 30, Nov. 20, Dec. 11.

Plane analytic geometry, differential and integral calculus, applications.

193. CALCULUS FOR ENGINEERS

Fall term. Credit four hours. Prerequisite, *four years of high school mathematics, including trigonometry and calculus*. Lectures M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on Oct. 9, Oct. 30, Nov. 20, Dec. 11.

Plane analytic geometry, differential and integral calculus, applications.

192. CALCULUS FOR ENGINEERS

Either term. Credit four hours. Prerequisite, 191 or 193. Fall term: M W F S 9:05, 11:15. Spring term: lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on Feb. 19, Mar. 12, Apr. 9, May 7.

Transcendental functions, technique of integration and multiple integrals, vector calculus, analytic geometry in space, partial differentiation, applications.

194. CALCULUS FOR ENGINEERS

Spring term. Credit four hours. Prerequisite, recommendation of the lecturer in Course 191 or Course 193. Lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on Feb. 19, Mar. 12, Apr. 9, May 7.

Covers contents of 192 in more detail and includes more theoretical material.

293-293H. ENGINEERING MATHEMATICS

Either term. Credit four hours. Prerequisite, 192 or 194. Fall term: lectures, M W F 8, 12:20, plus recitation periods to be arranged. Spring term: M W F S 9:05, 11:15. Preliminary examinations will be held at 7:30 p.m. on Oct. 15, Nov. 12, Dec. 10. 293H is an honors section in the fall term only.

Vectors and matrices, first-order differential equations, infinite series, complex numbers, applications. Problems for programming and running on the automatic computer will be assigned, and students are expected to have a knowledge of computer programming equivalent to that taught in Engineering 104.

294-294H. ENGINEERING MATHEMATICS

Either term. Credit three hours. Prerequisite, 293. Fall term: M W F 8, 12:20. Spring term: lectures, M W 8, 12:20, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on Mar. 4, Mar. 25, May 6. 294H is an honors section in the spring term only.

Linear differential equations, quadratic forms and eigenvalues, differential vector calculus, applications.

201-202. MATHEMATICS FOR SOCIAL SCIENTISTS

Throughout the year. Credit four hours a term. Prerequisite, upperclass standing. First term prerequisite to second. M W F 11:15.

A treatment of calculus and other topics of interest to social scientists. This course will not prepare the student to continue mathematics beyond the 400 level.

## Applied Mathematics and Differential Equations

### 313. TOPICS IN ALGEBRA AND ANALYSIS FOR ENGINEERS

Fall term. Credit four hours. Prerequisite, 213. M W F 9:05.

Some topics in modern algebra and advanced calculus useful in engineering. As many topics as time permits will be treated rigorously. The algebra includes geometry of vector spaces, simple properties of linear operators including eigenvalues and eigenvectors. The topics in advanced calculus discussed are calculus of several variables, Lagrange multipliers, and Laplace transforms.

### 315. HIGHER CALCULUS

Fall term. Credit three hours. Prerequisite, 213. T Th S 10:10.

Intended for students who have had only three semesters of calculus. It does not prepare for 415-416, and will not meet the needs of those graduate students whose work requires really serious application of mathematical methods.

Vector analysis. Ordinary and partial differential equations. Fourier series. Special functions. Laplace transforms. Emphasis is placed on a wide range of formal applications of the calculus rather than on the logical development.

### 421. APPLICABLE MATHEMATICS

Fall term. Credit four hours. Prerequisite, 222 or honors section of 294 or consent of the instructor. (Students from regular sections of 294 will be admitted upon the 294 instructor's recommendation, provided their grades are very high and they make up the extra work.) M W F 12:20, Th 2:30.

Graduate students who need mathematics extensively in their work and who have had a solid advanced calculus course as undergraduates should take 415-416. If they have not had such an advanced calculus course they should take 421-422-423. If their preparation is still too weak for this, they should take all or part of 221-222, followed by 421-422-423.

Theorems of Stokes, Green, Gauss, etc. Sequences and infinite series. Fourier series and orthogonal functions. Introduction to complex variables.

### 422. APPLICABLE MATHEMATICS

Spring term. Credit four hours. Prerequisite, 421 or consent of the instructor. M W F 12:20, Th 2:30.

Continuation of complex variables. Conformal mappings. Harmonic functions. Some special functions. Differential equations. Laplace and Fourier transforms. Asymptotic expansions of functions.

### 423. APPLICABLE MATHEMATICS

Fall term. Credit four hours. Prerequisite, 422. M W F 12:20, Th 2:30. Mr. Widom.

Linear operators and integral equations. Calculus of variations. Application to eigenvalue problems. Green's function, and treatment of special problems of mathematical physics.

### 415-416. MATHEMATICAL METHODS IN PHYSICS

Throughout the year. Credit four hours a term.

Intended for graduate students in physics or related fields who have had

a strong advanced calculus course and at least two years of general physics. The course goes very quickly, covering in two semesters slightly more than 421-422-423. Undergraduates will be admitted only with consent of the instructor. First term prerequisite to second. T W Th F 12:20.

Lectures and problem work designed to give a working knowledge of the principal mathematical methods used in advanced physics. Topics include a brief discussion of some basic notions: metric space, vector space, linearity, continuity, integration. Generalized functions (Schwartz distributions). Fourier series and Fourier integrals. Elementary complex variable. Saddle point method. Linear transformations in finite and in infinite-dimensional spaces. Matrices. Differential operators and integral operators, the equations and eigenvalue problems connected with them and the special functions arising from them. Elements of group theory. The rotation group and its representations.

427-428. INTRODUCTION TO DIFFERENTIAL EQUATIONS

Throughout the year. Credit four hours a term. Prerequisite, 222, or 294, or consent of instructor. First term prerequisite to second. M W F 12:20.

First term, ordinary differential equations covering the basic theory. Topics include uniqueness and existence theory, Sturm-Liouville theory, singular points, stability, approximation methods and applications. Second term, partial differential equations with treatments of Laplace, heat and wave equations. Topics include classification, maximum principles, uniqueness, stability, approximation methods and applications.

517-518. ORDINARY DIFFERENTIAL EQUATIONS

Throughout the year. Credit four hours a term. Prerequisites, 411-412 and some acquaintance with complex variables, or consent of instructor. First term prerequisite to second. M W F 10:10. Mr. Hager.

For description see the *Announcement of the Graduate School: Physical Sciences*.

519-520. PARTIAL DIFFERENTIAL EQUATIONS

Throughout the year. Credit four hours a term. Prerequisite, some acquaintance with complex variables and advanced calculus or, with consent of instructor, 423 or 416. First term prerequisite to second. T Th S 10:10. Mr. Schatz.

For description see the *Announcement of the Graduate School: Physical Sciences*.

521. ELEMENTARY FUNCTIONAL ANALYSIS

Fall term. Credit four hours. Prerequisite, 415-416 or 421-422-423, or consent of the instructor. T Th S 9:05.

Elementary set theory and topology, Banach and Hilbert spaces, measure and integration, spectral theorem for bounded operators. Graduate students in mathematics should take 613 for Functional Analysis.

522. APPLIED FUNCTIONAL ANALYSIS

Spring term. Credit four hours. Prerequisite, 521. T Th S 9:05.

Topics selected from spectral theory for unbounded operators in Hilbert space, compact operators, representations of compact groups, distributions. Applications to Fourier analysis, integral and differential equations, calculus of variations, quantum mechanics.

*Note:* Since the content of the 1969 version of 522 is quite different from that of the 1968 version, students could possibly take 522 twice with profit.

**619-620. ADVANCED PARTIAL DIFFERENTIAL EQUATIONS**

Throughout the year. Credit four hours a term. Prerequisites, 512 and 613 or consent of instructor. Hours to be arranged.

Selected topics in partial differential equations. Selections from existence, uniqueness and regularity results in the theories of elliptic, hyperbolic and parabolic equations.

**627-628. SEMINAR IN PARTIAL DIFFERENTIAL EQUATIONS**

Throughout the year. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged.

For courses in numerical analysis see Computer Science 421, 422.

## Analysis

**311-312. ELEMENTARY ANALYSIS**

Throughout the year. Credit four hours a term. Prerequisites, 213, 200. T Th S 10:10.

A careful study of the topology of the real line. Functions. Theory of continuous functions of one real variable. Differentiation and integration of such functions. Series and sequences. Functions of several variables. Applications. The material of this course is similar to that of 411-412, below, but is taught at a more elementary level and at a slower pace. A student may not receive credit for both 311-312 and 411-412.

**411-412. INTRODUCTION TO ANALYSIS**

Throughout the year. Credit four hours a term. Prerequisite, 222. T Th S 10:10.

(There will be a special honors section of this course. The instructor should be consulted.)

An introduction to the theory of functions of real variables, stressing rigorous logical development of the subject rather than technique of applications. Topics include elementary topology, the real number system, continuous and differentiable functions, integration, convergence and approximation theorems, Fourier series, calculus in several variables and differential forms.

**413. INTRODUCTION TO THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE**

Spring term. Credit four hours. Prerequisite, 222 or 312. M W F 9:05. Course 411 is not a prerequisite, but some previous acquaintance with advanced calculus as presented in 411 is definitely helpful.

A rigorous introduction to complex variable theory. Intended mainly for undergraduates and for graduate students outside mathematics; graduate students in mathematics desiring a first course in complex variables should take 511-512. Complex numbers. Differential and integral calculus for functions of a complex variable including Cauchy's theorem and the calculus of residues. Elements of conformal mapping. Elements of several complex variables.

**511-512. REAL AND COMPLEX ANALYSIS**

Throughout the year. Credit four hours a term. Prerequisite, 412. M W F 9:05.

First term: Set-theoretic preliminaries, abstract integration, Borel measures, Lebesgue measure,  $L_p$  spaces, Hilbert spaces, Banach spaces, product spaces, differentiation. Second term: Fourier transforms. Complex variables, harmonic functions, Schwarz lemma, approximation by rational functions, conformal mappings, including Riemann mapping theorem, Weierstrass- and Mittag-Leffler theorems, Jensen's formula, analytic continuation, the modular function, Piccard's theorem.

515. POTENTIAL THEORY

Spring term. Credit four hours. Prerequisite, 512. Hours to be arranged. Mr. Spitzer.

Newtonian as well as logarithmic potential, capacity, Green's functions and the Dirichlet problem in Euclidean space. Either applications to function theory, or integral representation theorems, or some probabilistic potential theory.

611-612. SEMINAR IN ANALYSIS

Throughout the year. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Fall term, Mr. Rothaus. Spring term, Mr. Hamilton.

613. FUNCTIONAL ANALYSIS

Fall term. Credit four hours. Prerequisites, 432 and 511. Hours to be arranged.

Topological vector spaces, Banach and Hilbert spaces, Banach algebras. Additional topics to be selected by instructor.

615. FOURIER ANALYSIS

Spring term. Credit four hours. Prerequisites, 500 and 512. Hours to be arranged.

Topics in Fourier analysis.

622. RIEMANN SURFACES

Fall term. Credit four hours. Prerequisite, 512; 531 is desirable. Hours to be arranged. Mr. Fuchs.

The notion of Riemann surface. Algebraic functions of one complex variable considered as functions defined on a closed Riemann surface. Differentials and integrals. Abel's theorem. The Riemann-Roch theorem. Uniformization.

[514. COMPLEX VARIABLE THEORY]

Spring term. Credit four hours. Prerequisites, 512 and 500. Not offered in 1968-69.

[523. ANALYSIS ON MANIFOLDS]

Spring term. Credit four hours. Prerequisites, 500 and 512. Not offered in 1968-69.

[528. VARIATIONAL METHODS]

Spring term. Credit four hours. Prerequisite, 413. Not offered in 1968-69.

[617. ANALYTIC NUMBER THEORY]

One term. Credit four hours. Prerequisite, 514. Not offered in 1968-69.

## [621. MEROMORPHIC FUNCTIONS]

Fall term. Credit four hours. Prerequisite, consent of the instructor. Not offered in 1968-69.

## [623. SEVERAL COMPLEX VARIABLES]

Fall term. Credit four hours. Prerequisites, 500 and 514. Not offered in 1968-69.

## Algebra

## 331. LINEAR ALGEBRA

Either term. Credit four hours. Prerequisites, 200 (this may be waived with consent of instructor) and 213. *A student may not receive credit in both 221 and 331.* M W F 10:10.

Emphasis on applications rather than theoretical development. Vectors, matrices, and linear transformations, affine and euclidean spaces, transformation of matrices, eigenvalues.

## 332. ALGEBRA AND NUMBER THEORY

Spring term. Credit four hours. Prerequisite, 221 or 331. M W F 10:10.

Commutative rings with unity, fields, and finite groups. Motivations and examples are mostly derived from arithmetical problems on the integers or congruence classes of integers. Course 332 will not serve as a prerequisite for courses numbered 500 or higher.

## 431-432. INTRODUCTION TO ALGEBRA

Throughout the year. Credit four hours a term. Prerequisite, 221 or 331. First term prerequisite to second. M W F 10:10. (There will be a special Honors section of this course. The instructor should be consulted.)

A rigorous introduction to modern algebra. First term, linear algebra. Second term, introduction to algebraic systems such as groups, rings, modules and fields.

## 531-532. ALGEBRA

Throughout the year. Credit four hours a term. Prerequisite, 432. First term prerequisite to second. T Th 2:30-4.

First term: finite groups, field extensions, Galois theory, rings and algebras, tensor algebra. Second term: Wedderburn structure theorem, Brauer group, group cohomology, Ext, Dedekind domain, primary decomposition, Hilbert basis theorem, local rings. Additional topics selected by instructor.

## 549-550. LIE GROUPS AND DIFFERENTIAL GEOMETRY

Throughout the year. Credit four hours a term. Prerequisites, 500 and 531.

Differentiable manifolds. Basic properties of Lie groups and their relationship to Lie algebras. Compact Lie groups; maximal tori; the Weyl group. Theory of Lie algebras over the real and complex fields. The classical groups.

## 631-632. SEMINAR IN ALGEBRA

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

633. GROUP THEORY

Spring term. Credit four hours. Prerequisite, 531. Hours to be arranged. Mr. Schanuel.

Representations and characters of finite groups; transfer and induced representations. Applications to structure of finite groups as time permits.

635. THEORY OF RINGS

Spring term. Credit four hours. Prerequisites, 532 or 637. Hours to be arranged. Mr. Silver.

Local class field theory. First and second inequalities. Brauer group of algebraic number fields.

637. ALGEBRAIC NUMBER THEORY

Fall term. Credit four hours. Prerequisite, 532 or consent of the instructor. Hours to be arranged. Mr. Chase.

Valuations and extensions of valuations. Ideal theory. Factorization of ideals in field extensions. Finiteness of the class number. The unit theorem.

639. HOPF ALGEBRAS

Fall term. Credit four hours. Prerequisite, 532. Hours to be arranged. Mr. Sweedler.

Algebras, coalgebras and duality. The adjoint action. Structure theory of co-commutative coalgebras and Hopf algebras, including theorems of Poincaré, Birkhoff-Witt, Borel and Kostant. Theory of the integral and the generalized Maschke's theorem.

[641. HOMOLOGICAL ALGEBRA]

Fall term. Credit four hours. Prerequisite, 531. Not offered in 1968-69.

[649. TOPOLOGICAL GROUPS]

Fall term. Credit four hours. Prerequisites, 500 and 531. Not offered in 1968-69.

## Geometry and Topology

352. ELEMENTARY TOPOLOGY

Spring term. Credit four hours. Prerequisite, 221 or 331. T Th S 9:05.

Topics from elementary topology, such as index, fixed points, Jordan curve theorem, vector fields. Elementary combinatorial topology of complexes. Euler characteristic, classification of surfaces.

451-452. CLASSICAL GEOMETRIES

Throughout the year. Credit four hours a term. Prerequisite, 221 or 331 or 431, which may be taken concurrently. First term prerequisite to second. T Th S 9:05.

Axiomatic methods in geometry. Foundations of Euclidean geometry. Non-Euclidean geometry, projective geometry, other geometric theories.

453-454. INTRODUCTION TO TOPOLOGY AND GEOMETRY

Throughout the year. Credit four hours a term. Prerequisites, 412 and 432, or consent of the instructor. M W F 11:15. Mr. Henderson.

This is a new course (designed primarily for Option I Mathematics Majors) which will be somewhat experimental in its first year. It will

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cover topics in general and algebraic topology, differentiable manifolds, and perhaps some differential geometry.

### 500. GENERAL TOPOLOGY

Fall term. Credit four hours. Prerequisite, 412. M W F 2:30.

Topics from set theory, topological spaces, function spaces, manifolds, and topological groups. Fundamental group and covering spaces.

### 551. INTRODUCTORY ALGEBRAIC TOPOLOGY

Spring term. Credit four hours. Prerequisites, 432 and 500. M W F 10:10.

Homology and cohomology theories for complexes and spaces. Manifolds and geometric applications.

### 651-652. SEMINAR IN TOPOLOGY

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

### 653-654. ALGEBRAIC TOPOLOGY

Throughout the year. Credit four hours a term. Prerequisite, 551 or the equivalent. Hours to be arranged.

Categories and functors, exact and half exact functors, homotopy theory, cohomology operations, spectral sequences, duality, and applications.

### 657-658. ADVANCED TOPOLOGY

Throughout the year. Credit four hours a term. Prerequisites, 551 or consent of the instructor. Hours to be arranged.

A selection of advanced topics from modern algebraic, differential and geometric topology. The content of this course varies from year to year.

### [655-656. HOMOTOPY THEORY]

Throughout the year. Credit four hours a term. Prerequisite, 551. Not offered in 1968-69.

### [659. SYMMETRIC SPACES]

Spring term. Credit four hours. Prerequisite, 549-550. Not offered in 1968-69.

### [661-662. SEMINAR IN GEOMETRY]

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Not offered in 1968-69.

### [663. MANIFOLDS]

Throughout the year. Credit four hours a term. Prerequisite, 551. Not offered in 1968-69.

### [667. ALGEBRAIC GEOMETRY]

Spring term. Credit four hours. Prerequisites, 500 and 531. Not offered in 1968-69.

## Probability and Statistics

### 370. ELEMENTARY STATISTICS

Fall term. Credit four hours. Prerequisites, 112, 122 or 202. M W F 12:20. Preliminary examinations will be held at 7:30 P.M. on Oct. 9, Oct. 30, Nov. 20, Dec. 11.

Topics in probability which are essential to an understanding of statistics; introduction to the principles underlying modern statistical inference and the rationale underlying choice of statistical methods in various situations. This is a terminal course, intended for those who will take no further work in this area.

### 371. BASIC PROBABILITY

Fall term. Credit four hours. Prerequisite, 213 or 222. M W F 12:20. Preliminary examinations will be held at 7:30 P.M. on Oct 9, Oct. 30, Nov. 20, Dec. 11.

Topics covered include combinatorics, important probability laws, expectations, moments, moment generating functions, limit theorems. Emphasis is on diverse applications and on development of use in statistical applications. While this course can serve as a terminal course in basic probability, it is primarily intended for those who will continue with 472. (See also the descriptions of 370 and 571.)

### 472. STATISTICS

Spring term. Credit four hours. Prerequisite, 371 and knowledge of linear algebra such as taught in 221. M W F 12:20. Preliminary examinations will be held at 7:30 P.M. on Feb. 19, Mar. 12, Apr. 9, May 7.

Classical and recently developed statistical procedures are discussed in a framework which emphasizes the basic principles of statistical inference and the rationale underlying the choice of these procedures in various settings. These settings include problems of estimation, hypothesis testing, large sample theory, experimental designs, sequential analysis and multiple decision problems. (See also the description of 370 and 572.)

### 571. PROBABILITY

Fall term. Credit four hours. Prerequisite, 412 or, with consent of the instructor, 416 or 422. M W F 12:20. Examinations and make-up lectures, when necessary, will be held on Thursday evenings at 7:30.

For description see the *Announcement of the Graduate School: Physical Sciences*.

### 572. STATISTICAL ANALYSIS

Spring term. Credit four hours. Prerequisite, 571. M W F 12:20.

A continuation of 571. Topics include an introduction to the theory of point estimation; consistency, efficiency, and sufficiency, and the method of maximum likelihood; the classical tests of hypotheses and their power; the theory of confidence intervals; the basic concepts of statistical decision theory; the fundamentals of sequential analysis.

Intended to furnish a rigorous introduction to mathematical statistics, the course is prerequisite to all advanced courses in statistics.

### 574. ADVANCED PROBABILITY

Spring term. Credit four hours. Prerequisite, 571. M W F 11:15.

A continuation of Math. 571. Selected topics from Volumes 1 and 2 of Feller. Modern limit theorems, discrete and selected continuous parameter Markov chains, related topics in semigroups and resolvents, ergodic and renewal theorems with applications.

### 671-672. SEMINAR IN STATISTICS

Throughout the year. Credit four hours. Prerequisite, consent of the instructor. M 4-6.

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### 673. ANALYSIS OF VARIANCE

Fall term. Credit four hours. Prerequisites, 572 and 432. Hours to be arranged.

The classical univariate and multivariate normal procedures. Invariance, minimax and admissibility results. Ranking problems. Other models. Non-parametric methods.

### 674. DESIGN OF EXPERIMENTS

Spring term. Credit four hours. Prerequisite, 673. Hours to be arranged.

Algebraic and geometric construction of the classical balanced block designs. Optimum design theory. Sequential designs.

### 677-678. STOCHASTIC PROCESSES

Throughout the year. Credit four hours a term. Prerequisites, 511 or 522, 571 or consent of the instructor. First term prerequisite to second. Hours to be arranged.

Definition and basic properties of stochastic processes, martingales, sample path properties of stochastic processes, invariance principles. More detailed investigations of Markov processes and Markov chains, diffusion processes.

### [575. INFORMATION THEORY]

Fall term. Credit four hours. Prerequisite, 411, or, with consent of the instructor, 416 or 421. Not offered in 1968-69.

### [675. STATISTICAL ESTIMATION]

Fall term. Credit four hours. Prerequisite, 572, 511 and some acquaintance with groups as in 432. Not offered in 1968-69.

### [676. DECISION FUNCTIONS]

Spring term. Credit four hours. Prerequisite, 675. Not offered in 1968-69.

### [679 (Also Economics 685). SEMINAR IN MATHEMATICAL ECONOMICS]

Spring term. Credit four hours. Prerequisite, consent of the instructor. Not offered in 1968-69.

## Mathematical Logic

### 381. ELEMENTARY MATHEMATICAL LOGIC

Spring term. Credit four hours. Prerequisite, 122 or 200. M W F 11:15.

Propositional calculus via truth tables and as a formal axiomatic theory. Boolean algebras. Introduction to the predicate calculus.

### 581. LOGIC

Fall term. Credit four hours. Prerequisite, 432 or consent of the instructor. M W F 11:15.

Basic topics in mathematical logic including: Propositional and predicate calculus. Formal number theory and recursive functions. Completeness and incompleteness theorems.

### 681-682. SEMINAR IN LOGIC

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

## 683. MODEL THEORY

Fall term. Credit four hours. Prerequisite, 581 or consent of the instructor. Hours to be arranged.

Construction and properties of models of axiomatic theories. Reduced products. Cardinality theorems. Preservation theorems. Non-elementary languages.

## 684. RECURSION THEORY

Spring term. Credit four hours. Prerequisite, 581 or consent of the instructor. M W F 11:15.

Theory of effectively computable functions. Classification of recursively enumerable sets. Degrees of recursive unsolvability. Applications to logic. Hierarchies. Recursive functions of ordinals and higher type objects. Generalized recursion theory.

## [685. METAMATHEMATICS]

Spring term. Credit four hours. Prerequisite, 581 or consent of the instructor. Not offered in 1968-69.

## [687. SET THEORY]

Spring term. Credit four hours. Prerequisite, 581 or consent of the instructor. Not offered in 1968-69.

## 690. SUPERVISED READING AND RESEARCH

## MODERN FOREIGN LANGUAGES AND LITERATURES

Courses in modern foreign languages and literatures are offered as follows:

### DEPARTMENT OF GERMAN LITERATURE

Mr. O. J. Matthijs Jolles, Chairman.

Courses in German literature.

### DIVISION OF MODERN LANGUAGES

Mr. J M. Cowan, Director.

All elementary and intermediate language courses; conversation and composition courses; courses in linguistics. For fulfillment of the Language Requirement for graduation see page 11 and for attainment of Qualification see page 11.

An option is provided for elementary courses in some languages as follows: The Basic Course sequence, 101-102, gives a thorough grounding in the language—listening, speaking, reading, and writing. It is conducted in small groups with native speakers as instructors. The Elementary Reading Course sequence 131-132, 133-134 concentrates on the comprehension of written texts.

DEPARTMENT OF ROMANCE STUDIES

Mrs. Jean Parrish, Chairman.

Courses in French literature, Italian literature, and Spanish literature. See separate language headings for course listings and information about major programs.

DEPARTMENT OF RUSSIAN LITERATURE

Mr. G. Gibian, Chairman

Courses in Russian literature.

## Burmese

Mr. R. B. Jones, Jr., and staff.

### 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

### 201-202. BURMESE READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Burmese; for 202, Burmese 201 or consent of the instructor. Hours to be arranged. Mr. Jones.

### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Burmese; for 204, Burmese 203 or consent of the instructor. Hours to be arranged. Mr. Jones.

### 301-302. ADVANCED BURMESE READING

Throughout the year. Credit four hours a term. Prerequisite, Burmese 201-202 or the equivalent. Hours to be arranged. Mr. Jones.

Selected readings in Burmese writings in various fields.

## Cebuano (Bisayan)

Mr. J. U. Wolff and staff.

### 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Offered according to demand. Hours to be arranged.

## Chinese

Messrs. N. C. Bodman, F. C. Chin, J. McCoy, Mrs. Pei Shin Ni, Mr. H. Shadick, Mrs. Pilwun Wang, and Staff.

For a major involving Chinese studies see Asian Studies.

### 101-102. BASIC CHINESE

Throughout the year. Credit six hours a term. M-F 8, M W F 9:05.

**[131H-132H. ELEMENTARY HOKKIEN CHINESE]**

Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. M-F 11:15. Mr. Bodman. Not offered in 1968-69.

**[131C-132C. ELEMENTARY CANTONESE]**

Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. M-F 11:15. Mr. McCoy. Not offered in 1968-69.

**133C-134C. INTERMEDIATE CANTONESE**

Throughout the year. Credit three hours a term. Prerequisite, Chinese 132C or equivalent. Hours to be arranged. Mr. McCoy.

**201-202. INTERMEDIATE CHINESE I**

Throughout the year. Credit four hours a term. Prerequisite, Qualification in Chinese. M W F 10:10 and T Th 1:25.

**213. INTRODUCTION TO CLASSICAL CHINESE**

Fall term. Credit three hours. Prerequisite, Qualification in Chinese. M W F 11:15. Mr. Shadick.

Systematic analysis of basic patterns in classical Chinese; study of texts; exercises in composition. An introduction to the literary style, primarily for students intending to work in classical literature, history, or art history.

**301-302. INTERMEDIATE CHINESE II**

Throughout the year. Credit four hours a term. Prerequisite, Chinese 202 or equivalent. M-F 11:15.

Readings and drill in modern expository Chinese, three hours; introduction to classical Chinese, two hours. This latter is intended to prepare students of modern Chinese to understand classical forms and quotations occurring in vernacular texts and to use dictionaries and reference works.

**312. INTERMEDIATE CLASSICAL CHINESE**

Spring term. Credit three hours. Prerequisite, Chinese 213 or 301. M W F 11:15. Mr. Shadick.

Study of texts in a variety of styles, ancient and modern.

**313. CHINESE HISTORICAL AND PHILOSOPHICAL TEXTS**

Fall term. Credit four hours. Prerequisite, Chinese 302 or 312, or consent of the instructor. T Th 11:15 and one hour to be arranged. Mr. Shadick.

Selections from the standard histories, the classical philosophers, and early modern reformers.

**402. HISTORY OF THE CHINESE LANGUAGE**

Either term. Credit four hours. Prerequisite, consent of the instructor. W 2:30-4:25. Mr. Bodman.

**403. LINGUISTIC STRUCTURE OF CHINESE**

Either term. Credit four hours. Prerequisite, consent of the instructor. T 2:30-4:25. Mr. Bodman.

**411-412. ADVANCED READINGS IN MODERN CHINESE**

Throughout the year. Credit four hours a term. Prerequisite, Chinese 302. M W F 1:25.

414. CLASSICAL CHINESE PROSE

Spring term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged.

416. CLASSICAL CHINESE POETRY AND DRAMA

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged.

420. READINGS IN THE TRADITIONAL CHINESE NOVEL

Either spring or fall term, according to demand. Credit two to four hours. Prerequisite, consent of the instructor. Hours to be arranged.

521-522. ADVANCED READINGS IN CLASSICAL CHINESE

Throughout the year. Credit two or four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

571-572. SEMINAR IN CHINESE LITERATURE

Throughout the year. Credit and hours to be arranged.

[SINO-TIBETAN LINGUISTICS]

(See Linguistics 581-582.) Mr. Bodman. Not offered in 1968-69.

## Dutch

Mr. J. M. Echols.

131-132. ELEMENTARY READING COURSE

Throughout the year. Credit four hours a term. Prerequisite, satisfaction of language requirement for graduation and consent of the instructor. Hours to be arranged. Mr. Echols.

Designed to impart a sound knowledge of the language for students who need it as a tool for research or who plan to go on to graduate school.

## English as a Second Language

The following courses are offered by the Division of Modern Languages. Foreign Students should consult a member of the Division at Morrill Hall 206.

102. ENGLISH AS A SECOND LANGUAGE

Fall term. Credit six hours. Prerequisite, placement by the instructor. Hours to be arranged.

211-212. ENGLISH AS A SECOND LANGUAGE

Throughout the year. Credit three hours a term. Prerequisite, placement by the instructor. M W F 11:15.

## French

Miss Claire Asselin, Messrs. L. J. Benoit, J. Béreaud, Miss Alice Colby, Messrs. H. Dieckmann, H.-J. Frey, Mrs. Janet Gordon, Messrs. D. I.

Grossvogel, R. A. Hall, Jr., Mrs. S. Alexandra Littauer, Mrs. Dorothy McCall, Mr. E. P. Morris, Mrs. Jean Parrish, B. L. Rideout, A. Seznec, and staff.

Students who elect to major in French should ordinarily have completed French 201-202, and French 203-204 or its equivalent. A student majoring in French is expected to become conversant with a fair portion of the masterworks of French literature, to acquaint himself with the outlines of French literary history, and to develop some skill in literary analysis. To this end he will be expected to complete successfully twenty-eight hours of French literature courses at the 300 level or higher, with papers to be written in French. At least one 400 course in French literature must be included. One term of French 401, 402, or 403, may be substituted for four hours of the twenty-eight required in French literature (but not for the required 400 course in literature). One four-hour course offered by the Department of Comparative Literature may be counted toward the twenty-eight required hours if prior approval has been obtained from the major adviser.

The major student will also be expected to acquire competence in the handling of French. This competence will be demonstrated by the successful completion of French 304 or by the passing of an oral and written examination to be taken no later than the end of the first semester of the senior year. The level of the exam will be that ordinarily reached at the end of four semesters of language study beyond Qualification. (For definition of Qualification see page 11 of this Announcement.) The particular language courses taken by any student will, of course, be partially determined by his level of preparation at entrance, personal talent, particular opportunities such as Junior Year Abroad, and the like. The placement in language courses of incoming majors will be decided, in the case of students who have done no previous language work at Cornell, by an oral and written examination which will be administered in the second term of the sophomore year. For details, please consult the major adviser, Mr. Bereaud.

The Honors program in French is open to superior students to be selected on the basis of grades, a letter of application, recommendation, and interview. Those students will meet weekly, during junior and senior years, in tutorial conferences with a faculty member. Junior tutorial will be devoted to intensive study of selected problems or authors and to the choice of a topic for the Honors essay; senior tutorial, to the preparation and writing of that essay. Honors students may be released from one or two courses in either junior or senior year to write the Honors essay. They will take a general oral examination at the end of the senior year. For details, please consult Mr. Morris.

The Distribution requirement in the Humanities is satisfied in French by French 201-202 if this course is not used in fulfillment of the language requirement.

Of the courses listed below, those dealing with literature are, together with French 303-304 and 429, staffed and administered by the

Department of Romance Studies, and inquiries in regard to them ought to be addressed to that Department (278 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (106 Morrill Hall).

## LANGUAGE AND LINGUISTICS

### 101. BASIC COURSE

Fall term. Credit six hours. Students who have previously studied French should consult page 11 before registering for this course. Drill M-F 8 or 10:10; lecture T Th 9:05 or 12:20.

### 102. BASIC COURSE

Either term. Credit six hours. Prerequisite, French 101 or its equivalent. Students who have previously studied French should consult page 11 before registering for this course. Fall term: drill M-F 8, 12:20, or 1:25; lecture M W 11:15 or 2:30. Spring term: drill M-F 8, 10:10, or 1:25; lecture T Th 9:05 or 12:20.

### 131-132. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. M W F 9:05 or 2:30; lecture F 10:10.

### 133-134. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. Fall term (133): M W F 2:30 or T Th S 9:05; lecture F 1:25. Spring term (134) M W F 11:15 or 1:25; lecture F 9:05.

### 203. INTERMEDIATE CONVERSATION

Either term. Credit three hours. Prerequisite, Qualification in French (for definition of Qualification, see page 11). Fall term: sections M W F 11:15 or 1:25 or T Th S 8 or 10:10; lectures M W 10:10 or 12:20, or 2:30 or T Th 8, 1:25, or 2:30. Spring term: sections M W F 8 or 11:15; lectures T Th 10:10 or 1:25.

Guided conversation, grammar drill, and oral and written composition. Emphasis is placed upon increasing the student's oral command of French.

### 204. INTERMEDIATE COMPOSITION

Either term. Credit three hours. Prerequisite, French 203. Fall term: M W F 10:10 and T Th 1:25. Spring term: sections M W F 9:05, 10:10, or 2:30 or T Th S 10:10; lectures T Th 11:15 or 2:30.

Continuation of the work of French 203, with special attention to accurate and idiomatic expression in French. Oral and written drill.

### 303-304. ADVANCED COMPOSITION AND CONVERSATION

Throughout the year. Credit four hours a term. Prerequisite, French 204 or placement by special examination. M W F 9:05; one additional section, hours to be arranged. Mr. Bereaud and staff.

Reading and analysis of selected contemporary texts in order to increase students' vocabulary and command of idiomatic French. Detailed study of present-day syntax. Class discussion conducted in French. Weekly translations or essays in French. One hour of conversation each week in groups

of two or three will give every student the opportunity of dealing with the specific problems he may encounter. The second semester places more emphasis on literary texts and their stylistic resources.

#### 401-402. HISTORY OF THE FRENCH LANGUAGE

Throughout the year in alternate years. Credit four hours a term. Prerequisites, Qualification in French and Linguistics 201. M W F 11:15. Mr. Benoit.

Fall term: detailed study of the structural development of French from the origins to the Old French period. Spring term: selected readings in Old French texts, examination of structural changes from the Old French period to the present.

#### 403. LINGUISTIC STRUCTURE OF FRENCH

Fall term. Credit four hours. Prerequisites, Qualification in French and Linguistics 201. M W F 3:35. Miss Asselin, Mr. Noblitt.

A descriptive analysis of present-day French, with emphasis on its phonetics, phonemics, morphology, and syntax. Required of students seeking certification by New York State.

#### THE COMPARATIVE STUDY OF THE ROMANCE LANGUAGES

(See Linguistics 441-442, 443-444, 445, 446, 449.)

#### 404. FRENCH FOR TEACHERS

Spring term. Credit four hours. Prerequisite, Qualification in French. Hours to be arranged. Mr. Benoit and Mrs. Gordon.

Survey of the current teaching methods, preparation of teaching materials, selection and use of textbooks and realia, further study of phonetics, syntax, and culture as needed. Required of students seeking certification by New York State.

#### 429. STYLISTICS

Fall term. Credit four hours. Primarily for graduate students. Limited to ten students. Some qualified undergraduate majors will be admitted, as space permits. Prerequisite, (undergraduates) French 304; (graduates) placement at the departmental French language examination. M W F 11:15. Mr. Béreaud.

French 429 will normally be taken by all entering graduate students in French, with the exception of those exempted on the basis of the departmental examination, and those who, not being prepared to undertake work at the level of French 429, will be asked first to take French 303 or 304. French 429 presupposes competence in the handling of French vocabulary, syntax, and idiom. The purpose is to teach the writing of French as a means of effective expression on literary and historical subjects. Review of advanced grammar; translations from and into literary French; lexical, stylistic, and methodological study of selected French critical works; literary *explication de textes*; study of French versification; analysis of literary topics, and composition of outlines. Short daily or weekly papers. Conducted in French.

#### 539. INTRODUCTION TO FRENCH PHILOLOGY

Fall term. Credit four hours. Required of all graduate students in French literature. Th 4:30-6:25. Miss Colby.

A study of the phonological, morphological, syntactical, and etymological developments which most frequently create problems for the student of literature.

## 554. GALLO-ROMANCE DIALECTOLOGY

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 431-432, or 433-434, or consent of the instructor. T Th 2:30. Mr. Benoit.

## 555. HISTORICAL PHONOLOGY OF FRENCH

Fall term in alternate years. Credit four hours. Prerequisite, Linguistics 201 or consent of the instructor. T Th 2:30. Mr. Benoit.

The detailed study of sound changes from Latin to French, with attention to intermediate stages.

## 558. LINGUISTIC STRUCTURES OF OLD AND MIDDLE FRENCH

Spring term in alternate years. Credit four hours. Prerequisite, French 403 or consent of the instructor. T Th 2:30. Mr. Noblitt.

An attempt at synchronic linguistic analysis of the French of approximately A.D. 1100 and 1600.

## 600. SEMINAR IN FRENCH LINGUISTICS

Offered in accordance with student needs. Credit four hours a term. Hours to be arranged. Mr. Hall.

## LITERATURE

## 201-202. INTRODUCTION TO FRENCH LITERATURE

Primarily intended for freshmen. Course 201 prerequisite to 202. Both courses given each term. Credit three hours a term. Prerequisite, Qualification in French (for definition of Qualification see page 11). The course will presuppose the ability to read literary French with some facility. In the fall term, French 201 will be offered M W F 9:05, 10:10, 11:15, 12:20, or 2:30; or T Th S 9:05 or 11:15. French 202 will be offered M W F 12:20; T Th S 10:10 or 12:20. In the spring term, French 201 will be offered M W F 12:20; or T Th S 9:05 or 12:20. French 202 will be offered M W F 9:05, 10:10, 11:15, 12:20, or 2:30; or T Th S 9:05, 10:10, or 11:15. Mrs. Parrish, Mrs. McCall, Messrs. Béreaud, Sez nec, Grossvogel and Staff.

Serves as an intermediate reading course and as an introduction to literature. Complete works are read representing significant writings from the Middle Ages to the present.

French 201: Lyrical Poetry; Villon, Ronsard, La Fontaine, Baudelaire, Mallarmé.

French 202: Students will be able to choose one of the two following programs: (1) Comedy and Satire; Rabelais, Molière, Voltaire, Sartre and others; (2) Changing Images of the Hero; Chanson de Roland, Corneille, Diderot, Malraux and others.

The object is to acquire reading skill while developing a critical appreciation of a foreign literature. As much English as is necessary will be used in sections at the beginning; as the year goes on, classes will be conducted more and more in French.

## 201E-202E (Experimental section).

Enrollment limited. Students electing this experimental version of French 201-202 must take both semesters of it. T Th S 10:10. Mr. Morris.

Traditionally, French 201-202 has sought to introduce students to some acknowledged masterpieces of French literature, to accustom them to close and accurate reading of literary French, and to acquaint them with certain regularities inherent to short lyric poems, prose narrative, comedy and

tragedy. The attempt will be made to achieve those same ends and at the same time to give the student some feeling for the ways, problems (social and spiritual) and accomplishments of selected moments in the history and literature of France. The course will not proceed by chronological "survey," but by historical "sections," or samplings. The relation of literary consciousness to historical consciousness will be explored: how does each age see itself, and write itself down? how does it portray other times?

The texts studied in 1968-69 will in likelihood be:

#### FIRST SEMESTER:

(a) 1857 (after the failure of the revolution of 1848): Baudelaire, *les Fleurs du mal*; Flaubert, *Mme Bovary*;

(b) The times of Louis XIV: Racine, *Andromaque*; La Fontaine, *Fables*; Mme de LaFayette, *La Princesse de Clèves*; Molière, *Le Tartuffe*; Saint-Simon, *Mémoires*.

#### SECOND SEMESTER:

(c) 1909-1913 (France on the eve of the first world war): Gide, *la Porte étroite*; Claudel, *l'Annonce faite à Marie*; Apollinaire, *Alcools*; Proust, *Du côté de chez Swann*;

(d) From Romanesque to Gothic: *La Chanson de Roland*; Chrétien de Troyes, *Yvain*; Rutebeuf, *Le Miracle de Théophile*; a farce; lyric poems; chronicles of Villehardouin.

#### 205-206. FRESHMAN SEMINAR: MODERN FRENCH DRAMA

Throughout the year. Credit three hours. Mrs. McCall.

For description see Freshman Humanities Program, p. 28.

#### 350. TRENDS AND TOPICS IN FRENCH LITERATURE 1494-1553

Spring term. Credit four hours. T Th S 11:15. Mr. Morris.

One of a series of courses intended to help French majors (and, in this case, students of the Renaissance concentrating in other areas) place their readings in some historical perspective. (Compare French 369.)

Literature and culture from the Italian campaigns to the death of Rabelais. Readings in Rabelais, Marot, Marguerite de Navarre, other major and minor figures. Main emphasis will fall on such concepts as Humanism, Renaissance, Reformation.

#### 369. FRENCH LITERATURE OF THE FIRST HALF OF THE SEVENTEENTH CENTURY

Fall term. Credit four hours. M W F 10:10. Mr. Seznec.

Readings will include Malherbe and the major baroque poets; Honoré d'Urfé, précieux and pastoral novels, Corneille, Rotrou, Descartes and Pascal.

#### 377. THE NOVEL IN THE EIGHTEENTH CENTURY

Fall term. Credit four hours. Prerequisite, French 201-202 or consent of the instructor. M W F 9:05. Mrs. Parrish.

Readings in Marivaux, Prévost, Diderot, Rousseau, Laclos, Bernadin de Saint-Pierre. Lectures in French, classroom discussion, written reports.

#### 388. NINETEENTH-CENTURY PROSE FICTION

Spring term. Credit four hours. M W F 12:20. Mr. Béraud.

The Romantic Novel. Readings from Madame de Staël, Chateaubriand, B. Constant, Nerval, Balzac, Stendhal, G. Sand, and Hugo. Class discussions, papers. Class conducted in French.

## 390. SURVEY OF FRENCH DRAMA

Spring term. Credit four hours. Prerequisite, French 201-202 or consent of the instructor. M W F 10:10. Mr. Grossvogel.

A survey of French drama from the Middle Ages to the present, stressing especially the sociological and experimental nature of the genre in France. The students will read a minimum of fifteen plays, with special attention to the works of Corneille, Molière, Racine, Beaumarchais, Marivaux, Voltaire, Hugo, Musset, Anouilh, Claudel, Cocteau and Giraudoux. Lectures in French, classroom discussion, written reports.

## 398. SARTRE AND CAMUS

Spring term. Credit four hours. M W F 9:05. Mrs. McCall.

Readings in the major literary works of Sartre and Camus, with reference to the philosophical and political background. Lectures in French, classroom discussion, written reports.

## 399. SEMINAR IN FRENCH POETRY: APOLLINAIRE

Fall term. Credit four hours. M 2:30-4:25. Mr. Grossvogel.

Close and critical analysis of the poetry of Apollinaire: the poet's poetics, the poet and his times, the poet as a precursor.

## 439-440. HONORS COURSE IN FRENCH

See Director of Honors Program, Mr. Morris.

## 447-448. MEDIEVAL LITERATURE

Throughout the year. Credit four hours. Prerequisite, two terms of 300 level French literature courses or consent of the instructor. May be entered either term. Fall term: M W F 9:05. Spring term: F 2:30-4:25 plus one hour to be arranged for students entering in the spring term without previous training in Old French. Miss Colby.

Translation of Old French texts into English and Modern French. The first term deals with the epic; the second term with the romance. Facility in reading Old French and appreciation of these two major genres are the primary goals of this course, but some attention will be given to other important genres.

## 462. THE THEATER OF RACINE

Spring term. Credit four hours. Mr. Seznec.

## 546. MEDIEVAL SEMINAR: VILLON

Spring term. Credit four hours. Th 4:30-6:25. Miss Colby.

Emphasis will be placed upon the relationship between the work of Villon and the poetic tradition which he inherited.

## 557. RENAISSANCE SEMINAR: RABELAIS

Fall term. Credit four hours. W 2:30. Mr. Morris.

## 579. EIGHTEENTH-CENTURY SEMINAR: LE CONTE

Spring term. Credit four hours. W 2:30. Mrs. Parrish.

Le Conte philosophique et moral. Texts chosen from Voltaire, Mar-montel, Diderot. Analysis of the genre and its antecedents.

## 629. INTRODUCTION TO LITERARY STUDIES

Fall term. Credit four hours. Required of all first-year graduate students in Romance Studies. M W 2:30. Mr. Selig.

## German

Messrs. D. Bansberg, V. T. Bjarnar, E. A. Blackall, E. Catholy, D. Connor, J. M. Cowan, J. B. Dallett, H. Dienert, Messrs. O. J. M. Jolles, H. L. Kufner, P. Lowe, Jr., J. W. Marchand, A. Muschg, B. E. Pike, F. van Coetsem, and staff.

For those not majoring in German, the prerequisite for admission to courses numbered 320 to 360 is German 201-202 or consent of the instructor. To obtain instructor's consent, students who have not completed German 201-202 will be required to show that they know sufficient German to follow with profit the course for which they wish to register.

For admission to a major in German, the prerequisites are both German 201-202 and 203-204. Students may apply for admission to the major while they are enrolled in these courses, but acceptance will be conditional on their completing these courses with a grade of C- or above. A prospective major should complete the Distribution requirements by the end of his sophomore year, but petitions will be considered.

For the major in German, the following courses are to be completed: German 303, 304, 405, and at least five other 300- or 400-level courses in German which should be a representative selection of courses in Germanic linguistics and/or German literature. The natural progression to the major is through 201-202 and 203-204.

The Honors program in German consists of an integrated plan designed for the individual student and culminating in an Honors essay. For admission to the Honors program a student must have a minimum average of B in German courses, and the consent of Mr. Deinert. The Honors Reading Courses (451 and 452) may form part of the Honors student's program.

The Distribution requirement in the humanities is satisfied in German by German 201-202 if this course is not used in fulfillment of the language requirement.

German 201-202 together with a 300- or 400-level sequence of two courses, or German 203-204, 303-304 would constitute a useful minor in German for those majoring in another field and for those proceeding to Graduate School. The attention of students majoring in German is called to the courses offered by the Department of Comparative Literature, many of which complement the course offerings in German. German majors may, if they wish, use comparative Literature courses to fulfill their second distribution requirement.

Of the courses listed below, those dealing with literature are staffed and administered by the Department of German Literature, and inquiries in regard to them ought to be addressed to that Department (172 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (136 Morrill Hall).

## LANGUAGE AND LINGUISTICS

## 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Students who have previously studied German should consult page 11 before registering for this course. Drill M-F 8, 10:10, 11:15, 12:20, or 2:30; lecture M W 9:05.

## 131-132. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. M W F 8, 11:15, 12:20, 2:30, 4:40, or 7:30 p.m.; lecture W 11:15 or T 11:15 or 7:30 p.m. or F 2:30.

## 133-134. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. Prerequisite, German 132 or the equivalent. M W F 10:10 or T Th S 8 or 12:20; lecture T 9:05.

## 203. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, Qualification in German (for definition of Qualification see page 11). Fall term: M W F 9:05 or 10:10; or T Th S 9:05 or 10:10. Lecture F 2:30. Spring term: M W F 9:05 or T Th S 9:05; lecture F 2:30.

Guided conversation and oral and written composition; with special attention to accurate and idiomatic expression in German.

## 204. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, German 203 or consent of the instructor. Fall term: M W F 12:20. Spring term: M W F 10:10 or 12:20; or T Th S 10:10.

Continuation of the work of German 203. Emphasis is placed on increasing the student's active vocabulary and command of grammatical patterns.

## 303-304. ADVANCED COMPOSITION AND CONVERSATION

Throughout the year. Credit four hours a term. Prerequisite, German 204 or consent of the instructor. T Th S 11:15.

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

## [401-402. HISTORY OF THE GERMAN LANGUAGE]

Throughout the year in alternate years. Credit four hours a term. Prerequisites, German 204 or consent of the instructor and Linguistics 201 taken previously or concurrently. M W F 11:15. Fall term, Mr. Kufner. Spring term, Mr. Lowe. Not offered in 1968-69.

## 403. LINGUISTIC STRUCTURE OF GERMAN

Fall term. Credit four hours. Prerequisites, German 204 or consent of the instructor, and Linguistics 201 taken previously or concurrently. M W F 10:10. Mr. Kufner.

A descriptive analysis of present-day German, with emphasis on its phonetics, phonemics, morphology, and syntax.

## 404. GERMAN FOR TEACHERS

Spring term. Credit four hours. Prerequisite, German 403. M W F 10:10. Mr. Kufner.

Methods of teaching the language based on a contrastive study of the structures of English and German. Extensive outside reading, reports on

textbooks, discussion of various teaching aids and realia. Required for provisional New York State teacher certification.

501. INTRODUCTION TO GERMANIC LINGUISTICS

Fall term in alternate years. Credit four hours. W 1:25. Mr. van Coetsem.

502. GOTHIC

Spring term in alternate years. Credit four hours. W 1:25. Mr. van Coetsem.

[503. OLD SAXON]

Fall term in alternate years. Credit four hours. M W F 3:35. Not offered in 1968-69.

[504. OLD HIGH GERMAN]

Spring term in alternate years. Credit four hours. M W F 3:35. Not offered in 1968-69.

509. OLD NORSE I

Fall term. Credit four hours. Hours to be arranged. Mr. Bjarnar.

510. OLD NORSE II

Spring term. Credit four hours. Hours to be arranged. Mr. Bjarnar.

[511. SAGAS]

Fall term. Credit four hours. Prerequisite, German 510 or consent of the instructor. Hours to be arranged. Mr. Lowe. Not offered in 1968-69.

[512. EDDA]

Spring term. Credit four hours. Prerequisite, German 510 or consent of the instructor. Hours to be arranged. Mr. Lowe. Not offered in 1968-69.

[601. GERMAN DIALECTOLOGY]

Fall term. Four hours credit. Hours to be arranged. Mr. Kufner. Not offered in 1968-69.

651. SEMINAR IN GERMAN LINGUISTICS I

Fall term. Four hours credit. Th 1:25. Mr. van Coetsem.

652. SEMINAR IN GERMANIC LINGUISTICS II

Spring term. Four hours credit. Th 1:25. Mr. van Coetsem.

## LITERATURE

### FRESHMAN SEMINAR IN GERMAN LITERATURE

(Comparative Literature 103-104)

Credit three hours a term. Messrs. Bansberg, Connor, Muschg, and staff.

For description see Freshman Humanities Program, page 28.

### 201-202. INTRODUCTION TO GERMAN LITERATURE

The aim is to introduce the student to German literature through the reading of complete texts mainly from the nineteenth and twentieth centuries. The course is so designed that the student will increase his reading knowledge of German while developing a critical approach to literature.

English will be used as much as necessary at the beginning; as the term progresses, classes will be conducted more and more in German. 201 is not a prerequisite for 202. Prerequisite for 201 or 202, Qualification in German (for definition of Qualifications see page 11).

201. Either term. Credit three hours. Fall term: M W F 8:00, 9:05, or 11:15 or T Th S 9:05 or 10:10. Spring term. M W F 9:05, or 11:15 or T Th S 9:05 or 11:15. Messrs. Bansberg, Connor, Dallett, Deinert, Muschg, and staff.

Topic: The German drama. The main emphasis of the course will be on dramatic works by Dürrenmatt, Brecht, Hofmannsthal, Büchner, Schiller, and Goethe.

202. Either term. Credit three hours. Fall term. M W F 9:05 or T Th S 9:05 or 11:15. Spring term: M W F 9:05 or 10:10; or T Th S 9:05 or 10:10. Messrs. Bansberg, Connor, Dallett, Deinert, Muschg, and staff.

Topic: Nineteenth- and twentieth-century prose. The course will deal with complete prose works by Dürrenmatt, Kafka, Mann, Hofmannsthal, Hauptmann, Keller, Brentano, and Kleist.

#### [352. LESSING AND THE ENLIGHTENMENT]

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. M W F 9:05. Mr. Connor. Not offered in 1968-69.

#### 354. SCHILLER UND DIE DEUTSCHE KLASSIK

Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. T Th S 9:05. Mr. Muschg. This course will be conducted in German.

#### 355. THE YOUNG GOETHE

Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. M W F 10:10. Mr. Blackall.

A study of Goethe's development as a writer from the *Sturm und Drang* up to the Italian journey, with special reference to his poetry written before 1786, his *Götz von Berlichingen*, *Werther*, *Iphigenie*, *Torquato Tasso*, and *Egmont*.

#### 356. THE LATER GOETHE

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. It is recommended that students taking this course take 355 first. M W F 12:20. Mr. Blackall.

A study of Goethe's development after the Italian journey. A full study of *Faust* (Part One and Two) and some of the later poetry will be included.

#### [357. ROMANTICISM]

Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. M W F 12:20. Mr. Blackall. Not offered in 1968-69.

German literature in the first half of the nineteenth century, with special reference to the Romantic movement itself and its effect on the period 1830-1850.

#### 358. FROM ROMANTICISM TO SYMBOLISM

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. T Th S 9:05. Mr. Deinert. This course will be conducted in German.

[359. PROSE FICTION FROM THOMAS MANN TO HEINRICH BÖLL]  
 Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. W 1:25-3:20. Not offered in 1968-69.

**MODERN DRAMATISTS**  
 (Comparative Literature 442)

Spring term. Credit four hours. Mr. Connor.  
 Brecht.

**361. POETRY FROM RILKE TO BRECHT**

Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. M W F 9:05. Mr. Catholy. This course will be conducted in German.

**405. INTRODUCTION TO MIDDLE HIGH GERMAN**

Fall term. Credit four hours. Prerequisite, consent of the instructor. M W F 1:25. Mr. Marchand.

Intended for students with no previous knowledge of Middle High German; will begin with study of the Middle High German language and then proceed to the reading of selected texts.

**UTOPIAS AND IMAGINARY VOYAGES IN THE BAROQUE AGE AND THE ENLIGHTENMENT**

(Comparative Literature 460)

Spring term. Credit four hours. M W F 11:15. Mr. Dallett.

**[410. TOPICS IN CLASSICISM AND ROMANTICISM]**

Spring term only. Credit four hours. Prerequisite, consent of the instructor. T Th 11:15. Not offered in 1968-69.

**MODERN GERMAN LITERATURE**

(Comparative Literature 411)

Fall term. Credit four hours. M W F 11:15. Mr. Deinert.  
 Franz Kafka.

**413-414. TOPICS IN MODERN GERMAN LITERATURE**

Credit four hours a term. Prerequisite, consent of the instructor. Fall term: T Th 11:15. Mr. Catholy. Typologie des deutschen Dramas. Spring term: T Th 11:15. Mr. Muschg. Topic to be announced.

**[415. BIBLIOGRAPHY AND METHODS]**

Fall term. Credit four hours. Prerequisite, consent of the instructor. M W F 3:35. Mr. Marchand. Not offered in 1968-69.

**[417-418. THE GREAT MOMENTS OF GERMAN LITERATURE]**

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Blackall. Not offered in 1968-69.

This course will be given every year beginning in the fall of 1969. It is recommended for graduate students and undergraduates (especially those majoring in other literatures) who wish to acquire an overall view of the whole range of German literature from the earliest texts to the present day. The only prerequisite will be a reading knowledge of German. Two weekly lectures will aim at a characterisation of the temper of a period or of the essential nature of a certain writer. A discussion period will concentrate on individual works illustrative of the topics of the lectures.

## 451-452. HONORS READING COURSE

Either term. Credit four hours a term. For Honors students only. Staff.

Extensive reading of texts supplementary to regular course work, under the direction of a member of the department, who will discuss the student's work with him four or five times a term.

## 521. MIDDLE HIGH GERMAN LITERATURE I

Fall term. Credit four hours. Prerequisite, German 405 or consent of the instructor. T 1:25-3:20. Mr. Marchand.

Topic: German Minnesang. An attempt will be made to survey the entire field of Minnesang up to and including Oswald von Wolkenstein. Particular attention will be paid to the melodies and musical structure of Minnesang.

## 522. MIDDLE HIGH GERMAN LITERATURE II

Spring term. Credit four hours. Prerequisite, German 405 or consent of the instructor. T 1:25-3:20. Mr. Marchand.

Topic: Early Middle High German Literature. A critical survey of the literature between 1060 and 1185, including a reading of major monuments, such as the *Annolied*, the *Wiener Genesis*, and the *Kaiserchronik*. Particular attention will be paid to the spiritual and philosophical backgrounds of the period.

## [523. GERMAN LITERATURE OF THE LATE MIDDLE AGES]

Fall term. Credit four hours. M 1:25-3:20. Mr. Dallett. Not offered in 1968-69.

## [525. SIXTEENTH-CENTURY GERMAN LITERATURE]

Fall term. Credit four hours. W 2:30-4:25. Mr. Dallett. Not offered in 1968-69.

## [527. SEVENTEENTH-CENTURY GERMAN LITERATURE]

Fall term. Credit four hours. W 1:25-3:20. Not offered in 1968-69.

## [530. EIGHTEENTH-CENTURY LITERATURE OTHER THAN GOETHE]

Spring term. Credit four hours. T 1:25-3:20. Mr. Jolles. Not offered in 1968-69.

## [531. GOETHE]

Fall term. Credit four hours. Th 1:25-3:20. Mr. Blackall. Not offered in 1968-69.

## 533. GERMAN ROMANTICISM

Fall term. Credit four hours. M 2:30-4:25. Mr. Blackall.

Topic: The early Romantics.

## 535. NINETEENTH-CENTURY GERMAN LITERATURE

Fall term. Credit four hours. W 1:25-3:20. Mr. Dallett.

Topic: *Mörrike*.

## 536. SEMINAR ON RICHARD WAGNER

(Also Music 682)

Spring term. Credit four hours. Prerequisites, a reading knowledge of German and ability to read musical notation. M 9:05-11:00. Mr. Blackall and Mr. Grout.

An analysis of Wagner's conception of the music-drama with special reference to *Tristan und Isolde*, *Der Ring des Nibelungen*, and *Die Meistersinger*.

#### 538. TWENTIETH-CENTURY GERMAN LITERATURE

Spring term. Credit four hours. Th 1:25-3:20. Mr. Deinert.

Topic: Rilke.

#### [540. HISTORY AND METHODS OF MODERN GERMAN LITERARY CRITICISM]

Spring term. Credit four hours. Mr. Jolles. Not offered in 1968-69.

542. (Topic to be announced)

Spring term. Four hours credit. W 1:25-3:20. Mr. Muschg.

#### 653-654. SEMINAR IN GERMAN LITERATURE

Throughout the year. Credit four hours a term. Hours to be arranged. Staff.

## Hindi

Messrs. G. H. Fairbanks, J. W. Gair, G. B. Kelley, and staff.

#### 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Drill, M-F at 9:05; lecture, T Th 10:10.

#### 201-202. HINDI READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Hindi; for 202, Hindi 201 or consent of the instructor. Hours to be arranged.

#### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Hindi; for 204, Hindi 203 or consent of the instructor. Hours to be arranged.

#### 301-302. READINGS IN HINDI LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Hindi 202. Hours to be arranged.

#### 303-304. ADVANCED COMPOSITION AND CONVERSATION

Throughout the year. Credit four hours a term. Prerequisite, Hindi 204. Hours to be arranged.

#### 305-306. ADVANCED HINDI READINGS

Throughout the year. Credit four hours a term. Prerequisite, Hindi 202. Hours to be arranged.

Intended for those who wish to do readings in history, government, economics, etc., instead of literature.

#### 401. HISTORY OF HINDI

Fall term in alternate years. Credit four hours. Prerequisites, Hindi 101-102 or equivalent and Linguistics 202. Hours to be arranged. Mr. Fairbanks.

600. SEMINAR IN HINDI LINGUISTICS

(See also Linguistics 331, 432, 521, 522, 530, 531, 532, 534.)

Either term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Fairbanks, Mr. Gair, or Mr. Kelley.

## Indonesian

Messrs. J. M. Echols, J. U. Wolff, and staff.

101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

201-202. INDONESIAN READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Indonesian; for 202, Indonesian 201 or consent of the instructor. Hours to be arranged.

203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Indonesian; for 204, Indonesian 203 or consent of the instructor. Hours to be arranged.

301. READINGS IN INDONESIAN AND MALAY

Either term. Credit four hours. Prerequisite, Indonesian 201-202 or the equivalent. Hours to be arranged.

302. READINGS IN INDONESIAN AND MALAY

Either term. Credit four hours. Prerequisite, Indonesian 301. Hours to be arranged.

303-304. ADVANCED INDONESIAN CONVERSATION AND COMPOSITION

Throughout the year. Credit four hours a term. Prerequisite, Indonesian 204 or the equivalent. Hours to be arranged.

305-306. ADVANCED READINGS IN INDONESIAN AND MALAY LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Indonesian 302 or consent of the instructor. Hours to be arranged.

403. LINGUISTIC STRUCTURE OF INDONESIAN

Either term. Credit four hours. Prerequisites, Indonesian 101-102 or the equivalent, and Linguistics 201. Hours to be arranged. Mr. Wolff.

MALAYO-POLYNESIAN LINGUISTICS

(See Linguistics 573-574)

[SOUTHEAST ASIAN LITERATURE IN TRANSLATION]

(See Comparative Literature 380)

Not offered in 1968-69.

## Italian

Messrs. G. P. Biasin, J. Freccero, Mrs. Anita Grossvogel, Mr. R. A. Hall, Jr., and staff.

For a major in Italian, consult Mr. Biasin and Mr. Hall.

### LANGUAGE AND LINGUISTICS

#### 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Drill, M-F at 8, 12:20, or 1:25; lecture T Th 10:10.

#### 131-132. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. M W F 2:30.

#### 151-152. ELEMENTARY GRADUATE READING COURSE

Throughout the year. Credit three hours a term. Hours to be arranged. Staff.

#### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Italian. T Th 1:25-3.

#### 304. ADVANCED COMPOSITION AND CONVERSATION

Given as required. Credit two to four hours. Prerequisite, Italian 204. Hours to be arranged.

#### [431. STRUCTURE OF ITALIAN]

Fall term in alternate years. Credit four hours. Prerequisite, Qualification in Italian. M W F 9:05. Mr. Hall. Not offered in 1968-69.

#### [432. ITALIAN DIALECTOLOGY]

Spring term in alternate years. Credit four hours. M W F 9:05. Mr. Hall. Not offered in 1968-69.

#### [433. OLD ITALIAN TEXTS]

Fall term in alternate years. Credit four hours. Prerequisite, consent of the instructor. M W F 9:05. Mr. Hall. Not offered in 1968-69.

#### [434. HISTORY OF THE ITALIAN LANGUAGE]

Spring term in alternate years. Credit four hours. Prerequisites, Qualification in Italian and Linguistics 201. M W F 9:05. Mr. Hall. Not offered in 1968-69.

#### 600. SEMINAR IN ITALIAN LINGUISTICS

Offered in accordance with student needs. Credit four hours. Mr. Hall.

### LITERATURE

#### 343-344. PETRARCH

Throughout the year. Credit four hours a term. M W F 10:10. Mr. Freccero.

A study of the poetry in the original and of selected Latin prose in translation. The second semester will place emphasis on Petrarch's role in the foundation of Italian Humanism.

[345-346. DANTE]

Throughout the year. Credit four hours a term. Prerequisite, reading knowledge of Italian and consent of the instructor. Mr. Freccero. Not offered in 1968-69.

361-362. THE MODERN ITALIAN NOVEL

Throughout the year. Credit four hours a term. T Th 3:35-5. Mr. Biasin.  
An analysis of such writers as Verga, Pirandello, D'Annunzio, Moravia, Brancati, Pavese, Tomasi di Lampedusa, Calvino, Bassani, Vittorini, Gadda.

457. EUGENIO MONTALE

Fall term. Credit four hours. Prerequisite, consent of the instructor. W 2:30. Mr. Biasin.

480. ITALO SVEVO

Spring. Credit four hours. W 2-4. Mr. Biasin.

An analysis of the Triestine writer's complete work. In Italian.

545. SPECIAL TOPICS IN THE DIVINE COMEDY

Spring term. Credit four hours. Prerequisite, Italian 345-346 or equivalent. Hours to be arranged. Mr. Freccero.

Admission of advanced students by permission of the instructor.

[549. BIBLICAL ALLEGORY AND THE STRUCTURE OF THE NOVEL]

Not offered in 1968-69.

629. INTRODUCTION TO LITERARY STUDIES

Fall term. Credit four hours. Required of all first-year graduate students in Romance Studies. M W 2:30. Mr. Selig.

## Japanese

Mr. J. McCoy, Mrs. Etsuko Terasaki, and staff.

101-102. BASIC COURSE

Throughout the year. Credit six hours a term. M-F 2:30 and W 1:25.

201-202. INTERMEDIATE JAPANESE

Throughout the year. Credit four hours a term. Prerequisite, Japanese 102. M-F 1:25.

301-302. SELECTED READINGS IN JAPANESE

Throughout the year. Credit four hours a term. Prerequisite, Japanese 201-202 or consent of the instructor. Hours to be arranged. Mrs. Terasaki.

305-306. INTRODUCTION TO CLASSICAL JAPANESE

Throughout the year. Credit four hours a term. Prerequisite, Japanese 301-302 or consent of the instructor. Hours to be arranged. Mrs. Terasaki.

401-402. JAPANESE READING FOR STUDENTS OF CHINESE

Throughout the year in alternate years. Credit three hours a term. Prerequisite, reading knowledge of Chinese and consent of the instructor. M W F 2:30. Fall term, Mr. McCoy; spring term, Mrs. Terasaki.

An introduction to the grammar of modern written Japanese and readings in selected scholarly texts. Designed specifically to enable the student to follow Japanese research published in his own field and to assist him in using the Japanese books, journals, and reference works appropriate to Chinese studies.

[404. LINGUISTIC STRUCTURE OF JAPANESE]

Spring term in alternate years. Credit four hours. Prerequisites, Japanese 102 or consent of the instructor, and Linguistics 201. M W F 2:30. Mr. McCoy. Not offered in 1968-69.

405-406. ADVANCED READINGS IN JAPANESE

Throughout the year. Credit four hours a term. Prerequisite, Japanese 302 or consent of the instructor. Hours to be arranged. Staff.

Topics will be selected on the basis of student needs.

## Javanese

Messrs. J. M. Echols, J. U. Wolff, and Staff.

131-132. ELEMENTARY COURSE

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Indonesian. Hours to be arranged.

133-134. INTERMEDIATE COURSE

Throughout the year. Credit three hours a term. Prerequisite, Javanese 132 or the equivalent. Hours to be arranged.

## Linguistics

Mr. F. B. Agard, Miss Claire Asselin, Messrs. L. J. Benoit, N. C. Bodman, J. M. Cowan, C. L. Eastlack, J. M. Echols, G. H. Fairbanks, F. A. Foos, J. W. Gair, R. A. Hall, Jr., C. F. Hockett, R. B. Jones, Jr., G. B. Kelley, H. L. Kufner, R. L. Leed, A. G. Lozano, P. Lowe, Jr., J. W. Marchand, J. McCoy, J. S. Noblitt, H. M. Olmsted, R. M. Quinn, M. D. Saltarelli, D. F. Solá, D. S. Stark, F. van Coetsem, J. U. Wolff, and staff.

Linguistics 201-202 satisfies the Distribution requirement in the social sciences.

The major in linguistics has three prerequisites: (1) Linguistics 201-202; (2) Qualification in two languages, one from the familiar European group (Latin, Greek, French, Italian, Portuguese, Spanish, German, Russian) and one from the other languages offered at Cornell, with six hours beyond Qualification in one or the other of these two; (3) a two-semester sequence in a related discipline (e.g. the literature of the language in which six hours beyond Qualification was offered as a prerequisite, anthropology, computer science, mathematics, philosophy, psychology, or sociology). Completion of the major requires: (1) Linguistics 301, 303, 304; (2) a course in historical linguistics, either a course

in historical method such as Linguistics 502 or the history of a specific language or family; (3) a minimum of 8 additional hours in Linguistics chosen in consultation with the adviser. Prospective majors should see Mr. Gair.

**201-202. INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE**

Throughout the year. Credit three hours a term. M W F 9:05 or 10:10. Messrs. Agard, Gair, and Kelley.

An introductory survey course designed to acquaint the student with the nature of human language and with its systematic study.

**207. PRACTICAL PHONETICS**

Fall term. Credit three hours. Prerequisite, Linguistics 202. M W 3:35-4:50. Mr. Agard.

**301-302. THE STRUCTURE OF ENGLISH**

Throughout the year. Credit four hours a term. M W F 11:15. Mr. Cowan and staff.

Modern structural analysis of English in the first term. In the second term, comparative analysis using the various contrastive sketches of English and other languages recently published. Emphasis will be on the teaching of English as a second language.

**303. PHONOLOGY**

Fall term. Credit four hours. T Th 3:35-4:50. Mr. Agard.

**304. MORPHOLOGY**

Spring term. Credit four hours. T Th 3:35-4:50. Mr. Agard.

**305. LANGUAGE STRUCTURES**

Fall term. Credit four hours. T Th 11:15-1:10. Mr. Jones, Mr. Solá.

**306. SYNTAX**

Spring term. Credit four hours. T Th 11:15-1:10. Mr. Kelley.

**[331. INDIA AS A LINGUISTIC AREA]**

Fall term in alternate years. Credit four hours. Prerequisite, Linguistics 202. Hours to be arranged. Mr. Fairbanks, Mr. Gair, Mr. Kelley. Not offered in 1968-69.

**403-404. ANALYTICAL TECHNIQUES**

Throughout the year. Credit four hours a term. Prerequisite, Linguistics 201-202. M W F 10:10. Mr. Hockett and staff.

A practical training course in the techniques of observation and analysis of descriptive linguistics.

**406. DIALECTOLOGY**

Spring term. Credit four hours. W 1:25-3:20. Mr. Hall.

A general survey of the study of dialectal variations in language and the various methodological problems it raises, in European and non-European languages.

## [413. LINGUISTIC DATA PROCESSING]

Fall term. Credit two hours. Prerequisite, Linguistics 201 and consent of the instructor., T Th 1:25, laboratory hour to be arranged. Mr. Kelley. Not offered in 1968-69.

## [432. INDO-ARYAN STRUCTURES]

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 201. Hours to be arranged. Mr. Gair. Not offered in 1968-69.

## [436. DRAVIDIAN STRUCTURES]

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 201. Hours to be arranged. Mr. Kelley. Not offered in 1968-69.

## 441-442. HISTORY OF THE ROMANCE LANGUAGES

Throughout the year in alternate years. Credit four hours a term. T Th 1:25-2:40. Mr. Hall.

## [443-444. COMPARATIVE ROMANCE LINGUISTICS]

Throughout the year in alternate years. Credit four hours a term. T Th 1:25-2:40. Mr. Hall. Not offered in 1968-69.

## 445. PROBLEMS AND METHODS IN ROMANCE LINGUISTICS

Fall term every third year. Credit four hours. W 1:25-3:20. Mr. Hall.

Examination of selected samples of various methodologies in Romance linguistics, with reports and discussion.

## [446. ROMANCE DIALECTOLOGY]

Spring term every third year. Credit four hours. M W F 9:05. Mr. Hall. Not offered in 1968-69.

Examination of various types of dialectological description; study of overall relation among Romance dialects.

## 449. AREAL TOPICS IN ROMANCE LINGUISTICS

Fall term every third year. Credit four hours. Course may be repeated. M W F 11:15. Mr. Hall.

Reading of texts and study of relationships of each area (Dalmatian, Roumanian, Provençal, Sardinian, Catalan).

Related linguistics courses offered in other departments are: Classics 423, 424; English 383, 501, 505; Philosophy 215, 590, 595; and Psychology 215, 313, 416.

## [502. COMPARATIVE METHODOLOGY]

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 201-202. M W F 3:35-4:50. Mr. Fairbanks. Not offered in 1968-69.

## [504. HISTORY OF LINGUISTICS]

Spring term. Credit four hours. Prerequisite, consent of the instructor. W 1:25-3:20. Mr. Hall. Not offered in 1968-69.

## [505. LITERATURE, LANGUAGE, AND CULTURE]

Fall term. Credit four hours. W 1:25-3:20. Mr. Hall. Not offered in 1968-69.

506. PIDGIN AND CREOLE LANGUAGES

Spring term. Credit four hours. M W F 11:15. Mr. Hall.

A survey of the field of pidginized and creolized languages, with discussion of methodological problems, historical relationships, and reading of selected texts.

507-508. FIELD METHODS AND LINGUISTIC TYPOLOGY

Throughout the year. Credit four hours a term. Prerequisite for 507, Linguistics 404. M W F 9:05. Messrs. Hockett and Wolff.

511-512. ACOUSTICAL PHONETICS

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Cowan.

A rapid survey of experimental articulatory phonetics; the speech mechanism as a sound generator; sound spectrography; psychophysiology of hearing, application of acoustical analysis to the study of speech sounds. Requires no mathematical training beyond arithmetical computation.

513-514. TRANSFORMATIONAL ANALYSIS

Throughout the year. Credit four hours a term. T Th 10:10-12:05. Miss Asselin and Mr. Saltarelli.

An introduction to the theory, literature, and practice.

[516. LITERACY]

Spring term. Credit four hours. Prerequisite, Linguistics 201. T Th 1:25-2:40. Mr. Solá. Not offered in 1968-69.

521-522. COMPARATIVE INDO-EUROPEAN LINGUISTICS

Throughout the year in alternate years. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Fairbanks.

530. ELEMENTARY PALI

Either term as needed. Credit three hours. Hours to be arranged. Mr. Gair.

[531-532. ELEMENTARY SANSKRIT]

Throughout the year in alternate years. Credit three hours a term. Hours to be arranged. Mr. Fairbanks. Not offered in 1968-69.

534. COMPARATIVE INDO-ARYAN

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 202 and 102 or equivalent of an Indo-Aryan language. Hours to be arranged. Mr. Fairbanks.

536. COMPARATIVE DRAVIDIAN

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 202 and 102, or equivalent of a Dravidian language. Hours to be arranged. Mr. Kelley.

537-538. OLD JAVANESE

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Echols.

561-562. COMPARATIVE SLAVIC LINGUISTICS

Throughout the year in alternate years. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Foos.

571-572. SEMINAR IN SOUTHEAST ASIAN LINGUISTICS

Throughout the year. Credit four hours a term. Prerequisites, Linguistics 201-202 and consent of the instructor. Hours to be arranged. Mr. Jones.

Descriptive and comparative studies of mainland Southeast Asian languages are dealt with in alternate terms. Topics may be selected in accordance with the interests of the students.

573-574. MALAYO-POLYNESIAN LINGUISTICS

Throughout the year. Credit four hours a term. Prerequisites, Linguistics 201-202 and consent of the instructor. Hours to be arranged. Mr. Wolff.

[581-582. SINO-TIBETAN LINGUISTICS]

Throughout the year. Credit four hours a term. Prerequisite, Linguistics 201-202 or Chinese 402-403 and consent of the instructor. Th 2:30-4:25. Mr. Bodman. Not offered in 1968-69.

583. CONTRASTIVE VIETNAMESE AND CHINESE GRAMMAR

Either term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Quinn.

600. SEMINAR

Each term. Admission by permission of the instructor. Hours and credits to be arranged. Various members of the Staff.

Subject to the needs of students and to the limitations of staff time, advanced seminars are set up in a wide variety of topics, which, in the past, have included such as the following: contemporary grammatical theory, applied linguistics in language teaching, applied linguistics in literary training and orthography formation, English grammar, problems and methods of Romance linguistics, Romance linguistic geography, Old Provençal texts, Old Italian texts, problems of Romance genealogy, Romance-based Creoles, German dialects, and field methods in phonology.

615-616. DIRECTED RESEARCH

## Portuguese

Messrs. F. B. Agard, C. L. Eastlack, and Staff.

101-102. BASIC COURSE

Throughout the year. Credit six hours a term. M-F 2:30, plus two hours to be arranged.

131-132. ELEMENTARY COURSE

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Spanish and consent of the instructor. M W F 10:10.

A basic course designed principally for students majoring in Spanish or interested especially in Portugal or Brazil. Phonology, grammar, listening comprehension, and reading.

203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Portuguese; for 204, Portuguese 203 or consent of the instructor. M-F 11:15.

## 303-304. ADVANCED COMPOSITION AND CONVERSATION

Throughout the year. Credit four hours a term. Prerequisite, Portuguese 204. Hours to be arranged.

## 305-306. ADVANCED READINGS

Throughout the year. Credit four hours a term. Prerequisite, Portuguese 304. Hours to be arranged.

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

## Quechua

D. F. Solá.

## 133-134. INTERMEDIATE COURSE

Throughout the year. Credit three hours a term. Prerequisites, qualification in Spanish and Quechua 101S (see *Announcement of the Summer Session*) or comparable experience. T Th 11:15-1:10.

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

## 600. SEMINAR IN QUECHUA LINGUISTICS

Either term. Admission by permission of the instructor. Hours and credits to be arranged. Mr. Solá.

## Russian

Miss Patricia Carden, Messrs. F. Foos, G. Gibian, Miss Antonia Glasse, Messrs. B. Glasse, M. Horwitz, Mrs. Augusta L. Jaryc, Mr. R. L. Leed, Mrs. Alla Novosilzov, Mr. H. M. Olmsted, Mrs. Marla Wykoff, and staff.

Russian majors study Russian language, literature, and linguistics, with emphasis placed in accordance with their specific interests.

It is desirable, although not necessary, for a prospective major to complete Russian 101-102, 201-202, 203-204 as a freshman or sophomore since these courses are prerequisite to most of the junior and senior courses which count toward the major. A student may be admitted to the major upon satisfactory completion of Russian 102 or the equivalent.

Students who elect to major in Russian should consult with Mr. Gibian and Mr. Leed as soon as possible.

Students taking Honors in Russian undertake individual reading and research, write an Honors essay, and take a comprehensive examination at the end of the senior year.

For a major in Russian a student will be required to complete: (1) Russian 303-304 or the equivalent; (2) twenty-four hours from 300- and 400-level literature and linguistics courses of which twelve hours must be in literature in the original.

Prospective teachers of Russian in secondary schools should take

Linguistics 201 while a freshman or sophomore, followed by Russian 403-404.

For Distribution Russian 201-202 may *not* be counted as a course in literature.

Of the courses listed below, those dealing with literature are staffed and administered by the Department of Russian Literature, and inquiries in regard to them ought to be addressed to that Department (191 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (131 Morrill Hall).

## LANGUAGE AND LINGUISTICS

### 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Students who have previously studied Russian should consult page 11 before registering for this course. Drill M-F 8, 9:05, 10:10, 11:15, or 12:20; lectures M W 2:30 or T Th 11:15 or 2:30.

### 131S-132S. ELEMENTARY COURSE IN SLAVIC LANGUAGES

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Russian and consent of the instructor. Hours to be arranged. Staff.

In a given year one of the following languages will be offered according to demand: Serbo-Croatian, Bulgarian, Slovenian, Polish, or Czech.

### 131-132. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. M W F 3:35 (for undergraduate students) or 4:40 (for graduate students). Mr. Olmsted.

### 133-134. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. Prerequisite, Russian 132 or the equivalent. Hours to be arranged. Mr. Olmsted.

### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Russian (for definition of Qualification see page 11). M W F 10:10, 12:20, or 2:30; plus lecture at T Th 9:05 or 10:10.

### 303-304. ADVANCED COMPOSITION AND CONVERSATION

Throughout the year. Credit four hours a term. Prerequisite for 303, Russian 204. Section 1, M W F 11:15 plus one hour to be arranged; section 2, four hours to be arranged. Mrs. Jaryc.

Emphasis is placed upon increasing the student's oral and written command of Russian. Advanced grammar, syntax, usage, idiomatic expressions. Oral reports, group discussion, selected readings of classic and Soviet writers.

### 305-306. ADVANCED READINGS

Throughout the year. Credit four hours a term. Prerequisite, Russian 202. Hours to be arranged. Mrs. Jaryc.

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

401-402. HISTORY OF THE RUSSIAN LANGUAGE

Throughout the year in alternate years. Credit four hours a term. Prerequisites, Qualification in Russian and Linguistics 201. M W F 2:30. Mr. Leed.

The study of the divisions of the Russian language chronologically and geographically; the relationships of the Russian language, the Slavic group, the Indo-European group; the changes in the sounds and forms of the Russian language; vocabulary borrowings from Eastern and Western languages.

[403. LINGUISTIC STRUCTURE OF RUSSIAN]

Fall term in alternate years. Credit four hours. Prerequisites, Qualification in Russian and Linguistics 201-202. M W F 2:30. Mr. Leed. Not offered in 1968-69.

[404. RUSSIAN FOR TEACHERS]

Spring term in alternate years. Credit four hours. Prerequisites, Qualification in Russian, Linguistics 201, and Russian 403. M W F 2:30. Mr. Leed. Not offered in 1968-69.

501. OLD CHURCH SLAVIC

Fall term in alternate years. Credit four hours. Hours to be arranged. Mr. Olmsted.

502. OLD RUSSIAN

Spring term in alternate years. Credit four hours. Hours to be arranged. Mr. Foos.

COMPARATIVE SLAVIC LINGUISTICS

(See Linguistics 561-562.)

600. SEMINAR IN SLAVIC LINGUISTICS

Offered in accordance with student needs. Credit four hours. Hours to be arranged. Mr. Leed, Mr. Olmsted, or Mr. Foos.

611. SEMINAR IN RUSSIAN DIALECT GEOGRAPHY

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Leed.

Study of the principal divisions of Russian dialects, the history of their development, their synchronic relationship, and the analysis of phonological, grammatical, and lexical isoglosses. Practical work in transcribing. Relationship of regional dialects to the standard language. Interpretation of the Russian Dialect Atlas.

LITERATURE

201-202. RUSSIAN READING

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Russian (for definition of Qualification see page 11). M W F 10:10 or T Th S 10:10.

RUSSIAN LITERATURE

(Comparative Literature 207-208)

In translation. Throughout the year. Credit three hours a term. M W F 12:20. Miss Carden.

## 292. SUPERVISED READING IN RUSSIAN LITERATURE

Either term. Variable credit. By invitation of the Department.

## THE RUSSIAN NOVEL

(Comparative Literature 367)

In translation. Fall term. Credit four hours. T Th S 9:05. Mr. Horwitz.  
Turgenev, Tolstoy, Dostoevsky.

## SOVIET LITERATURE

(Comparative Literature 368)

In translation. Spring term. Credit four hours. M W F 10:10. Mr. Horwitz.

314. INTELLECTUAL BACKGROUND OF RUSSIAN LITERATURE,  
1750-1900

Spring term. Credit four hours. M W F 11:15. Miss Glasse.

Rise of Romanticism. Slavophiles. Western influences. Conducted in English, but reading knowledge of Russian required. Open to graduate students.

## 331. RUSSIAN POETRY

Fall term. Credit four hours. Prerequisites, Russian 202 and consent of the instructor. T Th 2:30 and one hour to be arranged. Mr. Gibian.

## [332. RUSSIAN THEATER AND DRAMA]

Fall term. Credit four hours. Hours to be arranged. Miss Glasse. Not offered in 1968-69.

## [334. THE RUSSIAN SHORT STORY]

Spring term. Credit four hours. T Th 2:30 and one hour to be arranged. Prerequisite, Russian 202 and consent of the instructor. Miss Carden. Not offered in 1968-69.

## 421. SUPERVISED READING AND RESEARCH

Either term. Variable credit. By permission of the Department.

## 431. RUSSIAN PROSE FICTION

Fall term. Credit four hours. Prerequisites, Russian 332 or 334 or the equivalent, and consent of the instructor. T Th 2:30 and one hour to be arranged. Miss Carden.

## 432. PUSHKIN

Spring term. Credit four hours. Prerequisite, consent of the instructor. T Th 1:25, and one hour to be arranged. Miss Carden.

## [435. GOGOL]

Fall term. Credit four hours. Prerequisites, Russian 332 or 334 or the equivalent, and consent of the instructor. M W F 10:10. Mr. Horwitz. Not offered in 1968-69.

## 493. HONORS ESSAY TUTORIAL

Either term. Credit four hours.

## 517. RUSSIAN STYLISTICS

Fall term. Credit four hours. Hours to be arranged. Miss Glasse.

Literary uses of the Russian language. Close examination of texts from various periods and genres. Practical exercises.

[518. RUSSIAN STYLISTICS]

Spring term. Credit four hours. Hours to be arranged. Miss Glasse. Not offered in 1968-69.

[520. STUDIES IN RUSSIAN POETRY]

Spring term. Credit four hours. Hours to be arranged. Not offered in 1968-69.

521. RUSSIAN LITERATURE FROM THE BEGINNINGS TO 1700

Spring term. Credit four hours. Reading knowledge of Russian required. Hours to be arranged. Mr. Olmsted.

Old Russian literature, with attention to the development of the Russian literary language.

522. EIGHTEENTH-CENTURY LITERATURE

Fall term. Credit four hours. Prerequisite, Russian 521 or consent of the instructor. Hours to be arranged. Miss Glasse.

523. EARLY NINETEENTH-CENTURY LITERATURE

Spring term. Credit four hours. Prerequisite, Russian 522 or consent of the instructor. Hours to be arranged, Miss Glasse.

534. TOPICS IN RUSSIAN SYMBOLISM

Spring term. Credit four hours. W 3:35-5:30. Mr. Horwitz.

601. INTRODUCTION TO GRADUATE STUDY

Fall term. Credit four hours. T 3:35-5:30. Staff.

Required of all first-year graduate students majoring in Russian literature. Bibliography, methods of literary analysis, stylistics, topics in scholarship.

671. SEMINAR IN TWENTIETH-CENTURY RUSSIAN LITERATURE

Fall term. Credit four hours. Th 3:35-5:30. Topic varies from year to year. Topic to be announced. May be taken repeatedly. Mr. Gibian.

[672. SEMINAR IN NINETEENTH-CENTURY RUSSIAN LITERATURE]

Spring term. Credit four hours. Hours to be arranged. Not offered in 1968-69.

## Sinhalese

Messrs. G. H. Fairbanks, J. W. Gair, and staff.

(See also Linguistics 331, 432, 521, 522, 530, 531, 532, 534.)

101-102. BASIC COURSE

Throughout the year. Credit six hours a term. M-F 9:05 and T Th 10:10.

201-202. SINHALESE READING

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Sinhalese. Hours to be arranged.

## Spanish

Messrs. F. B. Agard, C. Bandera, J. S. Bernstein, D. Brenes, Mrs. Amanda Chacona, Messrs. J. Kronik, A. G. Lozano, D. Nasjleti, M. D. Saltarelli, K.-L. Selig, D. F. Solà and staff.

The Spanish major is designed to give the student oral control of the language, adequate proficiency in its written expression, and a creditable knowledge of the literature and culture of Spain and Spanish America.

Satisfactory completion of the major should enable the student to meet language requirements for a provisional teaching certificate, to do graduate work in Spanish, or to satisfy government standards for acceptance into training programs of the U.S. State Department and other agencies.

For a major in Spanish the following are to be completed: (1) 311-312 and 303-304 or the equivalent of the latter two courses; (2) twenty-four additional hours in Spanish literature or historical linguistics including at least two 400 level courses; (3) 403.

For acceptance into the major the student must have Spanish 201 and 204 or their equivalent and the approval of the Chairman of the Department of Romance Studies and of its adviser. The major adviser for 1968-69 is Mr. Brenes.

The Distribution requirement in the Humanities is satisfied in Spanish by any two of the following courses: Spanish 201, 311, 312; but no course may be counted if it is used in fulfillment of the language requirement.

Of the courses listed below, those dealing with literature are staffed and administered by the Department of Romance Studies, and inquiries in regard to them ought to be addressed to that Department (278 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (106 Morrill Hall).

### LANGUAGE AND LINGUISTICS

#### 101. BASIC COURSE

Fall term. Credit six hours. Students who have previously studied Spanish should consult page 11 before registering for this course. Drill M-F 8, 9:05, 12:20, or 1:25; lecture M W 2:30.

#### 102. BASIC COURSE

Either term. Credit six hours. Prerequisite, Spanish 101 or its equivalent. Students who have previously studied Spanish should consult page 11 before registering for this course. Fall term: drill M-F 8, 9:05, or 1:25; lecture, W F 12:20. Spring term: drill M-F 8, 9:05, 12:20, or 1:25; lecture M W 2:30.

#### 131-132. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. M W F 8 or 11:15; lecture, Th 9:05.

## 204 SPANISH

### 133-134. ELEMENTARY READING COURSE

Throughout the year. Credit three hours a term. Prerequisite, Spanish 132 or the equivalent. M W F 10:10 or 2:30; lecture, Th 3:35.

### 203. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, Qualification in Spanish (for definition of Qualification see page 11). Fall term: M-F 9:05, 10:10, or 11:15. Spring term: M-F 9:05 or 1:25.

Guided conversation, grammar review, and oral and written composition. Emphasis is on increasing the student's oral and written command of Spanish.

### 204. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, Spanish 203. Fall term: M-F 2:30. Spring term: M-F 8, 9:05, 10:10, or 11:15.

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

### 303. ADVANCED COMPOSITION AND CONVERSATION

Fall term. Credit four hours. Prerequisite, Spanish 204. M-F 10:10.

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

### 304. ADVANCED COMPOSITION AND CONVERSATION

Spring term. Credit four hours. Prerequisite, Spanish 303. M-F 10:10.

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

### 401-402. HISTORY OF THE SPANISH LANGUAGE

Throughout the year in alternate years. Credit four hours a term. Prerequisites, Qualification in Spanish, and Linguistics 201. M W F 2:30. Mr. Lozano, Mr. Saltarelli, or Mr. Solá.

The development of Spanish phonology, grammar, and lexicon, from its Latin origin to modern times.

### 403. THE GRAMMATICAL STRUCTURE OF SPANISH

Fall term. Credit four hours. Prerequisites, Qualification in Spanish and Linguistics 201. M W F 11:15. Mr. Solá.

Descriptive analysis of the morphological and syntactical structure of present-day standard Spanish.

### 404. SPANISH FOR TEACHERS

Spring term. Credit four hours. Prerequisites, Qualification in Spanish, and Linguistics 201. M W F 11:15. Mr. Lozano.

A course in methodology and applied linguistics for prospective teachers of the Spanish language. A survey of current attitudes, methods, materials, and techniques. The application of descriptive linguistics to the organization of lesson material, illustrated mainly through the contrastive study of Spanish and English phonology. Required for provisional New York State teacher certification.

## THE COMPARATIVE STUDY OF THE ROMANCE LANGUAGES

(See Linguistics 441-442, 443-444, 445, 446, 449)

## 600. SEMINAR IN IBERO-ROMANCE LINGUISTICS

Offered in accordance with student needs. Credit four hours. Hours to be arranged. Mr. Agard or Mr. Solá.

## LITERATURE

## 201. INTRODUCTION TO SPANISH LITERATURE

Either term. Credit three hours. Prerequisite, Qualification in Spanish (for definition of Qualification see page 11). M W F 11:15 or T Th S 9:05. Mr. Bandera, Mr. Brenes, and staff.

An intermediate reading course in which Spanish texts of established literary quality are read and analyzed. The purpose is twofold: to develop reading and speaking facility through acquisition of vocabulary and idiom, and to develop methods and habits of critical appreciation of a foreign literature. Class discussion is conducted mainly in Spanish. The literature course which normally follows Spanish 201 is Spanish 311 or 312.

## 201A. INTRODUCTION TO SPANISH AMERICAN LITERATURE

Either term. Credit three hours. Prerequisite, Qualification in Spanish (for definition of Qualification see page 11). Fall, T Th S 8, Mr. Bernstein. Spring, M W F 11:15, instructor to be appointed.

An intermediate reading course in which Spanish American texts of established literary quality are read and analyzed. The purpose is twofold: to develop reading and speaking facility through acquisition of vocabulary and idiom, and to develop methods and habits of critical appreciation of a foreign literature. Class discussion is conducted mainly in Spanish. The literature course which normally follows Spanish 201A is Spanish 311 or 312.

## 205. THE MODERN SPANISH NOVEL

Fall term. Credit three hours. M W F 11:15. Mr. Kronik.

For description see Freshman Humanities Program, page 30.

## 206. THE MODERN SPANISH DRAMA

Spring term. Credit three hours. M W F 11:15. Mr. Kronik.

For description see Freshman Humanities Program, page 30.

## 311-312. MASTERPIECES OF HISPANIC LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Spanish 201, four years entrance Spanish, or consent of the instructor. May be entered in the second term. M W F 12:20. Mr. Bandera. Spring term 312, M W F 12:20, Mr. Bandera; T Th S 10:10. Mr. Brenes.

Reading and discussion of representative works of Spanish and Spanish American literature. Works chosen are read in their entirety. Most of the first semester material is from Golden Age and colonial authors. Second semester deals with the nineteenth and twentieth centuries. Class conducted in Spanish.

## 390. THE POST-CIVIL WAR NOVEL IN SPAIN

Spring term. Credit four hours. Prerequisite, one 300-level course or consent of the instructor. M W F 10:10. Mr. Kronik.

Reading and discussion of Spanish fiction of the past twenty-five years (Cela, Laforet, Zuzunegui, Delibes, Romero, etc.). Conducted in Spanish.

397-398. THE MODERN SPANISH AMERICAN NOVEL

Throughout the year. Credit four hours a term. Prerequisite, a Spanish 300 literature course or consent of the instructor. May be entered second term. T Th S 11:15. Mr. Bernstein.

Reading and class discussion of significant novels. Fall term: emphasis on regionalist and social novels. Spring term: emphasis on the psychological novel.

429-430. HONORS WORK IN HISPANIC LITERATURE

Throughout the year. May be entered in the second term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Staff.

440. MEDIEVAL LITERATURE

Spring term. Credit four hours. Prerequisite, a Spanish 300 literature course or consent of the instructor. M W F 3:35. Mr. Bandera.

Critical literary analysis of major epic and nonepic works of the Spanish Medieval Period.

[455. SIXTEENTH-CENTURY SPANISH POETRY]

Fall term. Credit four hours. Prerequisite, one 300 level course or consent of the instructor. Mr. Selig. Not offered in 1968-69.

[457-458. CERVANTES]

Throughout the year. Credit four hours a term. Prerequisite, a Spanish 300 literature course or consent of the instructor. May be entered in the second term. Hours to be arranged. Mr. Brenes. Not offered in 1968-69.

464. DRAMA OF THE SPANISH GOLDEN AGE

Spring term. Credit four hours. M W F 1:25. Mr. Selig.

Critical analysis of selected plays by Lope de Vega, Tirso de Molina, Calderón, and Alarcón.

[466. SEVENTEENTH-CENTURY SPANISH POETRY]

Spring term. Credit four hours. Prerequisite, one 300 level course or consent of the instructor. Mr. Selig. Not offered in 1968-69.

469. GOLDEN AGE NONDRAMATIC LITERATURE

Fall term. Credit four hours. Prerequisite, two 300 level literature courses or consent of the instructor. T Th S 9:05. Mr. Brenes.

A study of selected works by Quevedo, Gracián, Saavedra Fajardo, Góngora and Fray Luis de León. Class conducted in Spanish.

483. EIGHTEENTH AND NINETEENTH-CENTURY SPANISH DRAMA

Fall term. Credit four hours. Prerequisite, one 300 level literature course or consent of the instructor. M W F 10:10. Mr. Kronik.

A study of the current and major works of the theater in Spain from the neo-classic period to Galdós. Conducted in Spanish.

489. SPANISH AMERICAN LITERATURE TO 1888

Fall term. Credit four hours. Prerequisite, a Spanish 300 level literature course or consent of the instructor. T Th S 12:20. Mr. Bernstein.

Reading and class discussion of significant Spanish American works of prose and poetry from the Colonial Period and the nineteenth century.

## 541. SEMINAR IN SPANISH LITERATURE: LA CELESTINA

Fall term. Credit four hours. T 2:30-4:30. Mr. Selig.

## 590. GRADUATE SEMINAR IN SPANISH AMERICAN LITERATURE

Spring term. Credit four hours. Hours to be arranged. Mr. Bernstein.

Topic to be announced.

## 629. INTRODUCTION TO LITERARY STUDIES

Fall term. Credit four hours. Required of all first-year graduate students in Romance studies. M W 2:30. Mr. Selig.

## 639-640. SPECIAL TOPICS IN HISPANIC LITERATURE

Throughout the year. Credit four hours a term. For graduate students. Hours to be arranged. Staff.

## Tagalog

Mr. J. U. Wolff and staff.

## 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Offered according to demand.

## 403. LINGUISTIC STRUCTURE OF TAGALOG

Either term. Credit four hours. Prerequisite, Linguistics 201. Hours to be arranged. Mr. Wolff.

## Telugu

Mr. G. B. Kelley and staff.

## 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Drill M-F 9:05, lecture T Th 10:10.

## 201-202. TELUGU READING

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Telugu. Hours to be arranged.

(See also Linguistics 331, 436, 536.)

## Thai

Mr. R. B. Jones, Jr. and staff.

## 101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

## 201-202. THAI READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Thai; for 202, Thai 201 or consent of the instructor. Hours to be arranged. Mr. Jones.

203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Thai; for 204, Thai 203 or consent of the instructor. Hours to be arranged. Mr. Jones.

301-302. ADVANCED THAI

Throughout the year. Credit four hours a term. Prerequisite, Thai 201-202 or the equivalent. Hours to be arranged. Mr. Jones.

Selected readings in Thai writings in various fields.

305-306. THAI LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Thai 301-302 or consent of the instructor. Hours to be arranged. Mr. Jones.

Reading of some of the significant novels, short stories, and letters written since 1850.

## Urdu

Mr. G. H. Fairbanks and staff.

101-102. BASIC COURSE

Throughout the year. Credit six hours a term. Drill, M-F at 9:05. Lecture, T Th 10:10.

(See also Linguistics 331, 432, 521, 522, 530, 531, 532, 534)

201-202. URDU READING

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Urdu. Hours to be arranged.

## Vietnamese

Messrs. R. B. Jones, Jr., R. M. Quinn, and staff.

101-102. BASIC COURSE

Throughout the year. Credit six hours a term. M-F 2:30 and T Th 1:25.

201-202. VIETNAMESE READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Vietnamese; for 202, Vietnamese 201 or consent of the instructor. M W F 11:15. Mr. Quinn.

203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Vietnamese; for 204, Vietnamese 203 or consent of the instructor. Hours to be arranged. Mr. Quinn.

301-302. ADVANCED VIETNAMESE

Throughout the year. Credit four hours a term. Prerequisite, Vietnamese 201-202 or consent of the instructor. M W F 1:25. Mr. Quinn.

## 305-306. VIETNAMESE LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Vietnamese 301-302 or consent of the instructor. Hours to be arranged. Messrs. Jones and Quinn.

Reading of selections from contemporary literature.

## MUSIC

Mr. J. T. H. Hsu, Chairman; Messrs. W. W. Austin, G. C. Green, D. J. Grout, W. C. Holmes, K. Husa, J. Kirkpatrick, W. F. Meyer, D. Montagu, R. M. Palmer, D. R. M. Paterson, H. E. Samuel, T. A. Sokol, M. W. Stith, Miss Barbara Troxell.

Freshmen considering music as a possible major or minor field should register for Music 151-152, and should consult the chairman of the Department of Music as early as possible, to make tentative plans for a comprehensive program in accordance with their abilities and previous musical training. The sophomore year is not too late for a decision, provided that during that year the student is enrolled in the appropriate courses. The Distribution requirements should be completed by the end of the sophomore year.

Prerequisites for admission to the major are: Music 151-152, with a grade above C in each part of the final examination (including sight singing and keyboard playing); Music 282; Music 321-322; and participation in one of the musical organizations or ensembles (Music 331 through 338 and 441 through 444).

Required courses for the A.B. degree with a major in music are: Music 351-352; 381-382; 451 or 453; 481; a second year of individual instruction in performance and of participation in a musical organization or ensemble; a course in conducting (Music 461 or 463); and one of the following: 457, 458, or 482.

Candidates for Honors in music will be designated by the Department at the beginning of the second semester of their junior year. Honors candidates will take Music 401-402 in addition to the courses regularly required for a major. Each candidate will submit an Honors thesis or a composition not later than April 1 of his senior year and will be required to pass a general examination in the theory and history of music not later than May 1 of his senior year.

The Distribution requirement in the expressive arts is satisfied in music by Music 151-152, 213-214, 215-216, 213-321-322, 213 plus any three hours in Courses 331 through 338, or by six hours in any other courses for which a student is qualified and has the approval of the Department.

A large collection of recorded music and scores is housed in the Department of Music, where a number of phonograph listening rooms are available. These facilities may be used by any member of the student body at hours to be announced each term.

Choral and instrumental ensembles are trained and directed by members of the departmental staff each term, and all students who are

interested are invited to join one or more of these groups. These ensembles include the Sage Chapel Choir, the Cornell Chorus, the Cornell University Glee Club, the Bands (Marching Band, Wind Ensemble, Symphonic Band, Brass Ensembles), the Cornell Symphony Orchestra, the Cornell Chamber Orchestra, and Chamber Music groups. For rehearsal hours and conditions for academic credit, see Music 331 through 338 and 441 through 444. Announcements of tryouts for all organizations will be made at the beginning of the fall term.

## Music Theory

### 151-152. THEORY I

Throughout the year. Credit three hours a term. A knowledge of the rudiments of music and some ability to perform are required for admission. Enrollment in the course is provisional pending the demonstration of adequate background and ability in proficiency tests given at the beginning of the term. First term prerequisite to second. M T W Th F 9:05. Mr. Paterson.

Designed for students expecting to major in music and other qualified students. An integrated theory course, prerequisite for all advanced courses in music. Detailed study of the fundamental elements of music: rhythm, scales, intervals, triads; melodic movement, harmonic progression, and introduction to analysis and elementary composition. Drill in aural discrimination, sight singing, and keyboard harmony; rhythmic, melodic, and harmonic dictation; and score reading.

### 215-216. BASIC TECHNIQUES OF MUSIC

Throughout the year. Credit three hours a term. This course may not be counted toward the requirements for the major in music. Ability to sing on pitch is required for admission; some ability to play an instrument is desirable. First term prerequisite to second. M T W Th F 9:05. Mr. Green. Music 215 will also be given in the spring term (M T W Th F 9:05, Messrs. Hsu and Meyer).

Study of the fundamental techniques of music. Includes rhythmic, melodic, and harmonic dictation; sight singing; writing of melody and simple four-part harmony; keyboard harmony; and listening to recorded masterpieces. Second term includes introduction to analysis and simple contrapuntal writing for voices and instruments.

### 351-352. THEORY II

Throughout the year. Credit four hours a term. Prerequisite, Music 152 or equivalent. First term prerequisite to second. M W F 10:10 and T Th 2:30. Mr. Green.

Includes advanced harmony and intermediate counterpoint and analysis. A continuation of Music 151-152, with more advanced drill in the areas specified in the description of that course. Special emphasis on the study of chromatic harmony and contrapuntal writing in two and three voices. There will be analysis of melody and harmony and of some of the fundamental homophonic and contrapuntal forms.

### 451. TONAL COUNTERPOINT AND ANALYSIS: EIGHTEENTH CENTURY

Fall term. Credit four hours. Prerequisite, Music 352 or equivalent. M W 12:20 and Th 1:25. Messrs. Paterson and Palmer.

Advanced problems of contrapuntal writing in three voices. An introduction to invertible counterpoint and fugal writing. Representative works employing the fugal principle will be analyzed with particular attention to those of J. S. Bach.

[453. MODAL COUNTERPOINT AND ANALYSIS]

Fall term. Credit four hours. Prerequisite, Music 352 or equivalent. Mr. Palmer. Not offered in 1968-69.

[455. ORCHESTRATION]

Spring term. Credit four hours. Prerequisite, Music 352. Mr. Husa. Not offered in 1968-69. Will be offered in 1969-70.

457-458. COMPOSITION (PROSEMINAR)

Credit four hours a term. May be entered either term. Prerequisite, Music 352 or equivalent. T 2:30-4:30 and one additional hour to be arranged. Messrs. Husa, Green, and Palmer.

Problems of writing in the smaller forms and in various media. Class discussion and performance, with analysis of contemporary works. The basic techniques of composition and their extensions in the twentieth century will be related to individual abilities and needs. Students will be required to attend the Friday afternoon reading sessions of student compositions and occasionally to attend rehearsals of the Cornell musical organizations and ensembles.

461. ORCHESTRAL CONDUCTING

Spring term. Credit two hours. Prerequisite, Music 352. T 2:30-4:30. Mr. Husa.

The fundamentals of score reading and conducting technique. Study of orchestral scores from baroque, classical, romantic, and contemporary periods. Students will occasionally conduct a small group. Opportunity will also be given to those who qualify to conduct the University Orchestras.

463. CHORAL CONDUCTING

Fall term. Credit two hours. Prerequisite, Music 352. Th 1:25-3:20. Mr. Sokol.

A study of the techniques of choral music: conducting, score reading, rehearsing, and arranging music for chorus.

464. CHORAL STYLE

Spring term. Credit two hours. Prerequisite, Music 352. Th 1:25-3:20. Mr. Sokol.

A study of the art of choral music. Emphasis on the principal vocal forms and on historical and national performance styles.

## Music History

213-214. THE ART OF MUSIC

Throughout the year. Credit three hours a term. May be entered either term. T Th 11:15 and one discussion section to be arranged. Mr. Austin and assistants.

A survey of old and new, easy and difficult music, designed to speed up the continuing development of various independent tastes. Frequent short written reports based on listening, beating time, and singing.

**282. INTRODUCTION TO MUSICAL STYLE AND ANALYSIS**

Spring term. Credit three hours. Prerequisite, Music 152 or equivalent. M W F 11:15. Mr. Austin.

A study of the interplay of idiom and structure in various styles through analysis of typical masterpieces.

**313. MASTERPIECES OF MUSIC**

Fall term. Credit four hours. Prerequisite, consent of the instructor. M 7:30-10:30 p.m. Mr. Grout.

Study of selected works and their historical environment. In 1968 the subject will be Opera in the twentieth century.

**314. THE GREAT TRADITION IN MUSIC**

Spring term. Credit four hours. Prerequisite, consent of the instructor. M 7:30-10:30 p.m. Mr. Grout.

Intensive study of a single work or group of works as representative of a given tradition and style. In 1969 the subject will be Beethoven's symphonies.

**381-382. HISTORY OF MUSIC I**

Throughout the year. Credit four hours a term. Prerequisite, Music 282. First term prerequisite to second. M 1:25-3:20, W 1:25. Mr. Holmes.

History of musical styles from the Middle Ages to Beethoven. Intensive study of musical scores, readings from theoretical sources (in translation), and written reports.

**481. HISTORY OF MUSIC II**

Fall term. Credit four hours. Prerequisite, Music 382. M 1:25-3:20 and individual conferences. Mr. Grout.

History of musical styles from the time of Beethoven to the present.

**482. MUSICOLOGY (PROSEMINAR)**

Spring term. Credit four hours. Prerequisite, Music 481. M 1:25-3:20. Mr. Grout.

Principles of research. Introduction to notation, with exercises in transcription from sources and preparation of performing editions.

## Honors

**401-402. HONORS WORK IN MUSIC**

Credit four hours a term. Open only to Honors candidates in their senior year. Mr. Austin and other members of the Department.

## Musical Performance

**321-322. INDIVIDUAL INSTRUCTION IN VOICE, ORGAN, PIANO; STRING, WOODWIND, AND BRASS INSTRUMENTS**

Throughout the year. For credit (undergraduate only), see below. Consent of the instructor required.

Basic fee for one half-hour lesson weekly during one term (carrying no credit), \$60. Fees for a practice schedule of six hours weekly during one term: \$20 for the use of a pipe organ; \$10 for a practice room with piano; \$5 for a practice room without piano.

For credit: one hour lesson weekly (or two half-hours) and a double practice schedule carry three hours of credit for two terms, provided that the student has earned or is earning at least an equal amount of credit in courses in music history or music theory. (Students should register in Music 321-322 for one hour's credit the first term and two hours' credit the second term.) The basic fees involved are then multiplied by one and one half (lesson fee \$90; practice fee \$30, \$15, and \$7.50). A student may register for this course in successive years.

The Department of Music offers a limited number of scholarships in applied music. For information inquire at the Department office.

## Musical Organizations and Ensembles

Throughout the year. Credit one hour a term. Consent of instructor required; admission by audition only. Registration is permitted in two of these courses simultaneously, and students may register in successive years, but no student may earn more than six hours of credit in these courses. Membership in these and other musical organizations is also open to students without credit, if desired.

### 331-332. SAGE CHAPEL CHOIR

T 4:30-5:30, Th 7:30-9:00 P.M., Sunday 9:30 A.M. Messrs. Paterson and Sokol.

### 335-336. CORNELL ORCHESTRAS

Rehearsals for the Cornell Symphony Orchestra: W 7:30-10 P.M., full orchestra; alternate T or Th 7:30-10 P.M., sectional rehearsals. Rehearsals for the Cornell Chamber Orchestra; M 7:30-10 P.M. (Limited to more experienced players.) Mr. Husa.

### 337-338. UNIVERSITY BANDS

Marching Band: T 7-9 P.M., Th 7-9 P.M., and F 4:30-5:45 (during football season only). Wind Ensemble: T 7-9 P.M., Th 4:30-5:45 (after football season). Symphonic Band: M 4:30-5:45, W 7-9 P.M. Mr. Stith.

### 339-340. EAR TRAINING AND SIGHT SINGING

Throughout the year. Open only to students who are participating in a University musical ensemble. Consent of the instructor is required. T 3:35. Messrs. Sokol and Paterson.

A practical course designed to improve the student's conception of melody and rhythm and his sight reading ability. Progressive class exercises in intervals, rhythms, melodies, and counterpoints.

### 441-442. CHAMBER MUSIC ENSEMBLE

Hours to be arranged. Consent of the instructor is required. Messrs. Montagu and Hsu.

### 443-444. CHAMBER SINGERS

F 4:30-6. Consent of the instructor is required. Mr. Sokol.

Study and performance of selected vocal music. Occasionally viols, recorders, and other instruments may be employed.

## Courses Primarily for Graduates

### 555. ANALYSIS

Fall term. Credit four hours. Prerequisite, Music 352 or equivalent. T 9:05-11, Th 9:05. Mr. Palmer.

An introduction to the systematic analysis of music structure. In addition to the analysis of rhythm and melody it includes a functional analysis of harmonic and tonal organization. Emphasis will be on the Viennese classic composers and Bach, with some consideration of later music.

### 557-558. SEMINAR IN COMPOSITION

Throughout the year. Credit four hours a term. Open to seniors by permission. W 1:25-3:20. Mr. Palmer.

Intended to make the student acquainted with compositional practices in contemporary styles and to develop his creative abilities.

### 580. INTRODUCTION TO CONTEMPORARY MUSIC

Spring term. Credit two hours. Prerequisite, Music 352 or equivalent. T Th 9:05. Mr. Palmer.

The analysis of short works of representative composers, with emphasis on only one or two techniques in each composition.

### 581-582. INTRODUCTION TO BIBLIOGRAPHY AND RESEARCH

Throughout the year. Credit four hours a term. Prerequisites, a general knowledge of music theory and music history and a reading knowledge of French and German. M 1:25-3:20. Mr. Samuel.

The basic materials and techniques of musicological research.

### [585-586. DEBUSSY TO BOULEZ]

Throughout the year. Credit four hours a term. Prerequisites, Music 580 and 582 or equivalent. Mr. Austin. Not offered in 1968-69.

### 680. CONTEMPORARY MUSIC (SEMINAR)

Spring term. Credit two hours. Prerequisite, Music 580. T 12:20-2:15. Mr. Palmer.

Detailed analysis of a limited number of larger works representative of main trends in twentieth century music. Different works are chosen each year.

### 681. MUSICOLOGY (SEMINAR)

Fall term. Credit four hours. M 9:05-11. Mr. Grout.

### 682. SEMINAR ON RICHARD WAGNER

(Also German 536.)

Spring term. Credit four hours. Prerequisites, a reading knowledge of German and ability to read musical notation. M 9:05-11. Mr. Grout and Mr. Blackall.

An analysis of Wagner's conception of the music-drama with special reference to *Tristan und Isolde*, *Der Ring des Nibelungen*, and *Die Meistersinger*.

### 683-684. PALEOGRAPHY

Throughout the year. Credit four hours a term. Prerequisite, reading knowledge of French and German. Reading knowledge of Latin is desirable. Th 2:30-4:30. Mr. Holmes.

Studies in the history of musical notation and theory from the tenth to the sixteenth centuries. Transcriptions and performance from original notation.

## [685-686. HISTORY OF OPERA (SEMINAR)]

Throughout the year. Credit four hours a term. Mr. Grout. Not offered in 1968-69.

## PHILOSOPHY

Mr. N. Malcolm, Chairman; Messrs. M. Black, S. M. Brown, Jr., K. S. Donnellan, A. Fine, B. C. Goldberg, J. Kamp, D. Keyt, N. Kretzmann, D. B. Lyons, D. Sachs, R. R. K. Sorabji, M. A. G. Stocker, N. L. Sturgeon, A. Wood, M. Woods, and G. H. von Wright.

Students expecting to major in philosophy must begin their systematic study of it in their freshman or sophomore years. For admission to the major, the normal requirement is earning a grade of C or better in a philosophy course above 200. Application for admission is made to the Department of Philosophy.

For the major, eight philosophy courses are required, and these must include either (a) twenty four hours of courses numbered above 300, or (b) Philosophy 210 and twenty hours of courses numbered above 300. Each student majoring in philosophy must complete the following: (1) Philosophy 201; (2) at least one course in the history of philosophy from among 301, 302, 303, 305, 307; (3) at least two courses numbered above 400; and (4) at least eight hours of approved courses in related subjects.

For provisional acceptance as a candidate for Honors, a student must have chosen a philosophy major, a cumulative average of B- for all work in the College of Arts and Sciences and have an average of B for courses in philosophy. All candidates for Honors pursue, in their senior year, a program of research (taking Philosophy 490) in either the fall or the spring term leading to the writing of an Honors essay.

The Distribution requirement in the humanities is satisfied in philosophy by completing any of the following sequences: 100 (unless used in satisfying the Freshman Humanities requirement) or 101 plus any 200 or 300 course, excluding 212; any two courses at the 200 or 300 level, excluding 212.

The 300-level courses are normally open only to undergraduates and to graduate students in other fields. Graduate students in philosophy may be permitted to enroll in 300-level courses by special action of the Department. 400-level courses will be open to graduate students and juniors and seniors.

## 100. FRESHMAN SEMINAR IN PHILOSOPHY

Either term. Credit three hours. Open only to freshman who have not taken Philosophy 101. Fall term: M W 2:15, Messrs. Sachs and Kretzmann; T Th 2:15, Mr. Lyons. Spring term: M W 2:15, Messrs. Stocker and Kretzmann; T Th 2:15, Messrs. Sturgeon and Wood.

Offered as part of the Freshman Humanities Program. See page 29.

101. INTRODUCTION TO PHILOSOPHY

Either term. Credit three hours. Open only to freshmen and sophomores who have not taken Philosophy 100. Registration is limited to thirty students a section. Fall term: M W F 10:10, Mr. Stocker; T Th S 9:05, Mr. Sturgeon; T Th S 10:10, Mr. Wood; T Th S 11:15, Mr. Goldberg. Spring term: M W F 11:15, Mr. Fine; T Th S 10:10, Mr. Kamp; T Th S 11:15, Mr. Goldberg.

An introduction to philosophical ideas and problems through an intensive study of the writings of several major philosophers.

201. ANCIENT PHILOSOPHY

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. Required for students majoring in philosophy. T Th S 9:05. Discussion sections to be arranged. Mr. Keyt.

A study of the treatment of major philosophical problems by philosophers in antiquity, with reference to the influence of their philosophical theories on science and literature.

210. PHILOSOPHICAL PROBLEMS

Either term. Credit four hours. Open to sophomores, juniors, seniors, and to freshmen who have taken 100 or 101. Recommended for prospective majors in philosophy. Registration is limited to 35 students. Fall term: T Th S 11:15, Mr. Sturgeon. Spring term: M W F 2:30, Mr. Donnellan. Discussion sections to be arranged.

The study of a selected philosophical problem. Contemporary as well as classical sources. Topic for fall term: Thoughts and their objects. Topic for spring term: Freedom of the will.

212. INTRODUCTION TO LOGIC

Either term. Credit four hours. No prerequisite. Fall term: M W F 10:10, Mr. Kamp. Spring term: T Th S 10:10, Mr. Keyt. Discussion sections to be arranged.

A presentation of the elements and fundamental techniques of formal logic. Emphasizes the analysis and evaluation of arguments, provides some familiarity with deductive systems, and includes discussion of logical concepts particularly relevant to philosophy.

215. SEMANTICS

Spring term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 11:15. Discussion sections to be arranged. Mr. Donnellan.

A survey of the philosophy of language and symbolism. Topics include the nature and limits of language, theories of meaning, artificial languages, conceptual schemes, types of discourse, and philosophical implications of contemporary linguistics.

223. SOCIAL AND POLITICAL PHILOSOPHY

Spring term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 10:10. Discussion sections to be arranged. Mr. Stocker.

Topic for 1968-69: The nature and problems of civil disobedience.

225. ETHICS

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 11:15. Discussion sections to be arranged. Mr. Donnellan.

An introduction to problems and theories in moral philosophy with special emphasis on sources of scepticism about the objectivity of moral principles and values.

## [301. MODERN PHILOSOPHY I]

Not offered in 1968-69.

## [302. MODERN PHILOSOPHY II]

Not offered in 1968-69.

## 303. MEDIEVAL PHILOSOPHY

Fall term. Credit four hours. Prerequisite, two courses in philosophy or consent of the instructor. M W F 10:10. Discussion sections to be arranged. Mr. Kretzmann.

An investigation of such topics as universals, truth, faith, and reason, the existence and nature of God in the writings of Augustine, Boethius, Anselm, Abelard, Aquinas, and others.

## [304. ANCIENT PHILOSOPHY AND SCIENCE]

Not offered in 1968-69.

## 305. SPECIAL TOPICS IN THE HISTORY OF PHILOSOPHY

Spring term. Credit four hours. Prerequisite, one course in philosophy or consent of the instructor. M W F 9:05. Mr. Lyons.

Topic for 1968-69: The ethical theories of Hobbes, Hume, Bentham, and Mill.

## [307. KANT]

Not offered in 1968-69.

## 308. CONTEMPORARY PHILOSOPHY

Fall term. Credit four hours. Open to sophomores, juniors and seniors. T Th S 11:15. Discussion sections to be arranged. Mr. Keyt.

Topic for 1968-69: Frege, Russell, and Wittgenstein.

## [309. AMERICAN PHILOSOPHY]

Not offered in 1968-69.

## 311. EXISTENTIALISM AND PHENOMENOLOGY

Spring term. Credit four hours. T Th S 11:15. Discussion sections to be arranged. Mr. Wood.

An examination of selected readings from modern continental philosophers, exploring their radical approach to questions of human perception, understanding, value, decision, and action.

## [314. INTRODUCTION TO PHILOSOPHY OF MATHEMATICS]

Not offered in 1968-69.

## [316. METAPHYSICS AND EPISTEMOLOGY]

Not offered in 1968-69.

## 320. PHILOSOPHY IN LITERATURE

Fall term. Credit four hours. Open to upperclassmen and to others by consent of the instructor. M W F 12:20. Discussion sections to be arranged. Mr. Sachs.

An examination of philosophical topics concerning the condition and conduct of human life, as they appear in a selection of literary works, from Sophocles' *Oedipus Rex* to Kafka's *Metamorphosis*.

[321. AESTHETICS]

Not offered in 1968-69.

322. PHILOSOPHY OF RELIGION

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 12:20. Discussion sections to be arranged. Mr. Wood.

A survey of philosophical thinking about the nature and justifiability of the beliefs and practices of religion in the Western tradition.

323. LAW, SOCIETY, AND MORALITY

Spring term. Credit four hours. Open to sophomores, juniors, and seniors who have had one course in philosophy. M W F 11:15. Discussion sections to be arranged. Mr. Lyons.

An examination of connected problems in moral, legal, and political philosophy, with emphasis on the relation between law and morals.

325. ETHICAL THEORY

Spring term. Credit four hours. Open to sophomores, juniors, and seniors who have had one course in philosophy, to others by consent of the instructor. T Th S 12:20. Discussion sections to be arranged. Mr. Sturgeon.

A systematic study of one or more ethical theories. Topic for 1968-69: Emotivism and its critics.

327. INTRODUCTION TO PHILOSOPHY OF SCIENCE

Fall term. Credit four hours. Open to juniors and seniors. M W F 2:30. Discussion sections to be arranged. Mr. Fine.

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

333. PHILOSOPHY OF PSYCHOLOGY

Spring term. Credit four hours. Open to sophomores, juniors, and seniors who have had one course in philosophy, to others by consent of the instructor. T Th S 12:20. Discussion sections to be arranged. Mr. Goldberg.

An examination of the concepts of thinking, learning, understanding, with special reference to animal behavior. The focus of the course will be on the continuity between animal and human intelligence.

403. PLATO AND ARISTOTLE

Fall term. Credit four hours. Open to philosophy majors and graduate students, and others by consent of the instructor. T Th S 12:20. Discussion sections to be arranged. Mr. Woods.

Topic for 1968-69: To be announced.

412. DEDUCTIVE LOGIC

Fall term. Credit four hours. Open to philosophy majors and graduate students, and others by consent of the instructor. M W F 12:20. Discussion sections to be arranged. Mr. Kamp.

A survey of current methods of formal logic with emphasis on their philosophical implications and applications. Topics include quantification theory, theory of descriptions, properties of formal systems, set theory, logical paradoxes.

413. DEDUCTIVE LOGIC

Fall term. Credit four hours. Prerequisite, Philosophy 412 or equivalent back-

ground in first-order logic. M W F 11:15. Discussion sections to be arranged. Mr. Fine.

Models, completeness results, the theorems of Löwenheim-Skolem, Gödel and Church, and other topics of philosophical interest selected from advanced logic.

[414. PHILOSOPHY OF LOGIC]

Not offered in 1968-69.

[415. PROBLEMS IN PHILOSOPHY OF LANGUAGE]

Not offered in 1968-69.

[416. METAPHYSICS]

Not offered in 1968-69.

[417. THEORY OF KNOWLEDGE]

Not offered in 1968-69.

418. INDUCTIVE LOGIC

Spring term. Credit four hours. Open to upperclassmen and graduate students. Prerequisites: Philosophy 412 (Deductive Logic) or the equivalent; otherwise, consent of the instructor. M W F 2:30. Discussion sections to be arranged. Mr. Black.

A critical examination of the foundations of induction and probability, with special reference to the work of Mill, Peirce, Keynes, Carnap, Reichenbach, von Wright and de Finetti. Among the topics to be discussed will be the definition of non-demonstrative inference, relations between probability and frequency, Goodman's paradoxes, and the justification of induction.

425. CONTEMPORARY ETHICAL THEORY

Fall term. Credit four hours. Open to philosophy majors and graduate students, and to others by consent of the instructor. M W F 11:15. Discussion sections to be arranged. Mr. Stocker.

Topic for 1968-69: Value and obligation.

[427. PROBLEMS IN PHILOSOPHY OF SCIENCE]

Not offered in 1968-69.

433. PROBLEMS IN ETHICS AND PHILOSOPHY OF MIND

Spring term. Credit four hours. Open to juniors, seniors, and graduate students. Prerequisite, two courses in philosophy or consent of the instructor. M W F 12:20. Discussion sections to be arranged. Mr. Sachs.

Selected topics in moral and mental philosophy: moral feelings and attitudes, ethical subjectivism and ethical relativism, thought and action, intentions, oneself and one's future. Topic for 1968-69: Moral feelings.

490. SPECIAL STUDIES IN PHILOSOPHY

Either term. Credit four hours. Open only to Honors students in their senior years. Members of the Department.

## Seminars

[551. PHILOSOPHY OF RELIGION]

Not offered in 1968-69.

## 220 PHYSICS

### 576. ANCIENT PHILOSOPHY

Spring term. Credit four hours. M 3:35-5:30. Mr. Sachs.  
Topic for 1968-69: The *Theaetetus* and related dialogues.

### 580. MEDIEVAL PHILOSOPHY

Spring term. Credit four hours. Th 3:35-5:30. Mr. Kretzmann.  
Topic for 1968-69: Aquinas: Metaphysics and Natural theology.

### 585. ETHICS AND VALUE THEORY

Fall term. Credit four hours. W 3:35-5:30. Mr. Lyons.  
Topic for 1968-69: To be announced.

### [587. AESTHETICS]

Not offered in 1968-69.

### 588. METAPHYSICS

Fall term. Credit four hours. Th 3:35-5:30. Mr. Donnellan.  
Topic for 1968-69: To be announced.

### 589. METAPHYSICS

Spring term. Credit four hours. W 3:35-5:30. Mr. Kamp.  
Topic for 1968-69: The Nature of time.

### 590. PHILOSOPHY OF LANGUAGE

Fall term. Credit four hours. F 3:35-5:30. Mr. Goldberg.  
Topic for 1968-69: Meaning.

### 594. THEORY OF KNOWLEDGE

Fall term. Credit four hours. T 3:35-5:30. Mr. Woods.  
Topic: Philosophical logic.  
Spring term. Credit four hours. T 3:35-5:30. Mr. Keyt.  
Topic: Logical Empiricism.

### 595. SEMANTICS AND LOGIC

Fall term. Credit four hours. M 3:35-5:30. Mr. Black.  
Topic for 1968-69: Non-cognitive uses of language.

### 597. PHILOSOPHY OF SCIENCE

Spring term. Credit four hours. F 3:35-5:30. Mr. Fine.  
Topic for 1968-69: Aspects of scientific change.

## PHYSICS

Mr. L. G. Parratt, Chairman; Messrs. V. Ambegaokar, N. W. Ashcroft, B. W. Batterman, K. Berkelman, H. A. Bethe, R. Bowers, B. H. Brandow, A. A. Browman, P. A. Carruthers, D. G. Cassel, G. V. Chester, D. R. Corson, R. M. Cotts, T. R. Cuykendall, J. P. Delvaille, J. W. DeWire, D. A. Edwards, D. B. Fitchen, K. Gottfried, K. I. Greisen, D. E. Groom, F. L. Gross, L. N. Hand, D. K. Hartill, P. L. Hartman, D. F. Holcomb, P. Horwitz, P. M. Joseph, T. Kinoshita, J. A. Krumhansl, P. B. Landecker, D. M. Lee, R. M. Littauer, E. C. Loh, H. Mahr,

B. W. Maxfield, D. B. McDaniel, N. D. Mermin, N. B. Mistry, H. F. Newhall, J. Orear, R. O. Pohl, A. L. Read, J. D. Reppy, R. C. Richardson, N. Rostoker, E. E. Salpeter, I. W. Shepherd, B. M. Siegel, A. J. Sievers, R. H. Silsbee, A. Silverman, R. L. Sproull, P. C. Stein, R. M. Talman, W. W. Webb, D. H. White, J. W. Wilkins, K. G. Wilson, R. R. Wilson, W. M. Woodward, and D. R. Yennie.

Entering freshmen may receive advanced placement and credit for one or two terms of Physics 101-102, 121-122, or 207-208 by demonstrating a high level of physics proficiency in the advanced placement examination administered (a) in the spring by the College Entrance Examination Board, or (b) just before the start of classes in the fall by the Cornell Department of Physics. Note that an entering freshman may proceed directly into sophomore physics only if he has also received advanced placement into sophomore calculus. Students who receive advanced placement for Physics 121 or 207 or Mathematics 111 into Physics 122 or 208 or Mathematics 112 (or 213) may advisedly take Physics 122 or 208 or Mathematics 112 (or 213) in the Cornell Summer Session (before September admission) in order to be in regular phase in the physics course sequence.

A student will ordinarily be admitted to a physics-major program, either Option A or B, if he has passed at a good level of proficiency one year of college physics (Physics 207-208 is strongly recommended) and one year of calculus. The candidate must present a tentative plan acceptable to his prospective major adviser for completing all the requirements for graduation, including those for the major.

**TWO MAJOR OPTIONS.** Option A is intended primarily for students who plan to pursue graduate studies in a physical or biological science, or otherwise to become professional scientists; Option B is intended primarily for students who have broader interests (less physics specialization at the Bachelor degree level), e.g., for those who plan to pursue graduate studies in a non-science field, to enter the medical profession, or to teach in precollege programs. The choice of Option B, however, does not preclude a professional career in physics or other natural science if the student elects more than the minimal work required for this option, or if he accepts a prolongation of his period of graduate study.

*Option A.* Minimal requirements: (a) thirty credit hours of physics courses selected from those indicated by the symbol # in the list below, including (i) two of Physics 310 (or 238), 360, and 410, (ii) Physics 443, and (iii) either Physics 444 or 454; and (b) Mathematics 421 (or 331 and 316); or the equivalent as judged by the student's major adviser. Graduate physics courses (numbered above 499) will not be accepted as substitutes in meeting requirement (a). It is strongly recommended that all students interested in a possible Option A major (who do not have advanced placement) take Physics 207-208 (preferably 208H) and Mathematics 111-122 in the freshman year; and Physics 305, and either 310 or 360, and Mathematics 221-222 in the sophomore year. It is difficult to

complete Option A if physics is started in the sophomore year, and possible only if the student has completed freshman calculus before the start of the sophomore year.

*Option B.* Minimal requirements: (a) an intermediate course (numbered above 300) in each of the following: mechanics, optics, electricity, experimental physics, and modern physics; (b) three credit hours in mathematics beyond Mathematics 213, 221, or 293; and (c) fifteen credit hours in approved courses in the natural sciences with at least six of these fifteen hours in courses numbered above 300. Requirement (c) may be satisfied in part by approved additional physics courses numbered between 300 and 500; and up to six of the fifteen hours (but not more than three of the six numbered above 300) may be in history of science or philosophy of science. In Option B the physics courses (Physics 207–208) may be conveniently started in the sophomore year.

Students in either Option A or B who have an interest in eventual graduate work in any science are advised to meet the foreign language requirement (at least Qualification) in a foreign language different from the one offered for admission to the College; and at least one of these two languages should be French, German, or Russian. For Qualification in a second language, language courses 131–132 are recommended.

A student may be granted Honors in physics upon the recommendation of the Physics-Advisers Committee of the physics faculty.

**DISTRIBUTION REQUIREMENT.** The Distribution requirement in physical sciences is satisfied in physics by Physics 101–102, 201–202, 207–208 or the first term of any one of these followed by the second term of another. Physics 201–202 is recommended for students who do not intend to take any second-year (or higher) course in a physical or biological science.

#### 101–102. GENERAL PHYSICS

Throughout the year. Credit four hours a term. Prerequisite, three years of college preparatory mathematics. Course 101 (or 207) is prerequisite to 102. Similar to but less analytically demanding than Course 207–208. Students who plan to major in a physical or biological science should preferably elect Physics 207–208. (See also Physics 201–202). Demonstration lectures, M W 9:05 or 11:15. Two discussion hours per week and about ten two-hour laboratory periods (usually in alternate weeks), as assigned. Preliminary examinations will be held at 7:30 P.M. Oct. 16, Nov. 20, Mar. 5, and April 16. Fall term, Messrs. Greisen, Delvaille, and staff. Spring term, Messrs. Greisen, Sievers, and staff.

Basic principles of physics, treated quantitatively but without calculus. Topics include motion, dynamics, conservation laws, kinetic theory, gravitational and electromagnetic forces and fields, wave motion and light, relativity, atomic physics, structure of matter, and nuclear physics. Historical and philosophical allusions as time permits. At the level of *Fundamental Physics*, Second Edition, by Orear, and of *Theory of Physics*, 1967, by Stevenson and Moore.

#### 121–122. INTRODUCTORY ANALYTICAL PHYSICS I AND II

Throughout the year. Credit three hours a term. (Physics 121 is also offered in the spring term, T Th S 9:05, for those students who have completed but

failed the course in the preceding fall term; permission of the instructor is required.) Prerequisite, calculus or coregistration in Mathematics 191-192, or consent of the instructor. Course 121 is prerequisite to 122. Primarily for students of engineering. Lecture, F 9:05 or 11:15 or 1:25. Two discussion periods per week and one two-hour laboratory period every other week, as assigned. Preliminary examinations will be held at 7:30 p.m. on Oct. 8, Nov. 12, Dec. 10, Mar. 4, Apr. 15, and May 6. Messrs. Newhall, Chester, Horwitz, Krumhansl, McDaniel, and staff.

The mechanics of particles: kinematics, dynamics, conservation of energy, conservation of linear momentum, circular motion, special relativity. Rotation of rigid bodies. Harmonic motion. The properties of the fundamental forces: gravitational, electromagnetic, and nuclear. At the level of *Introductory Analytical Physics*, fourth edition, by Newhall.

#### 201-202. ASPECTS OF THE PHYSICAL WORLD

Throughout the year. Credit three hours a term. (Not suitable for credit if taken after any two-term college physics course.) Prerequisites, three years of college-preparatory mathematics and high-school physics or chemistry, or consent of the instructor. Course 201 is prerequisite to 202. Not open to freshmen. Students who plan to take a second-year (or higher) physical or biological science course should elect Physics 101-102 or 207-208 instead of this course. Lectures, M W F 2:30. One two-hour laboratory-discussion period per week, as assigned. (Total class time will average about four hours per week.) Fall term, Messrs. Yennie and White. Spring term, Mr. White.

The central aim is to give non-science majors some insight into the methods and the results of physics and its neighboring sciences. A set of widely ranging but related topics will be considered, without attempt to survey physics systematically at any level. A diversity of treatment is employed. Typical topics: the nature of space and time, relativity, the solar system and gravitation, atoms and the structure of matter, semiconductor devices, and elementary particles.

#### 207-208. FUNDAMENTALS OF PHYSICS

Throughout the year. Credit four hours a term. Prerequisite, at least coregistration in Mathematics 111-112. High school physics is a normal background and, except for physics Option A majors and mathematics majors, prior completion of Mathematics 111-112 is strongly recommended. Course 207 (or either 101 or 121 with special permission) is prerequisite to 208. Intended as the first college-physics course for most students majoring in a physical science or in mathematics. Demonstration lectures, W F 9:05 or 11:15. Two discussion periods a week and one two-and-one-half-hour laboratory period alternate weeks, as assigned. Preliminary examinations will be held at 7:30 p.m. on Oct. 21, Nov. 25, Mar. 10, and April 21. Fall term, Messrs. Cassel, Kinoshita, Landecker, McDaniel, and staff. Spring term, Messrs. Gross, Berkelman, Stein, and Staff.

Topics treated during the year include Newton's Laws, conservation of momentum and energy, electricity, magnetism, waves, special relativity, atomic physics (including some wave mechanics), and statistical physics. Emphasis is placed on the fundamental concepts and on the analytical techniques of problem and laboratory work. At the level of *Elementary Classical Physics*, Vols. I and II, 1965, and of *Elementary Modern Physics*, 1960, by Weidner and Sells.

#### 208H. FUNDAMENTALS OF PHYSICS

Spring term. An Honors section of 208. Prerequisites, a request for this course as expressed by the student in consultation with the 208H instructor and

an invitation from the instructor. Lectures, W F 9:05 or 11:15. Discussion and laboratory either M W 1:25 and W 2:15-4:25, or T Th 1:25 and T 2:15-4:25. Students interested in 208H should reserve these hours but should pre-register for 208. Evening preliminary examinations as listed in Physics 208. Messrs. Hand, Landecker, and staff.

### 233-234. INTRODUCTORY ANALYTICAL PHYSICS III AND IV

Throughout the year. Credit three hours a term. (Physics 233 is also offered in the spring term, T Th S 11:15, for those students who failed the course in the preceding fall term but who passed Physics 235.) Prerequisites, Physics 122 and coregistration in Mathematics 293-294 and in Physics 235-236, or consent of the instructor. Course 233 is prerequisite to 234. Lectures, T Th 9:05 or 11:15 or 1:25. Two discussion periods every week, as assigned. Each term the course is subdivided into three independent sections, each of no more than 180 students (and for each lecture, no more than ninety students). Preliminary examinations will be held at 7:30 P.M. on Oct. 11, Nov. 8, Dec. 13, Feb. 20, Mar. 20, and April 24. Fall term, Messrs. Orear, Rostoker, Silverman, and Shepherd. Spring term, Messrs. Edwards, Groom, and Littauer.

Electrostatic fields, potential, fields around conductors and in simple dielectrics, special relativity, charges in motion, time-varying fields, induced electromotive force, energy of charge and current distributions, electrical oscillations and oscillatory behavior in general, electromagnetic waves, polarization, interference and diffraction. Quantum effects, atomic and x ray spectra, nuclear structure and reactions, particle physics, and solid state physics. At the level of *Electricity and Magnetism*, 1966, by Purcell (Berkeley Physics Course, Vol. 2), of *Introduction to Special Relativity*, 1965, by Smith, and of *Fundamentals of Optics and Modern Physics*, 1968, by Young.

### 235-236. LABORATORY TO ACCOMPANY PHYSICS 233-234

Throughout the year. Credit one hour a term. Must be taken with Physics 233-234. Course 235 is prerequisite to 236. One two-hour period every week, as assigned. Messrs. Lee, Loh, Richardson, and staff.

Experiments include electrical measurements, circuits, physical electronics, optics, lasers, atomic spectroscopy, solid state, nuclear and particle physics.

### 237-238. INTRODUCTORY ANALYTICAL PHYSICS III AND IV

Throughout the year. Credit four hours a term. An Honors section of 233-234 and 235-236. Prerequisites, same as for 233-234 and 235-236, and in addition (a) a request for this course as expressed by the student in consultation with the 237 instructor and, for an engineering student, with the concurrence of the director of the Division of Basic Studies in the College of Engineering, and (b) an invitation from the instructor. Enrollment limited. Course 237, or consent of the instructor, is prerequisite to 238. T Th S 9:05 or 11:15 and one laboratory every week, M T W or Th 2-4:25. Fall term, Mr. Berkelman and staff. Spring term, Mr. Delvaille and staff.

Topics include those (none omitted) in Physics 233-234 but their treatment is generally more analytical and somewhat more intensive. At the level of *Lectures on Physics*, Vol. II, 1964, by Feynman, of *Spacetime Physics*, 1966, by Taylor and Wheeler, and of *Fundamentals of Optics and Modern Physics*, 1968, by Young.

### 303. INTERMEDIATE MECHANICS

Fall term. Credit three hours. Prerequisites, Physics 208 (or 102 with special permission), and at least coregistration in Mathematics 213 or 221, or consent of the instructor. T Th S 9:05. Mr. DeWire.

Newtonian mechanics, conservation laws, central forces, oscillation systems, wave propagation, and relativity. At a level slightly higher than *Mechanics*, 1965, by Kittel, Knight, and Ruderman.

### #305. THE TWENTIETH-CENTURY REVOLUTION IN PHYSICS

Fall term. Credit four hours. Prerequisites, Physics 208 (preferably 208H), and coregistration in Mathematics 221 or 293, or consent of the instructor. M W F 8 and M or T 2:30. Mr. Sproull.

Developments leading to modern physical concepts such as quantum theory of radiation, quantum mechanics, and atomic structure. At the level of the first half of *Fundamentals of Modern Physics* by Eisberg.

### 307. OPTICS AND WAVE MOTION

Fall term. Credit four hours. Prerequisites, Physics 208H or 303, and Mathematics 213, or consent of the instructor. Lectures, T Th S 12:20 and T 2:30. Mr. Edwards.

Properties of waves (electromagnetic, mechanical, acoustic, etc.), velocity of light, polarization, interference phenomena, Huygens' and Fermat's principles, Fraunhofer and Fresnel diffraction with application to image formation, double refraction, optical activity, and selected topics of current interest (e.g., coherence phenomena, lasers, holography, etc.). At the level of *Fundamentals of Physical Optics*, third edition, by Jenkins and White, or of *Wave Phenomena* by Towne.

### #310. INTERMEDIATE EXPERIMENTAL PHYSICS

Either term. Credit four hours. Prerequisites, Physics 102 or 208, and Mathematics 112 or 192, or consent of the instructor. Lecture, F 2:30-4:25. Laboratory M W 1:25-4:25. An additional laboratory section will be opened in the spring term T Th 1:25-4:25 if registration exceeds thirty-six students. Messrs. Maxfield, Pohl, and staff.

Lectures on topics in experimental techniques. Selected laboratory experiments to suit the student's interests, on such subjects as resonance phenomena, electricity, magnetism, optics, spectroscopy, and modern physics.

### 311-312. TEACHING HIGH-SCHOOL PHYSICS

Throughout the year. Credit one or two hours a term. Prerequisites, two years of college physics and an interest in the teaching of science at an introductory level. Offered only if enrollment exceeds ten students. Course 311 is not prerequisite to 312. T 1:25-4:25. Messrs. Parratt and Greisen.

Seminars and laboratory work. Emphasis is on the nature and design of recent precollege programs in physics and in physical science. Underlying concepts and purposes are stressed, and current trends evaluated. Laboratory work provides experience with recently developed instructional materials, and opportunity for new developments by the students.

### #319. ANALYTICAL MECHANICS

Fall term. Credit four hours. Prerequisites, Physics 208H (or 208 with special permission) or 234, and coregistration in Mathematics 421, or consent of the instructor. T Th S 9:05 and F 1:25. Mr. Silsbee.

Analytical mechanics of material particles, systems of particles and rigid bodies; oscillating systems; planetary motion, stability of orbits; collisions; Euler's equations, gyroscopic motion; Lagrange's equations; Hamilton's equation; relativistic mechanics. At the level of *Mechanics*, second edition, by Symon.

**322. PRINCIPLES OF ELECTRICITY**

Spring term. Credit four hours. Prerequisites, Physics 303 (and preferably 307 and 310), and Mathematics 221 or 331 or 315, or consent of the instructor. M W F 11:15 and Th 12:20 or F 3:35. Mr. Cotts.

Topics selected from Physics 325-326 (excluding optics), treated with less mathematical sophistication. At the level of *Electricity and Magnetism* by Duckworth, or of *Electricity and Magnetism*, 1966, by Purcell (Berkeley Physics Course, Vol. II).

**#325-326. ELECTRICITY, MAGNETISM, AND PHYSICAL OPTICS**

Throughout the year. Credit four hours a term. Prerequisites, same as for Physics 319. Course 325 is prerequisite to 326. Lectures, T Th S 11:15 and Th 1:25. Preliminary examinations will be held at 7:30 P.M. on Oct. 16, Nov. 20, Mar. 2, and April 16. Fall term, Mr. Pohl. Spring term, Mr. Carruthers.

Electrostatics: Laplace and Poisson equations, boundary value problems, dielectrics. Magnetostatics: magnetic media, boundary conditions, mechanical and field energy. Electrodynamics: wave equation, Maxwell's equations and their applications, transmission lines, wave guides, radiation from a moving charge. Physical optics: reflection, refraction, dispersion, polarization, Fresnel and Fraunhofer diffraction, lasers and masers. Special relativity. At the level of *Lectures on Physics*, Vol. II, by Feynman, of *Foundations of Electromagnetic Theory* by Reitz and Milford, of *Electricity and Magnetism* by Slater and Frank, and of *Optics* by Sommerfeld.

**#342. KINETIC THEORY AND THERMODYNAMICS**

Spring term. Credit four hours. Prerequisites, Physics 322 (or 305 with special permission), and Mathematics 221 or 331 or 315, or consent of the instructor. T Th S 9:05 and M or T 2:30. Mr. Reppy.

Concepts of temperature, laws of thermodynamics, Carnot cycles, entropy, thermodynamic relations, free energies, phase equilibrium, multicomponent systems, chemical reactions, and thermodynamic stability criteria. Application of thermodynamics to physical systems including gases, paramagnetic solids, and electromagnetic radiation. Normal and Poisson distributions, and the random walk problem. Introduction to statistical mechanics including a treatment of Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics with applications. Elementary transport theory. At the level of *Fundamentals of Statistical and Thermal Physics* by Reif, or of *Thermal Physics* by Morse.

**355-356. INTERMEDIATE ELECTRODYNAMICS**

Throughout the year. Credit three hours each term. Prerequisites, Physics 234 and 236, and coregistration in Mathematics 421, or consent of the instructor. Course 355 is prerequisite to 356. (Replaces Physics 337). Primarily for students of engineering. Lectures, M W F 10:10. Fall term, Mr. Webb. Spring term, Mr. Rostoker.

Vector calculus. Electrostatic fields, Laplace and Poisson equations and boundary value problems, dielectrics, magnetostatic fields, permeable media. Maxwell's equations and wave equations. Waves in free space and in media. Application of Maxwell's equations to wave guides, plasmas, and magneto-hydrodynamics. Special relativity. Application of the wave equation to radiation: antennas, scattering of light, reflection, diffraction, polarization, and dispersion. At the level of (for first term) *Foundations of Electromagnetic Theory* by Reitz and Milford, *Introduction to Electromagnetic Theory* by Owen, and (for the second term) *Classical Electromagnetic Radiation* by Marion.

**#360. INTRODUCTORY ELECTRONICS**

Either term. Credit three hours. Prerequisite, Physics 208 or 236, or consent of the instructor. Lectures and laboratory, M W F or T Th F 2:30-4:25. Messrs. Cotts, DeWire, and Shepherd.

Introduction to the principles of semiconductor devices, of electronic components and circuits, and to the operating characteristics of power supplies, amplifiers, oscillators, switching and timing circuits, etc. At the level of *Elementary Electronics*, 1966, by White.

**[402. BIOPHYSICS]**

Spring term. Credit four hours. Prerequisites, Physics 200 or 209 or 234, two years of college chemistry, two years of college biology, Mathematics 112, and permission of the instructor. T Th 12:20 and conference hours to be arranged. Not offered in 1968-69.

See, instead, Elements of Physical Biology (Veterinary Medicine 920), and General Photobiology (Biological Sciences 547).

**#410. ADVANCED EXPERIMENTAL PHYSICS**

Either term. Credit four hours. Prerequisites, Physics 310 or 360, and 303 or 319, and 322 or 325 or 355, or consent of the instructor. Limited to seniors except by special permission. Laboratory, T W or Th F 1:25-4:25. Lecture, M 2:30-4:25. Fall term, Messrs. Hartman, Batterman, Cuykendall, Hartill, Littauer, Reppy, Siegel, and Stein. Spring term, Messrs. Hartman, Cassel, Cuykendall, Mistry, Siegel, and Webb.

Lectures and problems on selected topics in experimental concepts and techniques. About seventy different experiments are available among the subjects of mechanics, acoustics, optics, spectroscopy, electrical circuits, electronics and ionics, heat, x rays, crystal structure, solid state physics, cosmic rays, and nuclear physics. The student is expected to perform four to eight experiments, selected to meet his individual needs. Stress is laid on independent work.

**431-432. INTRODUCTORY THEORETICAL PHYSICS I AND II**

Throughout the year. Credit four hours a term. Prerequisites, (a) completion of an undergraduate major program in a physical or biological science, or in engineering, including, for Course 431, the equivalent of Physics 207-208 and, for Course 432, either 431 or the equivalent of Physics 303 and 322, and (b) coregistration in Mathematics 421-422, or consent of the instructor. Primarily for graduate students in a science other than physics (e.g., in chemistry, engineering, or biology) who wish a shortcut to more advanced courses (e.g., to Physics 443, 561, 562 or 572). M W F S 11:15. Fall term, Mr. Bethe. Spring term, Mr. Brandow.

During the fall term emphasis is on particle mechanics and potential theory. Topics include Newtonian mechanics, Lagrange's equations, Hamilton's equations, central forces, rigid body motion, electrostatics, boundary value problems, and Maxwell's equations. At the level of *Mechanics*, second edition, by Symon, and of *Foundations of Electromagnetic Theory* by Reitz and Milford.

During the spring term emphasis is on waves and radiation. Topics include normal modes, waves in mechanical media, electromagnetic waves, normal modes of the electromagnetic field, reflection, refraction, interference, diffraction, dispersion, wave guides, and radiation from an accelerated charge. At the level of *Classical Electromagnetic Radiation* by Marion.

## 436. MODERN PHYSICS

Spring term. Credit four hours. Prerequisites, Physics 322 or 431, or consent of the instructor. T Th S 11:15 and Th 2:30. Mr. Bowers.

Fundamentals of quantum theory, and selected topics in atomic, solid state, particle and nuclear physics. At the level of *Fundamentals of Modern Physics* by Eisberg.

## #443. ATOMICS AND INTRODUCTORY QUANTUM MECHANICS

Fall term. Credit four hours. Prerequisites, Physics 305, 319, and 325, or 432, and Mathematics 316 or 421, or consent of the instructor. Very few students should take Physics 572 before taking this course or its equivalent. T Th S 10:10 and M 9:05 or 2:30. Messrs. Bowers and Groom.

Difficulties with the classical interpretations of atomic properties are resolved in terms of quantum mechanics. At the level of *Introduction to Quantum Theory* by Park.

## #444. NUCLEAR AND HIGH-ENERGY PARTICLE PHYSICS

Spring term. Credit four hours. Prerequisite, Physics 443 or consent of the instructor. M W F 9:05 and F 1:25. Messrs. Orear and Hartill.

Behavior of high-energy particles and radiation; elementary particles; basic properties of nuclei; nuclear reactions; nuclear forces; cosmic rays; general symmetries and conservation laws of nature. At the level of *Nuclei and Particles* by Segre.

## #454. INTRODUCTORY SOLID STATE PHYSICS

Spring term. Credit four hours. Prerequisite, Physics 443, or Chemistry 593, or consent of the instructor. T Th S 10:10 and Th 2:30 or 3:35. Mr. Wilkins.

A semiquantitative introduction to modern solid state physics, including lattice structure, lattice vibrations, thermal properties, electron theory of metals and semiconductors, magnetic properties, and superconductivity. At the level of *Introduction to Solid State Physics*, third edition, by Kittel.

## 490. INDEPENDENT STUDY IN PHYSICS

Either term. Credit one to three hours a term. Prerequisites, permission of the professorial staff member under whose direction the work is to be done *must be obtained before registration*. Ordinarily limited to seniors. Hours to be arranged.

Individual project work. Reading or laboratory work in any branch of physics. Commonly associated with the Physics 410 laboratory.

## 491-492. SENIOR SEMINAR

Throughout the year. Credit one hour each term. Prerequisite, consent of the student's major adviser (or of the instructor if the student is not majoring in physics). Offered only if registration exceeds six students. Course 491 is not prerequisite to 492. Intended primarily for physics majors, either Option A or Option B, in their senior year. F 2:30-4:25. Fall term, Mr. Edwards. Spring term, Mr. Parratt.

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

For complete descriptions of graduate courses (except Physics 561-562 and 572 which are often taken by advanced seniors) see the *Announcement of the Graduate School: Physical Sciences*.

## 500. INFORMAL GRADUATE LABORATORY

## 505-506. DESIGN OF ELECTRONIC CIRCUITRY

## 510. ADVANCED EXPERIMENTAL PHYSICS

## 520. PROJECTS IN EXPERIMENTAL PHYSICS

## 561-562. THEORETICAL PHYSICS I AND II

Throughout the year. Credit four hours each term. Prerequisites, Physics 319 and 325, or 432, and coregistration in Mathematics 415 or 423, or consent of the instructor. Course 561 and either 443 or coregistration in 572 are prerequisite to 562. M 1:25 and T Th S 11:15. Fall term, Mr. Gross. Spring term, Mr. Chester.

*Fall term.* Mechanics (about 7 weeks): variational principles, Lagrangian mechanics with applications, Hamiltonian mechanics and Poisson brackets, small vibrations and normal modes, and symmetry principles. Electrodynamics (about 8 weeks): Maxwell's equations, electromagnetic potentials, stress energy, wave guides, Fresnel theory, and relativity. At the level of *Mechanics* by Landau and Lifshitz, and of *Electricity and Magnetism* by Jackson.

*Spring term.* Electrodynamics (about 6 weeks): radiation, Lienard-Wiechert potentials, multipoles, relativity (continued), and relativistic applications. Statistical physics (about 9 weeks): laws of thermodynamics, introduction to phase change, ensemble theory, thermodynamic fluctuations, Fermi-Dirac and Einstein-Bose statistics with applications, transport phenomena, and interacting systems. At the level of *Electricity and Magnetism* by Jackson, and of *Statistical Physics* by Landau and Lifshitz.

## 572. QUANTUM MECHANICS

Either term. Credit four hours. Prerequisites, Physics 443, 561 (or 432 with special permission), and at least coregistration in Mathematics 415 or 423, or consent of the instructor. M W F 11:15 and S 9:05. Fall term, Mr. K. Wilson. Spring term, Mr. Krumhansl.

Principles of wave mechanics. Illustrative solutions of the Schrödinger equation, scattering, Dirac's formulation of quantum mechanics, transformation theory, and approximation methods. Symmetries: angular momentum, spin, the exclusion principle. At the level of *Quantum Mechanics*, Vol. I and part of Vol. II, by Messiah.

## 574. INTERMEDIATE QUANTUM MECHANICS

## 612. EXPERIMENTAL ATOMIC AND SOLID-STATE PHYSICS

## 614. EXPERIMENTAL HIGH-ENERGY PHYSICS

## 635. SOLID STATE PHYSICS I

## 636. SOLID STATE PHYSICS II

## 645. NUCLEAR PHYSICS

## 646. HIGH ENERGY PARTICLE PHYSICS

*Note: In courses above 650 the final grades will be only S or U.*

## 651. ADVANCED QUANTUM MECHANICS

## 652. QUANTUM FIELD THEORY

653. STATISTICAL PHYSICS

654. THEORY OF MANY-PARTICLE SYSTEMS

[657. THEORY OF NUCLEI]

Not offered in 1968-69.

661. HIGH ENERGY PHENOMENA

[666. TOPICS IN THEORETICAL ASTROPHYSICS]

Not offered in 1968-69.

680A. SPECIAL TOPICS: FINITE GROUPS

Fall term.

680B. SPECIAL TOPICS: THEORY OF CORNELL (LNS) EXPERIMENTS

Spring term.

680C. SPECIAL TOPICS: GROUP THEORY

Spring term.

690. INDEPENDENT STUDY IN PHYSICS

## PSYCHOLOGY

Mr. H. Levin, Chairman; Messrs. H. Alker, M. Anisfeld, H. Bernbach, U. Bronfenbrenner, R. D. Darlington, W. C. Dilger, Mrs. Eleanor J. Gibson, Messrs. J. J. Gibson, B. P. Halpern, S. C. Jones, W. W. Lambert, J. B. Maas, R. B. MacLeod, L. Meltzer, U. Neisser, F. Rosenblatt, T. A. Ryan, M. E. Seligman, F. Stollnitz, and G. W. Wilcox.

**THE MAJOR.** Prerequisites for admission are: (a) three courses in psychology which must include Psychology 101 and will normally include a laboratory course (Child Development 115 may be counted toward the three course requirement); (b) no grade below C+ in any psychology course; (c) acceptance by the admissions committee of the Department of Psychology.

Application forms may be obtained at the departmental office and should be filed two weeks before the preregistration period.

Requirements for the major are:

(a) A total of forty hours in psychology, including prerequisites, at least twenty hours of which are in courses numbered 300 or higher. Students majoring in psychology are expected to choose, in consultation with their advisers, a range of courses which cover the basic processes in psychology, and to have laboratory experience.

(b) Completion, by the beginning of the senior year, of an approved course in statistics, or the passing of an achievement examination administered by the department.

With the permission of the major adviser, courses in other departments may be accepted toward the major requirements.

**CONCENTRATION IN SOCIAL PSYCHOLOGY.** In cooperation with the Department of Sociology, a concentration in social psychology is available. Psychology majors who wish to specialize in social psychology must meet the prerequisites for a major in psychology and take the following courses:

- a. Three courses in sociology at the 300 level or higher.
- b. One course in experimental psychology.
- c. One survey course in social psychology.
- d. One course in experimental social psychology.
- e. One course in social methodology.
- f. One independent project or one seminar in social psychology.

**THE HONORS PROGRAM.** The Honors Program is intended to give the student an opportunity to examine selected problems in depth, and subsequently to carry out independent investigation under the direction of a faculty member. During the spring term of their junior year, Honors students will take either Psychology 494, a special seminar focusing on classic problems in psychology, or (with their adviser's consent) some other appropriate course at the 400 level or above. In the fall term of their senior year, they will register for Psychology 495. This seminar will usually be given in two sections, one dealing with problems of perception, learning, and physiological psychology and the other with problems of personality and social psychology. Students will attend the section relevant to their thesis area. These seminars are intended to help the student focus on a thesis problem and will consist partly of individualized instruction. Thesis research will normally begin during the fall semester, and will continue in the spring by enrollment in Psychology 498. Final Honors standing is based upon a written thesis and an oral defense of the thesis as well as upon general academic performance.

Prospective candidates are encouraged to file applications for provisional Honors standing as early as possible but not later than November 10, 1968. These applications should be turned in to one of the department secretaries in Room 313, Morrill Hall. For consideration by the Honors Committee applicants should have a cumulative grade average of B in all courses taken in psychology.

**DISTRIBUTION REQUIREMENTS.** The Distribution requirement in social sciences is satisfied by any two courses in Psychology. (Child Development 115 may be counted.)

**PARTICIPATION IN EXPERIMENTS.** Participation in psychological experiments may be required as a part of course work for any student when the instructor considers that it will be to the student's educational advantage.

#### 101. INTRODUCTION TO PSYCHOLOGY: BASES OF HUMAN BEHAVIOR

Either term. Credit three hours. Open to freshman. Those planning to major in psychology should begin with this course. Three lectures and one demonstration-discussion seminar per week. Fall term: lectures, M W F 10:10,

seminars to be assigned. Spring term: lectures, M W F 10:10, seminars to be assigned. Mr. Maas.

Emphasizes the study of human behavior from the standpoint of the basic processes, including the following: brain functioning, intelligence, perception, learning, motivation, emotion, abnormal behavior, and psychiatry. The course centers upon contemporary problems confronting psychologists and is supported by special films, guest speakers, and an Honors seminar.

#### INTRODUCTION TO PSYCHOLOGY: DEVELOPMENT OF HUMAN BEHAVIOR

(Child Development 115)

Fall term. Credit three hours. Open to freshmen. Psychology 101 not prerequisite. Three lectures and an optional section meeting. Lectures, M W F 11:15, sections to be announced. Mr. Condry.

Concerned with the behavior of man as a social organism. Primary attention is given to the impact of environmental and social forces in the intellectual, emotional, and social development of the person from infancy through adulthood.

#### 102. INTRODUCTION TO PSYCHOLOGY: PERSONALITY AND SOCIAL BEHAVIOR

Spring term. Credit three hours. Open to freshmen. No prerequisites. M W F 11:15. Mr. Jones.

An examination of personality and social influences on the individual's adjustment to himself and his environment. Both classic and contemporary viewpoints will be considered and evaluated in the light of empirical evidence.

#### 103. EDUCATIONAL PSYCHOLOGY

Spring term. Credit three hours. Prerequisite, an introductory course in psychology. M W F 9:05. Mr. Levin.

The major facts and principles of psychology bearing on educational practice and theory. Human learning, cognitive development abilities, and group processes as they influence classroom learning will be stressed. Recent educational advances such as new curricula and programmed learning will be discussed in the light of contemporary psychological theories.

#### 201. INTRODUCTION TO EXPERIMENTAL PSYCHOLOGY

Either term. Credit four hours. *No prerequisites.* Lectures M W F 2:30. Laboratory Th 8-9:55, 10:10-12:05, 2:30-4:25, or 7:30-9:25 p.m. Mr. Seligman.

An analysis of current and classical research problems selected for their relevance to general theoretical issues and illustrative of modern research in psychology. Specific topics will be chosen from the fields of learning, motivation, perception, and the like. Provides an introduction to laboratory methods and experimental design useful in many of the advanced courses in psychology.

#### 206. PSYCHOLOGY IN BUSINESS AND INDUSTRY

Spring term. Credit three hours. Prerequisite, Psychology 101 or C.D. 115, or consent of the instructor. M W F 9:05. Mr. Maas.

A survey of psychological research in problems of concern to business and industry. The course is divided into three units: (1) personnel selection and placement (interviewing, psychological testing); (2) conditions of efficient production (work methods, accident control, training, counseling, group dynamics, job satisfaction); and (3) advertising, market and motivation research.

**210. ATTENTION AND MEMORY**

Spring term. Credit three hours. Prerequisite, Psychology 101 or consent of instructor. M W F 12:20. Mr. Neisser.

A study of the relations between the constructive processes of attention and memory, emphasizing recent studies of attentive and preattentive processes in vision, of selective listening, of short-term memory and recoding, and of long-term memory and imagery.

**212. MODERN PSYCHOLOGY IN HISTORICAL PERSPECTIVE**

Spring term. Credit four hours. Prerequisite, one course in psychology or consent of instructor. Lectures, M W F 1:25. Mr. MacLeod.

An examination of the broad problems of psychology, e.g., mind and body, the basis of knowledge, the basis of conduct, as they have been envisaged at various periods of history. Special emphasis is laid on the relation between psychological thinking and developments in philosophy, religion, the sciences, literature, and the arts. Designed for the general student; recommended but not required for prospective majors.

**215. LINGUISTICS AND PSYCHOLOGY**

Fall term. Credit three hours. Prerequisite, consent of instructor. Open to freshmen. M W F 11:15. Messrs. Levin and Kelley.

An introductory course covering the recent development of a new field of study based on psychology and linguistics. Topics covered will be the nature of language and its acquisition, the influence of the sounds and grammar of language on perception and memory, bilingualism, and dialects.

**216. DECISION AND CHOICE**

Spring term. Credit three hours. Prerequisite, a course in psychology or consent of the instructor. M W F 2:30. Mr. Wilcox.

A survey of attempts to account for human choice behavior in situations with risky outcomes. Subjective probability, utility, strength of preference, portfolio theory. Emphasis will be on experimental findings.

**281. INTERPERSONAL RELATIONS AND SMALL GROUPS**

(Also Sociology 281)

Fall term. Credit three hours. Prerequisite, Sociology 101, Psychology 102 or Child Development 115. M W F 11:15.

The presentation and development of selected theories offered to account for the dynamics of interpersonal relationships and the social structures which emerge from, and condition, these relationships. Emphasis will be upon social psychological processes in small groups, such as athletic teams, committees, fraternities, engaged couples, etc. These perspectives are compared and evaluated.

**284. PERSONALITY AND SOCIAL INFLUENCE**

(Also Sociology 284)

Spring term. Credit four hours. Not open to students who have had Psychology 102. Prerequisite, a course in psychology. T Th 10:10 and one hour discussion section to be arranged.

The approaches of several theories—psychoanalytic, cognitive, and behavioral—are evaluated in relation to selected topics such as motivation traits, attitudes, conformity, prejudice, and group behavior. Students will read extensively in modern and classic attempts to explicate the human

condition. Lectures will evaluate these perspectives in terms of recent research. Not intended for students who plan to take other courses in personality or social psychology.

**301. AN INFORMATION PROCESSING APPROACH TO PSYCHOLOGY**  
Fall term. Credit three hours. Prerequisite, one year of mathematics or a physical science, or consent of the instructor. M W F 10:10. Mr. Bernbach.

Introductory treatment of human behavior as the behavior of an information processing system. Topics covered include input and coding of information (detection and perception), storage and retrieval of information (learning and memory), and output processes (skill learning and performance). Also covered is a treatment of behavior as a choice among alternatives and the bases of such choices (motivation).

**305. PERCEPTION**

Fall term. Credit four hours. Prerequisite, two courses in psychology including Psychology 101. Lectures M W 9:05, Laboratory, W or Th 2:30-4:25. Mr. Neisser.

The basic phenomena of visual and auditory perception studied in terms of the stimulus variables on which they depend and of the mechanisms involved. Topics include the detection of weak stimuli, perceptual constancy and illusion, visual and auditory space perception, motion, and perceptual adaptation.

**306. LEARNING**

Spring term. Credit four hours. Prerequisites, Psychology 101 or equivalent. Lectures T Th 9:05, Laboratory T or W 2:30-4:25. Mr. Stollnitz.

The fundamental conditions and principles of learning, both animal and human. The basic phenomena of operant conditioning, human verbal and motor learning, discrimination learning, and serial learning will be studied experimentally. Traditional and contemporary theories of learning will be reviewed, and selected experimental literature will be discussed with special emphasis upon recent developments in the field.

**307. MOTIVATION**

Fall term. Credit four hours. Prerequisites, Psychology 101 and 201, or 306, or consent of the instructor. Lectures W F 10:10, Laboratory T 2:30-4:25. Mr. Alker.

Factors controlling the initiation, direction, and intensity of activity. Methods of research with emphasis upon experimental and statistical controls. Evaluation of evidence on major theories of motivation such as instinct theory, psychoanalysis, and behavioristic drive theory.

**309. DEVELOPMENT OF PERCEPTION AND ATTENTION**

Spring term. Credit four hours. Prerequisite, Psychology 305. M W F 10:10. Mrs. Gibson.

Selection and reduction of stimulus information in ontogenetic and phylogenetic development; theories of perceptual learning and experimental methods of testing them.

[311. FEELING AND EMOTION]

Fall term. Credit four hours. Prerequisite, nine hours in Psychology or consent of the instructor. Not offered in 1968-69.

**313. COGNITIVE PROCESSES**

Fall term. Credit four hours. Prerequisites, six hours of psychology or Honors standing (in any department), or consent of the instructor. M W F 11:15. Sections to be arranged. Mr. Anisfeld.

An examination of the mental processes involved in language learning and use, concept formation, and problem solving; relation between language and thinking. Students are required to carry out a supervised experimental or observational study.

**NEUROBIOLOGY AND BEHAVIOR**

(Biological Sciences 320)

Spring term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104, and upper class standing. T Th S 11:15. Messrs. Camhi, Eisner, Emlen, Gilbert, Halpern, Rosenblatt, and Mrs. Salpeter.

Evolution of behavior, cueing of behavior, social and non-social behavior, neuroanatomy, neurophysiology, neurochemistry, neural networks, memory.

**BRAIN MECHANISMS AND MODELS**

(Biological Sciences 521-522)

Throughout the year. Credit four hours a term. Prerequisites, one year of calculus and one year of biological sciences or psychology, and consent of the instructor. Hours to be arranged. Mr. Rosenblatt with assistance of guest lecturers.

**323. PHYSIOLOGICAL PSYCHOLOGY**

Fall term. Credit four hours. Prerequisites, Psychology 101 or its equivalent, Psychology 201 or a 300 level laboratory course in Psychology, Biological Sciences 101-102 or its equivalent, and Chemistry 103-104 or its equivalent. T Th 9:05 and Laboratory T 1:25-5:30. Mr. Halpern.

A selective examination of neuroendocrine and neurophysiological functions related to emotion, learning, eating, and perception.

**[324. PSYCHOBIOLOGY]**

Spring term. Credit four hours. Prerequisites, a grade of at least B in Psychology 323 and consent of the instructor. Not offered in 1968-69.

**325. ABNORMAL PSYCHOLOGY**

Fall term. Credit four hours. Prerequisites, nine hours of psychology, or consent of the instructor. T Th S 9:05.

An introduction to the study of disordered behavior. Description of major syndromes, investigations and theories of etiology, and approaches to treatment will be covered in an attempt to introduce the student to major concepts and problems in this area.

**[326. COMPARATIVE PSYCHOLOGY]**

Spring term. Credit four hours. Prerequisite, Psychology 101, or Biological Sciences 320, or consent of the instructor. Not offered in 1968-69.

**[335. PSYCHOLOGICAL PROBLEMS OF ADVERTISING AND MARKET RESEARCH]**

Spring term. Credit four hours. Prerequisites, Psychology 101 and Psychology 350. Mr. Maas. Not offered in 1968-69.

**350. STATISTICS AND RESEARCH DESIGN**

Spring term. Credit four hours. Prerequisite, Psychology 101. M W F 11:15. Mr. Darlington.

Devoted about equally to elementary applied statistics—both estimation and hypothesis testing—through two-way analysis of variance, and to general problems in the design and analysis of research projects.

**381. SOCIAL PSYCHOLOGY**

(Also Sociology 381)

Either term. Credit four hours. Prerequisites, three hours of psychology and three hours of sociology. M W F 10:10.

Analysis of the history, concepts, methods, and theories used to describe and conceptualize the ways in which people react to one another in social settings and in the laboratory. Students will work individually or as teams on projects, using experimental or other empirical methods. The topics for investigation in lectures and reading will include socialization, attitude change, communication, interpersonal influence, impression formation, leadership, and propaganda.

**385. THEORIES OF PERSONALITY**

(Also Sociology 385)

Fall term. Credit four hours. Prerequisite, Psychology 101 or 102 or consent of the instructor. M W F 12:20.

A critical survey of the concept of personality in literature, the social sciences, and psychology. A number of the modern specialists will be discussed at some length, and recent empirical and experimental work that has grown out of their thought will be analyzed. The empirical relation of personality notions to some philosophical beliefs and literary productions will be considered. The emphasis will be mainly upon "normal" personality.

## Primarily for Seniors and Graduate Students

**401. PSYCHOLOGICAL TESTING I**

Fall term. Credit four hours. Prerequisites, six hours in psychology and a course in elementary statistics. T Th S 11:15. Mr. Darlington.

Emphasis is on the logical and mathematical problems in the interpretation, evaluation, and construction of tests. No training in administering tests.

**402. PSYCHOLOGICAL TESTING II**

Spring term. Credit four hours. Prerequisite, Psychology 401 or consent of the instructor. T Th S 11:15. Mr. Darlington.

A more advanced treatment of the topics discussed in Psychology 401.

**410. INDIVIDUAL DIFFERENCES AND PERSONALITY**

Spring term. Credit four hours. Prerequisites, seven hours of psychology, junior or senior standing, or consent of the instructor. Mr. Alker.

Survey of theory and research concerning individual differences in personality, intelligence, creativity, anxiety, learning, perception, motivation, attitudes, and attitude change. Emphasis will be given to the applicability of different research techniques.

**[412. RESEARCH DESIGN IN PERSONALITY AND SOCIAL PSYCHOLOGY]**

Spring term. Credit four hours. Open to junior or senior psychology majors, or consent of instructor. Not offered in 1968-69.

**[414. PRACTICUM AND SEMINAR IN PSYCHOLOGICAL TESTING]**

Spring term. Credit four hours. Prerequisite, Psychology 401 or 402. All students must have consent of the instructor. Hours to be arranged. Not offered in 1968-69.

**416. PSYCHOLOGY OF LANGUAGE**

Spring term. Credit four hours. Prerequisite, Psychology 313 or consent of the instructor. M W 2:30-4. Mr. Anisfeld.

An advanced treatment of the nature of the human capacity for language, the reading process, social and psychological aspects of bilingualism, speech perception and production. Instruction will be supplemented by experimental exercises.

**426. EXPERIMENTAL PSYCHOPATHOLOGY**

Spring term. Credit four hours. Prerequisite, a course in learning (Psychology 201 would be accepted) and a course in abnormal or personality psychology. M W 9:05 plus two hours laboratory to be arranged. Mr. Seligman.

The application of experimental methods to behavior disorders. A survey of current investigations of etiology and treatment with special emphasis upon a scientific approach to pathology.

**427. SENSORY FUNCTION**

(Also Biological Sciences 427)

Fall term. Credit three hours. Prerequisite, Biological Sciences 320 or equivalent and permission of the instructors. T Th 11:15. Messrs. Halpern and Tapper.

Sensory receptors and the central nervous system transformation of afferent activity will be considered in relation to human and animal psychophysical data and to the adaptive significance of behavior. The receptor will be examined in terms of anatomy, biochemistry, biophysics of transduction and the central nervous-system control of peripheral input. Offered in alternate years.

**428. SENSORY FUNCTION LABORATORY**

(Also Biological Sciences 428)

Fall term. Credit two hours. Prerequisite, Psychology 427 and permission of the instructors. Enrollment limited to fifteen students. Hours to be arranged. Messrs. Halpern and Tapper.

Experiments on the principles of receptor function and afferent neural activity. Offered in alternate years.

**COMPARATIVE VERTEBRATE ETHOLOGY**

(Biological Sciences 421)

Fall term. Credit three hours. Primarily for graduate students; juniors and seniors will be accepted to capacity of laboratory. Prerequisites, Biological Sciences 101-102, or 103-104 and permission of the instructor. T Th 9:05 and laboratory to be arranged. Mr. Dilger.

**429. PSYCHOPHYSICS AND SCALING**

Fall term. Credit four hours. Prerequisites, Psychology 201 or 305, junior or senior standing, or consent of the instructor. M W F 1:25. Mr. Wilcox.

Emphasis on the theory and application of quantification procedures in psychology. Topics include subjective magnitudes, auditory and visual discrimination, sensitivity, detection theory, data theory, scaling methods.

**461. HUMAN LEARNING AND MEMORY**

Fall term. Credit four hours. Prerequisites, Psychology 201 or 306, and junior or senior standing. T Th S 10:10.

**462. DISCRIMINATION LEARNING**

Fall term. Credit four hours. Prerequisite, Psychology 306 or equivalent. T Th 2:30 and laboratory hours to be arranged. Mr. Stollnitz.

Performance of human and nonhuman subjects on various types of discrimination problem. Discrimination reversal, transfer, and learning-set formation. Laboratory work will stress individual projects.

**465. MATHEMATICAL BEHAVIOR THEORY**

Spring term. Credit four hours. Prerequisite, one year of calculus. T Th 10:10. Mr. Bernbach.

The purpose of this course is to give a brief overview of current developments in mathematical psychology and to develop techniques for the application of mathematics to psychological theory. Topics covered include choice behavior, decision theory, psychophysics, memory and learning theory, and information processing models of behavior.

**[466. THEORIES OF VISION]**

Spring term. Credit four hours. Prerequisite, consent of instructor. Not offered in 1968-69.

**471-472. STATISTICAL METHODS IN PSYCHOLOGY**

Throughout the year. Credit four hours each term. Prerequisites, Psychology 101 or Child Development 115, 201 or consent of the instructor. Psychology 471 is prerequisite to 472. Fall term, M W F 1:25. Spring term, M W F 1:25. Mr. Ryan.

An analysis of the methods for treating various kinds of psychological data. Fall term: tests of significance and confidence limits, analysis of variance and correlation. Spring term: complex designs in analysis of variance, analysis of trends and covariance, multiple and curvilinear correlation, introduction to factor analysis.

**[476. RESEARCH METHODS IN PSYCHOLOGY—EXPERIMENTAL AND LABORATORY]**

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Stollnitz and staff. Not offered in 1968-69.

Instrumentation for the behavioral sciences.

**[477. RESEARCH METHODS IN PSYCHOLOGY—INDUSTRIAL AND FIELD]**

Spring term. Credit four hours. Prerequisite, Psychology 206 or consent of the instructor. Not offered in 1968-69.

**480. ATTITUDES AND ATTITUDE CHANGE**

(Also Sociology 480)

Spring term. Credit four hours. Prerequisites, three hours of psychology and three hours of sociology. M W F 9:05.

A systematic survey of theory and research on attitudes and attitude change.

**481. EXPERIMENTAL SOCIAL PSYCHOLOGY**

(Also Sociology 481)

Fall term. Credit four hours. Prerequisites, three hours of psychology and three hours of sociology or anthropology. M W F 2:30.

Emphasis is on the empirical study of social psychological phenomena. Students will be introduced to empirical laboratory and field methods used in social psychology. Substantive problems will provide the focus for the demonstration and use of these techniques.

#### 483. GROUP DYNAMICS

(Also Sociology 483)

Fall term. Credit four hours. Prerequisites, written consent of the instructor and three hours in psychology and three hours in sociology. Hours to be arranged. Mr. Hayes.

A field and laboratory course dealing with the major dimensions of interpersonal perception and behavior. The relation of these dimensions to self-conception, social roles, group structure and dynamics are examined. Contemporary research is stressed in the readings. Subject projects are an integral part of the course.

#### 484. EXPERIMENTAL GROUP DYNAMICS

(Also Sociology 484)

Spring term. Credit four hours. Prerequisites, a course in statistics and a course in social or experimental psychology. W 1:25-3:20 and a laboratory time to be arranged. Mr. Meltzer.

A practicum. Supervised research experience in the design, execution, and analysis of experimental research on topics such as group cohesiveness, group pressures, group goals, leadership, group performance, and interpersonal influence and communication. Students will read and discuss experimental studies as well as pertinent theoretical articles.

#### [488. INDIVIDUAL AND SOCIETY IN THE SOVIET UNION]

(Also Sociology 488)

Spring term. Credit four hours. Prerequisite, consent of the instructor. Will be conducted as a seminar. Hours to be arranged. Mr. Bronfenbrenner. Not offered in 1968-69.

#### 489. SELECTED PROBLEMS IN SOCIAL PSYCHOLOGY

(Also Sociology 489)

Fall term. Credit four hours. Prerequisites, consent of the instructor and three hours of psychology and three hours of social psychology or sociology. Hours to be arranged. Mr. Jones.

A small discussion seminar dealing with issues in both social and personality psychology. Initial discussions will focus on specific areas of the field such as interpersonal evaluation, attitude change, and group processes. Subsequently, the discussions will become more general and raise such questions as what are the major themes social psychologists are or should be studying and what are the appropriate units of analysis of social behavior.

#### [490. PERSISTENT PROBLEMS IN PSYCHOLOGY]

Fall term. Credit four hours. T 2:30-4:25 plus conference hours to be arranged. Not offered in 1968-69.

#### 494. JUNIOR HONORS SEMINAR

Spring term. Credit four hours. Prerequisite, admission to the departmental honors program. Hours to be arranged. Mr. Neisser.

One or more fundamental issues in psychology will be examined in depth, and from many points of view.

**495. SENIOR HONORS SEMINAR**

Fall term. Credit four hours. Prerequisite, admission to the departmental honors program. Hours to be arranged.

This seminar is intended to introduce the honors student to specific areas of psychological research so that he can choose and begin working on a dissertation topic. The seminar will usually be divided into two sections, dealing with different areas of interest.

**496. SUPERVISED STUDY**

Either term. Credit two hours. Staff.

**497. SUPERVISED STUDY**

Either term. Credit four hours. Staff.

**498. SENIOR HONORS DISSERTATION**

Spring term. Credit four hours. Hours to be arranged. Prerequisite, admission to the departmental Honors program and (usually) Psychology 495.

## Graduate Courses and Seminars

Primarily for graduate students, but with the consent of the instructor may be taken by qualified undergraduates. Approximately five graduate courses or seminars will be offered each term, the selection to be determined by the needs of the students. During the preregistration period, the list of courses and seminars for the following term will be posted, specifying instructors, topics to be covered, and hours of meeting. Only grades of S or U will be given in the following courses:

**501-502. GENERAL SEMINAR FOR BEGINNING GRADUATE STUDENTS**

Either term. Credit three hours.

**511-512. PERCEPTION**

Either term. Credit four hours.

**513-514. LEARNING**

Either term. Credit four hours.

**515-516. MOTIVATION**

Either term. Credit four hours.

**517-518. LANGUAGE AND THINKING**

Either term. Credit four hours.

**521-522. PSYCHOBIOLOGY**

Either term. Credit four hours.

**523-524. PHYSIOLOGICAL PSYCHOLOGY**

Either term. Credit four hours.

**525-526. MATHEMATICAL PSYCHOLOGY**

Either term. Credit four hours.

**531-532. HISTORY OF PSYCHOLOGY**

Either term. Credit four hours.

## 541-542. STATISTICAL METHODS

Either term. Credit four hours.

## 543-544. PSYCHOLOGICAL TESTS

Either term. Credit four hours.

## 545-546. METHODS OF SOCIAL ANALYSIS

Either term. Credit four hours.

## 547-548. METHODS OF CHILD STUDY

Either term. Credit four hours.

## 561-562. HUMAN DEVELOPMENT AND BEHAVIOR

Either term. Credit four hours.

## 575-576. PERSONALITY

Either term. Credit four hours.

## 577-578. INDUSTRIAL PSYCHOLOGY

Either term. Credit four hours.

## 583-584. PROSEMINAR IN SOCIAL PSYCHOLOGY

(Also Sociology 583-584)

Either term. Credit four hours. Fall term: T 3:35-5:30. Mr. Rosen. Spring term: hours to be arranged. Mr. Jones.

Critical analysis of the major current theories and research in social psychology. In the fall, sociological perspectives will be emphasized; in the spring, psychological ones.

## 591-592. EDUCATIONAL PSYCHOLOGY

Either term. Credit four hours.

## 595-596. THE TEACHING OF PSYCHOLOGY

Either term. Credit four hours.

## 681-682. SEMINAR IN SOCIAL PSYCHOLOGY

(Also Sociology 681-682)

Either term. Credit four hours.

Research oriented analysis of selected topics in social psychology.

## 683. RESEARCH PRACTICUM IN SOCIAL PSYCHOLOGY

(Also Sociology 683)

Fall term. Credit four hours. Hours to be arranged. Mr. Hayes.

## ROMANCE STUDIES

Mrs. Jean Parrish, Chairman; Messrs. C. Bandera-Gomez, J. Bereaud, J. S. Bernstein, G.-P. Biasin, D. Brenes, Miss Alice Colby, Messrs. H. Dieckmann, J. Freccero, D. I. Grossvogel, J. Kronik, Mrs. Dorothy McCall, Messrs. E. P. Morris, K.-L. Selig, A. Sez nec, and staff.

The Department of Romance Studies offers courses in French language and literature, Italian language and literature, and Spanish language and literature. For complete course listing and for details of the

major programs in French, Italian and Spanish, see those language headings under *Modern Foreign Languages and Literatures*.

## RUSSIAN LITERATURE

Mr. G. Gibian, Chairman; Miss Patricia Carden, Miss Antonia Glasse, and Mr. M. Horwitz.

For complete course listings and for details of the major, see the heading "Russian" under *Modern Foreign Languages and Literatures*.

## SEMITIC LANGUAGES AND LITERATURES

Mr. I. Rabinowitz, Chairman; C. M. Carmichael, A. L. Ivry, D. Patterson, D. W. Young.

The Department of Semitic Languages and Literatures offers Cornell undergraduates access to the thought and self-expression of the cultures which produced Judaism, Christianity, and Islam, and which today help to define and characterize the many millions of people in the group of countries that comprise the region we call the Middle East. Hebrew, Aramaic, and Arabic are not only the languages of the Old Testament and of the Koran, but of literatures of intrinsic merit and interest whose influence has permeated and enriched the literatures of many other civilizations, both East and West, ancient and modern, including our own. Studies pursued in this Department will, therefore, be found of lasting benefit and utility to all whose career interests involve the Middle East or Africa, and to all whose interest in religion and the humanities is more than merely casual.

Students who elect Semitics as their major study must complete twenty-four hours of advanced courses offered by the Department (courses numbered above 201, except as specified below) and fifteen hours, approved by the Department, in related subjects. Related subjects may be selected by the student from course offerings in other departments of the College which are relevant to his intellectual interests or to his preparation for professional training or graduate study.

Students whose major study is in Semitics may emphasize either Hebrew or Arabic language and texts, provided that at least nine hours of course work be taken in the less-emphasized language; all courses in the less-emphasized language may be counted among the twenty-four needed to complete the major study.

Candidates for the degree of Bachelor of Arts with Honors in Semitics, in addition to fulfilling the requirements of the major study as outlined above, must complete successfully the special Honors courses 370, 371, and 372. Part of the credit for Honors courses may be included in the twenty-four hours required for the major study. Students who wish to become candidates for Honors and who have a cumulative average of B or better should consult their major advisers before preregistering for the second term of the junior year.

The Distribution requirement in humanities is satisfied in Semitic literatures by any two courses in Hebrew at the 200 level or higher, or by Arabic 207-208, provided the courses have not been used in fulfilling the language requirement.

Independent study may be arranged for students who have special interests or needs and are able to work in areas not covered by the courses.

## Hebrew and Aramaic

### 101-102. ELEMENTARY CLASSICAL HEBREW

Throughout the year. Credit three hours a term. The first term is prerequisite to the second term. M W F 11:15. Mr. Carmichael.

### 103. CLASSICAL HEBREW FOR ADVANCED STUDENTS

Fall term. Credit three hours. Prerequisite, three units of entrance Hebrew or consent of the instructor. T Th 9:05, and a third hour to be arranged. Mr. Rabinowitz.

Designed to enable students with some previous knowledge of Hebrew to achieve systematic control of the grammar and syntax of the language. Prospective majors in Semitics who wish to emphasize Hebrew and who have not had Hebrew 101-102 should take this course.

### 201. CLASSICAL HEBREW PROSE

Either term. Credit three hours. Prerequisite, Hebrew 102, or 103, or consent of the instructor. M W F 2:30. Mr. Carmichael.

Selected prose narratives of the Hebrew Bible.

### 204. POSTBIBLICAL HEBREW PROSE (1)

Spring term. Credit three hours. Prerequisites, Hebrew 201, or three units of entrance Hebrew and the consent of the instructor. T Th at 9:05 and a third hour to be arranged. Mr. Rabinowitz.

Rapid reading of narrative texts in rabbinic, medieval, and modern Hebrew.

### 302. CLASSICAL HEBREW POETRY

Spring term. Credit four hours. Prerequisite, Hebrew 201 or consent of the instructor. M W F 2:30. Mr. Rabinowitz.

Reading and interpretation of texts selected from the Psalter and the Prophets.

### 305. POSTBIBLICAL HEBREW PROSE (2)

Fall term. Credit four hours. Prerequisites, Hebrew 204, or four units of entrance Hebrew and consent of the instructor. Hours to be arranged. Mr. Patterson.

Readings in the Mishnah, in medieval theological and philosophical texts, and in the modern essay.

### 307. POSTBIBLICAL HEBREW POETRY

Fall term. Credit four hours. Prerequisite, Hebrew 305. Hours to be arranged. Mr. Patterson.

Reading of representative works by important medieval and modern Hebrew poets from Kalir to Bialik.

## [411. MISHNAH AND TOSEPHTA]

Fall term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor. Not offered in 1968-69.

## [421. MIDRASH]

Fall term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor. Not offered in 1968-69.

## [423. TALMUD]

Fall term. Credit four hours. Prerequisite, Hebrew 305 and Aramaic 452, or consent of the instructor. Not offered in 1968-69.

## 432. MEDIEVAL HEBREW LITERATURE

Spring term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor. Hours to be arranged. Mr. Ivry.

Reading of a group of texts of philosophical interest.

## 441. MODERN HEBREW LITERATURE

Fall term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor. Hours to be arranged. Mr. Patterson.

The development of modern Hebrew literature, both fiction and nonfiction, traced in selected works of the foremost writers from "Mendele" (S. J. Abramowitz, 1836-1917) and "Ahad Ha'am" (Asher Ginsberg, 1856-1927) to the present.

## 451. ARAMAIC

Fall term. Credit four hours. Prerequisite, Hebrew 201, Arabic 208, or consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

The Western Aramaic of the Bible, the Qumran Scrolls and the Targums.

## 452. TALMUDIC ARAMAIC

Spring term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

The Late Palestinian (Galilean) Aramaic of the Palestinian Talmud and the Midrashim; the Eastern Aramaic of the Babylonian Talmud.

## 453-454. SYRIAC

Throughout the year. Credit four hours a term. Prerequisite, Hebrew 201, Arabic 208, or consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

The classical language and literature of Syrian and Mesopotamian Christianity.

## [471. SEMINAR]

Fall term. Credit four hours. For qualified undergraduate and graduate students. Not offered in 1968-69.

## 472. SEMINAR IN MEDIEVAL JEWISH PHILOSOPHY

Spring term. Credit four hours. Otherwise qualified undergraduate and graduate students who cannot read Hebrew and Arabic texts may be admitted with the consent of the instructor. Hours to be arranged. Mr. Ivry.

The thought of such philosophers as Isaac Israeli, Solomon ibn Gabirol, Bahya ibn Paquda, Judah ha-Levi, Moses Maimonides, Hasdai Crescas, and Joseph Albo will be illustrated from their writings.

## 401. INDEPENDENT STUDY

Either term. Credit two hours. For qualified students. Staff.

## 402. INDEPENDENT STUDY

Either term. Credit four hours. For qualified students. Staff.

## Arabic

## 105-106. ELEMENTARY LITERARY ARABIC

Throughout the year. Credit three hours a term. The first term is prerequisite to the second term. T Th 10:10, and a third hour to be arranged. Mr. Young.

## 207-208. INTERMEDIATE LITERARY ARABIC

Throughout the year. Credit three hours a term. Prerequisite, Arabic 106 or consent of the instructor. T Th 11:15, and a third hour to be arranged. Mr. Young.

Rapid reading of selected texts in the main genres of Arabic literature.

## 317. ISLAMIC TEXTS IN ARABIC

Fall term. Credit four hours. Prerequisite, Arabic 208 or consent of the instructor. Hours to be arranged. Mr. Ivry.

Study of a number of *sūrah*s of the Koran and of *hadith*s selected from the *Sahih* of al-Bukhārī.

## 318. ARABIC GEOGRAPHERS AND HISTORIANS

Spring term. Credit four hours. Prerequisite, Arabic 208 or consent of the instructor. Hours to be arranged. Mr. Ivry.

Reading of texts drawn from the works of several of the best writers in each genre.

## 461. ARABIC PHILOSOPHERS

Fall term. Credit four hours. Prerequisite, Arabic 317 or 318, or consent of the instructor. Hours to be arranged. Mr. Ivry.

Texts illustrative of the thought of a major Islamic philosopher.

## 462. MEDIEVAL ARABIC BELLES LETTRES ('ADAB)

Spring term. Credit four hours. Prerequisite, Arabic 317 or 318, or consent of the instructor. Hours to be arranged. Mr. Ivry.

Texts read will include selections from ibn Khallikān's *Biographical Dictionary*, the *Thousand and One Nights*, al-Jāhiz's *Book of Misers*, the *Memoirs of Usāma ibn Munqidh*, etc.

## [481. MODERN ARABIC LITERATURE]

Fall term. Credit four hours. Prerequisite, Arabic 318, or consent of the instructor. Not offered in 1968-69.

## [482. ARABIC POETRY]

Spring term. Credit four hours. Prerequisite, Arabic 318, 462, or consent of the instructor. Not offered in 1968-69.

491. SEMINAR IN ISLAMIC PHILOSOPHICAL LITERATURE

Fall term. Credit four hours. Otherwise qualified undergraduate and graduate students who cannot read Arabic texts may be admitted with the consent of the instructor. Hours to be arranged. Mr. Ivry.

Texts and topics will be taken from representative works of several of the major philosophers, e.g., al-Kindi, al-Fārābī, Avicenna, Averroes and al-Ghazzālī.

[492. SEMINAR]

Spring term. Credit four hours. Open to qualified undergraduate and graduate students. Not offered in 1968-69.

405. INDEPENDENT STUDY

Either term. Credit two hours. For qualified students. Staff.

406. INDEPENDENT STUDY

Either term. Credit four hours. For qualified students. Staff.

## Honors Courses

370. HONORS COURSE

Spring term. Credit four hours. To be taken in the junior year.

A program of readings and consultations devoted to an author or topic to be made known in advance of the term.

371-372. SENIOR HONORS COURSE

Throughout the year. Credit four hours a term. The first term is prerequisite to the second term.

Continuation of 370 with change of author or topic.

## Other Courses

THE LITERATURE OF THE OLD TESTAMENT  
(Comparative Literature 301)

[THE LITERATURE OF POST-EXILIC ISRAEL]  
(Comparative Literature 302)

Not offered in 1968-69.

THE LITERATURE OF THE NEW TESTAMENT  
(Comparative Literature 303)

## SOCIOLOGY

Mr. J. M. Stycos, Chairman; Mr. C. Ackerman, Mrs. Rose K. Goldsen, Messrs. D. P. Hayes, N. Henry, W. W. Lambert, P. G. Marden, R. McGinnis, L. Meltzer, D. I. Pool, B. C. Rosen, G. F. Streib, N. Tavuchis, R. M. Williams, Jr.

## Sociology Major

### A. GENERAL SOCIOLOGY

For a major in sociology, the following courses must be completed:

(a) Prerequisites: A student applying for admission to the major must have completed Sociology 101 and one 200-level sociology course. In addition, he must present two other courses in related subjects, typically to be chosen from Industrial and Labor Relations 210 (Statistics I), Mathematics 111 (Calculus), Philosophy 212 (Introduction to Logic), and Linguistics 201 (Introduction to the Scientific Study of Language). In special cases, however, other preparatory courses may be more relevant to the student's choice of concentration within sociology (e.g., courses in biological sciences for a concentration in demography or ecology; courses in computer science and/or engineering for systems analysis). In such cases, the Undergraduate Committee will judge the appropriateness of the courses.

(b) Upperclass Courses: A student accepted in the major must complete thirty-two hours of courses at the 300 level or higher, chosen in consultation with and with the consent of his adviser. Realizing the variety of other academic interests and career intentions to which sociology is relevant (for example, law, public service and government) and which a major in sociology should serve, the Department wishes to allow each student and his adviser freedom to construct an appropriate sequence of courses. (Students not presenting ILR 210 and Mathematics 111 among their preparatory courses will include among the thirty-two hours one course in the techniques of research: for example, research design, data collection and analysis.)

(c) Senior Year Requirement: All students will either (i) include within their thirty-two hours of advanced courses a graduate seminar during their senior year, writing for the seminar a comprehensive term paper, or (ii) present to the Department during their last term of residence a substantial essay on empirical or library research.

### B. SPECIAL PROGRAMS

The Department of Sociology participates in two interdepartmental programs: Social Psychology, in cooperation with the Department of Psychology; and Social Relations, in cooperation with the Department of Anthropology. These have special requirements, as follows:

#### Sociology with a Concentration in Social Psychology

Sociology majors who wish to specialize in social psychology must meet the prerequisites for a major in sociology and take the following:

- a. Three courses in sociology at the 300 level or higher.
- b. One course in experimental psychology.
- c. One survey course in social psychology.

- d. One course in experimental social psychology.
- e. One course in social methodology.
- f. One independent project or one seminar in social psychology.

## Social Relations Major

The major in social relations provides the student with basic competence in cultural anthropology, social psychology, and sociology, while giving particular emphasis to the common methods of research in these disciplines. The student electing this major is expected to obtain a grasp of the common interests and evidence of these disciplines as well as knowledge of their unique insights in attempting to develop generalizations regarding man in society. The student's work is integrated in his senior year when he takes the social relations seminar in which he is expected to interrelate aspects of the theory and data of the three disciplines.

1. **PREREQUISITES TO THE MAJOR:** The candidate must apply to the Committee on Admission to the Social Relations Major, offering the following:

- a. Either Anthropology 101 or Sociology 101.
- b. Either Psychology 101 or 102, or Child Development 115 or Sociology 281.
- c. Either Industrial and Labor Relations 210 or equivalent.

2. **THE MAJOR:** The major calls for a minimum of thirty-six hours of course work as follows:

a. Three pairs or other combinations of related courses at the 300 level or above, to be selected in consultation with the major adviser. These six courses must include two courses from each of the following disciplines: anthropology, social psychology, sociology.

b. At least one course in methods, to be selected from the following: anthropological methods, techniques of experimentation (psychology), methods in sociology, advanced psychological statistics, the philosophy of science or of social science, advanced statistics (such as Industrial and Labor Relations 311).

c. At least one course in theory which is related to social relations.

d. The senior seminar in social relations (Sociology 497, or Anthropology 495).

A list of the courses which may be used to satisfy the requirements for a major in social relations is available from any of the major advisers.

Students seeking admission to the program in social relations should apply to the Chairman of the Social Relations Committee, Mr. Roberts, Anthropology.

## Seminars

Seminars may be taken by qualified undergraduates with the consent of the instructor, except as otherwise noted in course listings.

## The Honors Program

For admission to the Honors program, students should file application with the program coordinator, Mr. Tavuchis, not later than November 1 of their junior year. Honors candidates must have a general average of at least B- and an average in departmental courses of at least B, or show exceptional promise.

## Distribution Requirements

The Distribution requirement in social sciences is satisfied in sociology by Sociology 101 and an additional semester course at the 200 or 300 level.

## Participation in Research

Participation in sociological research may be required as part of course work for any student when the instructor considers that it will be to the student's educational advantage.

### 101. MAN IN SOCIETY

Fall term. Credit three hours. M W F 9:05. Mr. Ackerman.

An introduction to the principal questions and perspectives of sociology. The focus will be upon the history and findings of the analysis of the processes which maintain the continuity and stability of society and which contribute to its change.

### 202. UNDERGRADUATE SEMINAR IN SOCIOLOGY

Spring term. Credit three hours. Prerequisites, Sociology 101 and consent of the instructor. T Th (S) 10:10. Mr. Hayes.

Stresses active student participation in the classroom and in laboratory and field research. Readings in the original sources will emphasize major contemporary issues.

### 230. POPULATION PROBLEMS

Spring term. Credit three hours. M W 12:20, and one hour to be arranged. Mr. Stycos.

The practical and scientific significance of population growth and composition. Fertility, migration, and mortality in relation to social and cultural factors and in relation to questions of population policy. National and international data will receive approximately equal emphasis.

### 248. POLITICS IN SOCIETY

Spring term. Credit three hours. Prerequisite, Sociology 101 or consent of instructor. M W F 10:10. Mr. Ackerman.

An examination of political institutions and theories as sociological phenomena. Cultural and social factors associated with political structure, political attitudes, and political behavior. Political decision making and theorizing as sociological processes.

**262. PUBLIC OPINION**

Spring term. Credit three hours. M W F 11:15. Mrs. Goldsen.

Factors determining the character of public opinion on the basis of relevant social, psychological, and political science knowledge. The nature, development, and control of public opinion in terms of opinion formation and change and the relation of public opinion to social and political action. The role of the communication media of radio, television, press, and motion pictures in determining public opinion. Students will be asked to participate in a field study examining opinion on a current issue of public interest.

**264. INTERGROUP RELATIONS: PREJUDICE, DISCRIMINATION, AND CONFLICT**

Spring term. Credit three hours. Prerequisite, Sociology 101 or consent of the instructor. T Th S 11:15.

An evaluation of relations among ethnic, racial, and religious groups in terms of the social psychology of intergroup hostility and conflict and the position and role of these groups in the larger community. Prejudice and discrimination will be analyzed for their social, psychological, political, and economic causes and effects. Social and political movements based on intolerance and efforts to resolve intergroup conflict will be examined, with special attention to current developments resulting from the desegregation of public schools.

**281. INTERPERSONAL RELATIONS AND SMALL GROUPS**

(Also Psychology 281)

Fall term. Credit three hours. Prerequisite, Sociology 101, Psychology 102, or Child Development 115. M W F 11:15.

The presentation and development of selected theories offered to account for the dynamics of interpersonal relationships and the social structures which emerge from, and condition, these relationships. Emphasis will be upon social psychological processes in small groups, such as athletic teams, committees, fraternities, engaged couples, etc. These perspectives are compared and evaluated.

**284. PERSONALITY AND SOCIAL INFLUENCE**

(Also Psychology 284)

Spring term. Credit four hours. Prerequisite, a course in psychology. T Th 10:10 and one hour discussion section to be arranged. Not open to students who have had Psychology 102.

The approaches of several theories—psychoanalytic, cognitive, and behavioral—are evaluated in relation to selected topics such as motivation, traits, attitudes, conformity, prejudice, and group behavior. Students will read extensively in modern and classic attempts to explicate the human condition. Lectures will evaluate these perspectives in terms of recent research. Not intended for students who plan to take other courses in personality or social psychology.

**321. TECHNIQUES OF SOCIOLOGICAL RESEARCH**

Fall term. Credit four hours. Prerequisites, Sociology 101 and a course in statistics, or consent of the instructor. T Th S 10:10. Mr. Henry.

Strategies in the framing and testing of sociological hypotheses are considered. Data-gathering techniques are evaluated, with emphasis on the analysis of data from sample surveys.

**[332. URBAN COMMUNITIES]**

Spring term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. Not offered in 1968-69.

**[341. SOCIOLOGY OF EDUCATION]**

Fall term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. Not offered in 1968-69.

**343. THE FAMILY**

Fall term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. M W F 10:10. Mr. Streib.

The structure and function of the nuclear family and the extended family in the West and cross-culturally. Specific areas which will be examined include biological foundations, mate selection, illegitimacy, sexual controls, internal familial processes, disorganization, the family and stratification, changes in family systems.

**346. SOCIAL STRATIFICATION**

Spring term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. M W F 1:25-2:15. Mr. Tavuchis.

An overview of various theories and empirical investigations of social stratification considered historically and cross-culturally.

**350. COMPARATIVE SOCIAL STRUCTURE**

Spring term. Credit four hours. Prerequisite, Sociology 101. M W F 11:15. Mr. Rosen.

An examination of social and psychological factors which affect the modernization process. Emphasis is placed upon cross-national data which show how social structure and personality interact to influence the transition of communities from traditional to modern forms of social organization. Among the topics to be covered are psychological factors in economic development, the impact of industrialization on family structure and socialization, and personality elements which affect the political process in developing societies.

**351. SOCIOLOGY OF DEVIANCE**

Fall term. Credit four hours. Prerequisite, Sociology 101. M W F 12:20. Mr. Ackerman.

Sociological aspects of youth culture, lower-class gangs, mental illness, homosexuality, and suicide are examined in the context of "action" theory, with special attention given to "anomie," "alienation," and "identity crisis."

**354. RELIGION IN WESTERN SOCIETY**

Spring term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. M W F 9:05. Mr. Streib.

The interrelationship of culture, society, and religion. Religion and social stratification, religion and economic and political institutions, social change and religion. The major emphasis will be upon American society and American religious institutions.

**[362. ECONOMIC DEVELOPMENT AND SOCIAL EVOLUTION]**

Spring term. Credit four hours. Prerequisite, Sociology 101. Mr. Ackerman. Not offered in 1968-69.

**381. SOCIAL PSYCHOLOGY**

(Also Psychology 381)

Either term. Credit four hours. Prerequisites, three hours of psychology and three hours of sociology. M W F 10:10.

Analysis of the history, concepts, methods, and theories used to describe and conceptualize the ways in which people react to one another in social settings and in the laboratory. Students will work individually or as teams on projects, using experimental or other empirical methods. The topics for investigation in lectures and reading will include socialization, attitude change, communication, interpersonal influence, impression formation, leadership, and propaganda.

**385. THEORIES OF PERSONALITY**

(Also Psychology 385)

Fall term. Credit four hours. Prerequisite, Psychology 101 or 102 or consent of the instructor. M W F 12:20.

A critical survey of the concept of personality in literature, the social sciences, and psychology. A number of the modern specialists will be discussed at some length, and recent empirical and experimental work that has grown out of their thought will be analyzed. The empirical relation of personality notions to some philosophical beliefs and literary productions will be considered. The emphasis will be mainly upon "normal" personality.

**402. SOCIAL THEORY**

Spring term. Credit four hours. Prerequisite, consent of the instructor. M 1:25-3:20 and one hour to be arranged.

Survey of selected theories and concepts in contemporary sociology reviewed in historical perspective, in relation to the contributions of other social sciences, and in terms of present-day developments in theory and research. Throughout, emphasis will be placed on trends in contemporary social theory.

**420. INTRODUCTION TO MATHEMATICAL SOCIOLOGY**

Fall term. Credit four hours. Prerequisites, Sociology 101 and one year of college mathematics, or consent of the instructor. Th 1:25-3:20 and one additional hour. Mr. McGinnis.

Elementary mathematics as applied to sociological theory. Both deterministic and probabilistic models are considered. Stochastic probability processes are emphasized in relation to theories of social change.

**[423. ANALYSIS OF QUANTITATIVE DATA]**

Fall term. Credit four hours. Open to junior and senior majors and graduate students with the consent of the instructor. Laboratory period to be arranged. Mrs. Goldsen. Not offered in 1968-69.

**[424. ANALYSIS OF QUALITATIVE DATA]**

Spring term. Credit four hours. Open to junior and senior majors and graduate students with the consent of the instructor. Laboratory period to be arranged. Mrs. Goldsen. Not offered in 1968-69.

**433. INTERNATIONAL URBANIZATION**

Fall term. Credit four hours. Prerequisite, background in the social sciences or consent of the instructor. M W F 11:15. Mr. Marden.

An examination of the processes and prospects of urbanization in an international context. The growth, nature, and roles of urban centers in both

developed and developing nations will be considered. Urbanization will be viewed from an interdisciplinary perspective.

[434. SOCIOLOGY OF HUMAN FERTILITY]

Spring term. Credit four hours. Prerequisite, Sociology 230 or consent of the instructor. Mr. Stycos. Not offered in 1968-69.

[435. MORTALITY AND MORBIDITY]

Fall term. Credit four hours. Prerequisite, Sociology 230 or consent of the instructor. Mr. Marden. Not offered in 1968-69.

438. HUMAN MIGRATION

Spring term. Credit four hours. Prerequisite, Sociology 230 or consent of the instructor. T Th S 11:15.

An analysis of international and internal migration as it affects the social and economic structure of societies and the groups in movement. The major theoretical and methodological investigations will be examined from such varied perspectives as individual motivation and mathematical models of migration.

INTRODUCTION TO HUMAN ECOLOGY

(Planning 712. Arch.)

Fall term. Credit three hours. Mr. Feldt.

An examination of the form and development of the human community with respect to spatial, temporal, and functional patterns of organization. Demographic, environmental, and technological characteristics are treated as parameters relevant to the ecological structure of the community.

[441. STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—I]

Fall term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. T Th S 9:05. Mr. Williams. Not offered in 1968-69.

[442. STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—II]

Spring term. Credit four hours. Prerequisite, Sociology 441 or consent of the instructor. T Th S 9:05. Mr. Williams. Not offered in 1968-69.

447. SOCIOLOGY OF MEDICINE

Fall term. Credit four hours. Prerequisite, consent of the instructor. W 1:25-3:20 and one hour to be arranged. Mr. Marden.

An analysis of health, illness, and the health professions and institutions from the sociological perspective. Topics to be considered will be the socialization of medical professionals, the organization of medical care, and patient-professional relationships.

480. ATTITUDES AND ATTITUDE CHANGE

(Also Psychology 480)

Spring term. Credit four hours. Prerequisites, three hours of psychology and three hours of sociology. M W F 9:05.

A systematic survey of theory and research on attitudes and attitude change.

481. EXPERIMENTAL SOCIAL PSYCHOLOGY

(Also Psychology 481)

Fall term. Credit four hours. Prerequisites, three hours of psychology and three hours of sociology or anthropology. M W F 2:30-3:20.

Emphasis is on the empirical study of social psychological phenomena. Students will be introduced to empirical laboratory and field methods used in social psychology. Substantive problems will provide the focus for the demonstration and use of these techniques.

#### 483. GROUP DYNAMICS

(Also Psychology 483)

Fall term. Credit four hours. Prerequisites, written consent of the instructor and three hours in psychology and three hours in sociology. Hours to be arranged. Mr. Hayes.

A field and laboratory course dealing with the major dimensions of interpersonal perception and behavior. The relation of these dimensions to self-conception, social roles, group structure, and dynamics are examined. Contemporary research is stressed in the readings. Student projects are an integral part of the course.

#### 484. EXPERIMENTAL GROUP DYNAMICS

(Also Psychology 484)

Spring term. Credit four hours. Prerequisites, a course in statistics and a course in social or experimental psychology. W 1:25-3:20 and laboratory time to be arranged. Mr. Meltzer.

A practicum. Supervised research experience in the design, execution, and analysis of experimental research on topics such as group cohesiveness, group pressure, group goals, leadership, group performance, and interpersonal influence and communication. Students will read and discuss experimental studies as well as pertinent theoretical articles.

#### [488. INDIVIDUAL AND SOCIETY IN THE SOVIET UNION]

(Also Psychology 488)

Spring term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Will be conducted as a seminar. Mr. Bronfenbrenner. Not offered in 1968-69.

#### 489. SELECTED PROBLEMS IN SOCIAL PSYCHOLOGY

(Also Psychology 489)

Fall term. Credit four hours. Prerequisites, consent of the instructor and three hours of psychology and three hours of social psychology or sociology. Hours to be arranged. Mr. Jones.

A small discussion seminar dealing with issues in both social and personality psychology. Initial discussions will focus on specific areas of the field such as interpersonal evaluation, attitude change, and group processes. Subsequently, the discussions will become more general and raise such questions as what are the major themes social psychologists are or should be studying and what are the appropriate units of analysis of social behavior.

#### 491. SELECTED TOPICS IN SOCIOLOGY

Either term. Credit two hours. Open only to majors. Hours to be arranged. Staff.

#### 492. SELECTED TOPICS IN SOCIOLOGY

Either term. Credit four hours. Open only to majors. Hours to be arranged. Staff.

#### 494. HONORS SEMINAR: JUNIOR YEAR

Spring term. Credit four hours. Prerequisite, acceptance as candidate for Honors. Hours to be arranged. Staff.

**495. HONORS RESEARCH: SENIOR YEAR**

Fall term. Credit four hours. Prerequisite, Sociology 494. Hours to be arranged. Staff.

**496. HONORS THESIS: SENIOR YEAR**

Spring term. Credit four hours. Prerequisite, Sociology 495. Hours to be arranged. Staff.

**497. SOCIAL RELATIONS SEMINAR**

(Also Anthropology 495)

Fall term. Credit four hours. Open only to seniors majoring in social relations. Hours to be arranged.

**[511. THEORY OF CULTURE AND SOCIAL ORGANIZATION]**

Fall term. Credit four hours. Prerequisite, Sociology 402 or equivalent. Mr. Williams. Not offered in 1968-69.

**520. MATHEMATICAL MODELS**

Spring term. Credit four hours. Prerequisites, courses in calculus and probability or consent of the instructor. Hours to be arranged. Mr. Henry.

A survey of the application of mathematical methods to sociology, with particular emphasis on the work of James Coleman.

**522. SURVEY OF SOCIOLOGICAL METHODS**

Spring term. Credit four hours. Prerequisites, Sociology 321 and a statistics course or consent of the instructor. Hours to be arranged. Mrs. Goldsen and staff.

A survey of contemporary social science research techniques that emphasize interdisciplinary methodological convergences. Investigators from several disciplines report on research problems that are encountered and techniques that are used to cope with them.

**523. FOUNDATIONS OF STATISTICAL ANALYSIS**

Fall term. Credit four hours. Prerequisite, a course in statistics or consent of the instructor. W 3:35-5:30 and one hour to be arranged. Mr. McGinnis.

The logic of social research; sets and relations; measurement; probability models.

**524. RESEARCH DESIGN AND STATISTICAL INFERENCE**

Spring term. Credit four hours. Prerequisite, Sociology 523 and a course in statistics or consent of the instructor. Hours to be arranged. Mr. Henry.

The logic of statistical inference, experimentation, and decision theory. Measures of association for cross-classification. Causal analysis of multivariate relations, using regression analysis and related techniques.

**[526. STOCHASTIC PROCESSES IN SOCIOLOGY]**

Spring term. Credit four hours. Prerequisites, one year of college mathematics and one term of statistics, or consent of the instructor. Mr. McGinnis. Not offered in 1968-69.

**[527. SOCIOLOGICAL APPLICATION OF GAME AND DECISION THEORY]**

Spring term. Credit four hours. Prerequisites, one year of college mathematics and one term of statistics, or consent of instructor. Mr. McGinnis. Not offered in 1968-69.

[528. MEASUREMENT AND LATENT STRUCTURE THEORY]

Spring term. Credit four hours. Prerequisite, Sociology 524 or consent of the instructor. Not offered in 1968-69.

530. INTRODUCTION TO DEMOGRAPHY

Spring term. Credit four hours. Prerequisites, graduate student status or consent of the instructor. M W F 10:10. Mr. Marden.

A survey of the methods, theories, and problems of contemporary demography. Special attention is directed to the social determinants and consequences of fertility, mortality, and migration. The populations of both developed and developing areas are examined.

[531. DEMOGRAPHIC THEORY]

Fall term. Credit four hours. Open to majors and graduate students. T 1:25-3:20. Not offered in 1968-69.

535. TECHNIQUES OF DEMOGRAPHIC ANALYSIS

Fall term. Credit four hours. Prerequisite, Sociology 230 or consent of the instructor. T Th S 11:15.

Methods of processing and analyzing demographic data. Measures of mortality, fertility, and migration as applied to census and vital statistics data will be analyzed, and the more general applications of demographic techniques to other classes of data illustrated.

536. DEMOGRAPHIC RESEARCH METHODS

Spring term. Credit four hours. Prerequisite, Sociology 230 or consent of the instructor. M W F 11:15. Mr. Pool.

Research application of basic demographic techniques to selected regions of the world, particularly the economically less developed regions. Attention is directed to field survey techniques, including sampling and questionnaire construction, as well as formal demographic analysis. Students may work on selected research projects for the semester.

541. SOCIAL ORGANIZATION AND CHANGE

Fall term. Credit four hours. T Th 1:25-3:20.

An analysis of major problems in theory and research in the general field of social organization and change. The subject will be studied from the standpoint of the nature and size of the social system (small groups, communities, large-scale organizations, societies) and also in terms of the social processes and properties of the system, such as integration, authority, conformity, and deviance.

543. FAMILY, KINSHIP, AND SOCIETY

Fall term. Credit four hours. Prerequisites, graduate student status or consent of the instructor. Hours to be arranged. Mr. Tavuchis.

A systematic analysis of the nuclear family, extended family systems, and corporate kinship groups cross-culturally and historically. The relation of family structures to other institutional areas; for example, economy, polity, stratification and their relations to specific social processes such as demographic events, social disorganization, mobility.

583-584. PROSEMINAR IN SOCIAL PSYCHOLOGY

(Also Psychology 583-584)

Either term. Credit four hours. Fall term: T 3:35-5:30. Mr. Rosen. Spring term: hours to be arranged.

Critical analysis of the major current theories and research in social psychology. In the fall, sociological perspectives will be emphasized; in the spring, psychological ones.

**602. SEMINAR: THEORY**

Spring term. Credit four hours.

**621. SEMINAR: ISSUES IN THE METHODOLOGY OF THE SOCIAL SCIENCES**

Fall term. Credit four hours. Hours to be arranged. Mr. McGinnis.

[**622. SEMINAR: ISSUES IN THE METHODOLOGY OF THE SOCIAL SCIENCES**]

Spring term. Credit four hours. Staff. Not offered in 1968-69.

**632. SEMINAR: CONTEMPORARY RESEARCH IN DEMOGRAPHY**

Spring term. Credit four hours. T 3:35-5:30. Mr. Stycos.

Critical analysis of recent research investigations in Latin American demography.

**634. SEMINAR: POPULATION, HISTORY, AND SOCIETY**

Spring term. Credit four hours. Hours to be arranged. Messrs. Marden and Tavuchis.

An introduction to problems of historical analysis in sociology, with a special emphasis upon topics of demographic concern.

**641. SEMINAR: THEORY AND RESEARCH**

Fall term. Credit four hours. Hours to be arranged.

**643. SEMINAR: THEORY AND RESEARCH**

Fall term. Credit four hours.

**657. SEMINAR: SOCIAL CHANGE AND THE COMMUNITY**

Fall term. Credit four hours. W 3:35-5:20. Mr. Streib.

The seminar will concentrate upon the topics of leadership, religious organizations, and the process of social change.

**661. SEMINAR: TOPICS IN SOCIAL SYSTEMS ANALYSIS**

Spring term. Credit four hours. M 3:35-5:30. Mr. Ackerman.

Concepts and theories. Empirical referent will vary from year to year.

**662. SEMINAR: SOCIAL SYSTEMS ANALYSIS**

Spring term. Credit four hours.

Foundations of systems analysis.

**663. SEMINAR: SOCIAL SYSTEMS ANALYSIS**

Fall term. Credit four hours.

Foundations of social systems analysis.

**681-682. SEMINAR IN SOCIAL PSYCHOLOGY**

(Also Psychology 681-682)

Either term. Credit four hours.

Research oriented analysis of selected topics in social psychology.

683. RESEARCH PRACTICUM IN SOCIAL PSYCHOLOGY

(Also Psychology 683)

Fall term. Credit four hours. Hours to be arranged. Mr. Hayes.

Research on interaction and social structure.

685. SEMINAR: SOCIAL PSYCHOLOGY OF MODERNIZATION

Fall term. Credit four hours. Hours to be arranged. Mr. Rosen.

An analysis of the interacting effects of social structure and personality on social change in developing countries.

691-692. DIRECTED RESEARCH

Either term. Credit to be arranged. Hours to be arranged. Staff.

## SPANISH

For complete course listings and for details of the major, see the heading "Spanish" under *Modern Foreign Languages and Literatures*.

## THEATRE ARTS

Mr. J. Clancy, Chairman; Messrs. H. D. Albright, G. Beck, V. M. Bevilacqua, M. A. Carlson, Miss Anne Gibson, Miss Peggy Lawler, Mr. B. O. States, Jr., and staff.

The Department of Theatre Arts offers a broad and varied curriculum dealing with theatre and related arts. All majors must complete the sequence 109-110 plus thirty additional hours of work in the Department, which must include 251-252 and at least two additional hours in courses numbered in the 250's. Upperclassmen accepted as majors who have not taken 109-110 must complete instead 209 and an additional course prescribed by the department. In addition, majors must complete at least twelve hours of related work outside the Department. All majors must demonstrate proficiency in practical theatre work.

Students wishing to graduate with Honors may undertake to work toward an Honors essay or an Honors production project. Those interested in working toward the essay should make application to the Chairman by the first term of their junior year, those working toward the production project by the first term of their sophomore year. For provisional acceptance as a candidate for Honors, a student must have chosen theatre as his major, have a cumulative average of B- for all work done in the College, and have no grades below B- for courses in the Department. Successful candidates will be removed from provisional status at the end of their junior year, and as seniors must enroll in the Honors sequence 427-428.

The Distribution requirement in the expressive arts is satisfied only by the sequence 109-110.

Opportunities for performance in theatre, dance, and cinematography are available to all members of the student body through the facilities

of the Department. A wide variety of theatrical performances is presented each term in the University Theatre of Willard Straight Hall, the Kaufmann Auditorium in Goldwin Smith Hall, and the Drummond Studio in Lincoln Hall. Students may participate as actors, dancers, directors, playwrights, film makers, designers, or technicians. General auditions are held at the beginning of each term, with additional auditions for particular productions scheduled throughout the year. Film-making equipment and facilities are available for student use.

#### 109-110. INTRODUCTION TO THEATRE ART

Throughout the year. Credit three hours a term. First term prerequisite to the second. M W F 11:15. Mr. Albright.

Study of the fundamental elements in theatrical production and of their interrelationships. The first term will be devoted primarily to the written script and its analysis for production, and to staging and design as they affect the work of actor and director.

In the second term the artistic choices of the actor and director in bringing a script to life on the stage will be given primary consideration. Material in both terms will be developed through lectures, readings, discussions, and demonstrations, as well as through individual and group exercises.

#### 300. INDEPENDENT STUDY

Either term. Credit to be arranged. Individual study of special topics. Open to juniors and seniors by consent of the Departmental member directing the study.

#### 427. HONORS SEMINAR

Fall term. Credit four hours. Prerequisite, senior standing as a candidate for Honors. Hours to be arranged. Members of the Department.

#### 428. HONORS RESEARCH

Spring term. Credit four hours. Prerequisite, Theatre Arts 427. Hours to be arranged. Members of the Department.

## Speech

**PRIZES.** 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; the Class of 1886 Memorial Prize in Public Speaking for sophomores and juniors.

#### 202. PERSUASION

Fall term. Credit three hours. Prerequisite, Speech and Drama 107 or 201. M W F 9:05. Mr. Bevilacqua.

Advanced study of the speech designed to affect attitudes and beliefs and to induce action. Study of the theories of persuasion with special attention to the logic, language, and structure of audience-centered persuasive discourse. Practice in the composition and delivery of persuasive speeches related to varied purposes, audiences, and propositions.

**412. BRITISH PUBLIC ADDRESS**

Spring term. Credit four hours. M W F 12:20. Mr. Bevilacqua.

Analytic study of parliamentary and public speeches reflecting the evolution of British rhetorical practice. Speeches to be studied will relate to such movements as the American and French revolutions, Indian reform, parliamentary reform, free trade, imperialism, and World War II. Representative of the orators considered are Cromwell, Chatham, Burke, Cobden, Gladstone, and Churchill.

**501-502. SEMINAR IN RHETORICAL THEORY**

Throughout the year. Credit four hours a term. M 2-4:25. Mr. Bevilacqua.

In the first term consideration will be given to theories of rhetorical practice; in the second term, to applications of rhetorical theory in the criticism of public address.

## Drama

**PRIZES:** Four prizes are offered under the auspices of the Department: the Heermans Prize for One-Act Plays on an American Theme (open to undergraduates), the George A. McCalmon Prize for One-Act Plays (open to graduates and undergraduates with no restriction as to theme), the Cornell Dramatic Club First President's Prize for significant contributions to the theatre program, and the Cornell Student Film Festival Prize (open to graduates and undergraduates with no restriction as to length or theme).

The Drummond Awards were established in honor of the late Professor A. M. Drummond, to acknowledge, each year, outstanding achievements by undergraduate members of the Cornell Dramatic Club and other undergraduate participants in the University Theatre program.

## THEATRE PRODUCTION

Each of the following courses (251-252, 253-254, 255-256 and 257-258) is offered throughout the year. Credit one hour a term. Consent of the instructor is required. The courses may be repeated for credit, but no student may earn more than six hours of credit applicable towards graduation. Acting, directing, managerial, and technical responsibilities in productions of the University Theatre and/or Studio programs under the direction of the University Theatre staff. Participation is also open to students without credit.

**251-252. TECHNICAL THEATRE**

Credit one hour per term. Hours to be arranged. First meeting in Lincoln B-9 at 7:30 P.M. on the first day of instruction. Miss Gibson. Only grades of S and U will be given.

**255-256. REHEARSAL AND PERFORMANCE**

Credit one hour per term. Hours to be arranged. First meeting in Lincoln B-9 at 7:30 P.M. on the first day of instruction. Staff. Only grades of S and U will be given.

**257-258. MANAGEMENT AND DIRECTION**

Credit one hour per term. Hours to be arranged. First meeting in Lincoln B-9 at 7:30 P.M. on the first day of instruction. Staff. Only grades of S and U will be given.

**280. BEGINNING ACTING**

Either term. Credit three hours. M W 3:30-5:30. Staff.

Introduction to the problems and basic techniques of the actor. Practice in creative exercises, pantomime, improvisation, and scene study. Students appear in public studio performances.

**[281. ORAL INTERPRETATION OF LITERATURE]**

Not offered in 1968-69.

**282-283. DANCE AND MOVEMENT FOR THE THEATRE**

Throughout the year. Credit three hours a term. First term prerequisite to the second. F 1:30-3:00 plus one other period to be arranged. Miss Lawler.

Basic dance technique designed to help the actor improve his use of the body as an expressive instrument. Emphasis in the second term is on changing styles of movement.

**MODERN DANCE TECHNIQUE**

(Physical Education 210)

**RHYTHMIC FUNDAMENTALS**

(Physical Education 220)

**DANCE COMPOSITION**

(Physical Education 230)

**[287. PLAY PRODUCTION]**

Not offered in 1968-69.

**290. BEGINNING DIRECTING**

Either term. Credit three hours. M W F 3:30-5:30.

Lectures, discussions, practice in play analysis, actor communication, blocking techniques, and preparation of prompt scripts. Each student will informally stage scenes from selected plays. Practical emphasis upon communication and conception of approach.

**351-352. THEATRE PRACTICE**

Throughout the year. Credit two hours a term. Primarily for majors in Theatre Arts but open, by consent of instructor, to others. Hours to be arranged. First meeting in Lincoln B-9 at 8:30 P.M. on the first day of instruction. Miss Gibson and the staff of the University Theatre.

Planning and execution of projects in the productions of the University Theatre.

**361. STAGECRAFT**

Fall term. Credit four hours. No prerequisite but previous study of acting or play production recommended. M W 12:20. Laboratory, T 2:00-4:25. Staff.

The theory and practice of stage production and design; theatre structure and equipment, problems and practice in scene construction and painting, elements of lighting. Lectures and demonstrations.

**364. STAGE LIGHTING AND DESIGN**

Spring term. Credit four hours. Prerequisite, Theatre Arts 361 or consent of instructor. M W 12:20. Laboratory T 2:00-4:25. Miss Gibson.

A consideration of the history, theory, and practice of lighting and design in the pictorial elements of dramatic production. Lectures, demonstrations, and special projects.

367. STAGE COSTUME

Fall term. Credit four hours. T Th 12:20. Laboratory M 2:00-4:25. Staff.

Research in stage costume design, analysis in terms of fashion, techniques, fabrics, with emphasis on period silhouette and costume research. Lectures and demonstrations.

368. COSTUME DESIGN

Spring term. Credit four hours. T Th 12:20. Laboratory M 2:00-4:25. Staff.

Stage costume design and construction. Practice in costume design, analysis of costume in production. Specific production design projects, lectures, and demonstrations; construction and rendering laboratories.

380. ADVANCED ACTING

Spring term. Credit four hours. Prerequisite, Theatre Arts 280 or consent of instructor. T Th 3:30-5:30.

Intensive work with fundamentals of voice and body training. Practical emphasis upon integration of conception, preparation of role and techniques of presentation.

388. PLAYWRITING

Fall term. Credit four hours. Previous study in play production recommended. W 1:25-4:25. Mr. States.

A laboratory for the discussion of student plays. Each student is expected to write two or three one-act plays, or one full-length play.

390. ADVANCED DIRECTING

Spring term. Credit four hours. Prerequisite, Theatre Arts 290 or consent of instructor. T Th 3:30-5:30. Mr. Clancy.

Investigation of the theatrical meaning of a play and the methods by which such meaning may be communicated in the modern theatre. Discussion and studio practice.

THEATRE HISTORY, LITERATURE, AND THEORY

209. THE ARTS OF THE THEATRE

Fall term. Credit three hours. Not open to freshmen or to students who have taken Theatre-Arts 109 or 110. M W F 12:20. Mr. Albright.

A survey of the elements of dramatic communication intended to develop appreciation and rational enjoyment of the theatre in all its forms. This is not a production course, and no experience in dramatic production is required. Lectures, readings, demonstrations.

[210. THE PUBLIC ARTS]

Not offered in 1968-69.

393. HISTORY OF THE THEATRE I

Fall term. Credit four hours. M W F 10:10. Staff.

A survey of the characteristics of primitive theatre, and of theatrical styles and production modes in Classical Greece, Rome, China, India, Medieval Europe, Renaissance England, and Spain.

394. HISTORY OF THE THEATRE II

Spring term. Credit four hours. M W F 10:10. Staff.

A survey of theatrical styles and production modes in Europe and the

Orient since 1642. Among the areas considered will be Renaissance France, the English Restoration, the eighteenth and nineteenth centuries in England, France, Germany, and Japan, and the modern international stage.

#### WORLD DRAMA

(Comparative Literature 345-346)

#### GREEK AND ROMAN DRAMA

(Comparative Literature 404)

#### REPRESENTATIVE ENGLISH DRAMAS

(English 339)

#### ELIZABETHAN AND JACOBEAN DRAMA

(English 412)

#### SHAKESPEARE

(English 368 and 413)

#### [396. AMERICAN DRAMA AND THEATRE]

Not offered in 1968-69.

#### MODERN DRAMA

(English 346 and 462, Comparative Literature 442)

#### [397-398. SURVEY OF THEATRICAL THEORY]

Not offered in 1968-69.

#### [493. SEMINAR IN THEATRE HISTORY]

Not offered in 1968-69.

#### 497. THEATRE AESTHETICS

Fall term. Credit four hours. Prerequisites, two 300-level or 400-level courses in drama. Th 2:00-4:25. Mr. Albright.

The chief theories of dramatic production in relation to aesthetic principles.

For complete descriptions of graduate courses see *Announcement of the Graduate School: Humanities*.

#### [597. SEMINAR IN THEATRE AESTHETICS]

Not offered in 1968-69.

#### 598. SEMINAR IN THEATRE CRITICISM

Fall term. Credit four hours. Prerequisites, graduate standing and consent of instructor. F 2:00-4:25. Mr. Clancy.

Studies in the relationship of dramatic theory to production.

#### 690. THESES AND SPECIAL PROBLEMS IN DRAMA AND THE THEATRE

#### CINEMA

#### [253-254. CINEMA PRODUCTION]

Not offered in 1968-69.

## 375. HISTORY OF THE CINEMA I

Fall term. Credit four hours. T Th 11:15. Laboratory, T 2:00-4:25. Mr. Beck.

An introduction to the history and art of the cinema: its characteristic problems, devices, and development. Representative motion pictures will be studied. Lectures, demonstrations, and film viewings.

## 376. HISTORY OF THE CINEMA II

Spring term. Credit four hours. T Th 11:15. Laboratory, T 2:00-4:25. Mr. Beck.

An examination of the non-fiction film and the independent film. Attention is given to the film-maker as artist, propagandist, and recorder. Representative examples will be studied. Lectures, demonstrations, and film viewings.

## 377. FUNDAMENTALS OF CINEMATOGRAPHY

Fall term. Credit four hours. M W 11:15. Laboratory, W 2:00-4:25. Mr. Beck.

Principles and methods of motion picture production with primary emphasis on creative techniques: script writing, photography, editing, special effects, and sound recording. Lectures, demonstration, and special projects.

## 475. SEMINAR IN THE CINEMA

Spring term. Credit four hours. Prerequisite, Theatre Arts 375 and 376. M 2:00-4:25. Mr. Beck.

Selected topics in the history and aesthetic of the cinema.

## CENTER FOR INTERNATIONAL STUDIES

Mr. Douglas E. Ashford, Director.

The purpose of the Center is to facilitate and encourage research and teaching dealing with international affairs and to serve as a focal point for their discussion. The Center's major effort is directed to strengthen the social sciences as they relate to international studies. The Center brings to the campus visiting professors and research fellows who often give interdisciplinary courses and seminars. Through the use of the permanent Cornell faculty, the Center is beginning to develop a teaching program, both at the undergraduate and graduate levels, in those areas where it can usefully add to the regular offerings of separate schools and departments.

Please refer to the *Announcements* of the various schools for information about degree requirements and to the *Report and Announcement of International Studies* at Cornell for information about activities and interdisciplinary and departmental programs.

Courses and seminars offered in 1968-69 will include:

## 372. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT

(Also Economics 372.)

Spring term. Credit four hours. T Th S 11:15. Mr. Morse and guest lecturers.

A consideration of various contributions by economists and others to an understanding of how societies undergo economic growth and institutional change. Developing countries are the main focus of attention, most detailed consideration being given to Africa. Some possibilities of combining elements from economics and other fields to form a broad approach to economic de-

velopment are explored. This course is identical with Economics 372, but students not majoring in economics will not be held responsible in examinations for technical economic material.

**442. POLITICAL AND ECONOMIC CHANGE IN CONTEMPORARY EUROPE**

(Also Government 442.)

Spring term. Credit four hours. Open to qualified juniors and seniors. M W 2:30-4. Mr. Einaudi.

Emphasis will be placed on the key manifestations of change since the War. The crisis of parties and of social and political institutions. New instruments of public policy. The varieties of public corporations and of planning agencies. The social and technological revolutions and private enterprise. The search for new dimensions of government: regionalism and the supranational communities.

**530. METHODOLOGICAL PROBLEMS IN CROSS-NATIONAL ANALYSIS**

Spring term. Hours to be arranged. Credit four hours. Mr. Teune.

An examination of methodological issues and problems in comparative research problems which will include establishing equivalence and validity of measures within and between system comparisons, as well as analysis of different patterns of explanation for specific systems. Data used will be of three types: (1) political integration data for between system (between country) comparisons, (2) economic and social mobilization data for local political systems for within system analysis, and (3) elite data for individuals. Much of the data and analyses will be from a four-nation study of India, Poland, the United States and Yugoslavia.

**542. POLITICAL AND ECONOMIC CHANGE IN CONTEMPORARY EUROPE**

(Also Government 542 and BPA 562.)

Spring term. Credit four hours. Open to graduate students only. Mr. Einaudi.

**545. METHODS OF SOCIAL ANALYSIS**

(Also Psychology 545. I&LR 664 and BPA 908)

Fall term. Credit four hours. Hours to be arranged. Mr. Triandis.

Topic for 1968: Approaches to the Analysis of Subjective Culture. An analysis of the phenomenological field of persons who have grown up in different cultures. A variety of approaches, including the use of componential analysis; the semantic, behavioral, and role differentials; studies of stereotypes; the use of free associations, will be reviewed.

**550. RESEARCH IN COMPARATIVE MODERNIZATION**

Throughout the year. Credit and hours to be arranged. Prerequisite: graduate standing and permission of instructor. Mr. Young.

Students may register who are engaged in research in association with the Comparative Modernization Research Methods Project and who do not wish to register for departmental directed research. The Research Methods Project staff assists graduate students in the use of available data, such as national social accounts, documents, ethnographic reports and aerial photographs. A variety of informal instruction patterns can be worked out.

**561. IDEOLOGY AND POLITICAL CHANGE**

(Also BPA 561 and Govt. 545)

Spring term. Credit four hours. Hours to be arranged. Mr. Ashford.

An examination of the philosophical and ideological roots of nationalist

thought in developing countries. Particular attention is given to the modification and elaboration of nationalism in response to the achievement of independence and the growing commitment to rapid development. The major approaches to the study of nationalism are critically examined.

#### 572. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT (Also Economics 372.)

Spring term. Credit four hours. Open to graduate students only. Mr. Morse and guest lecturers.

See course 372 for description.

## THE PROGRAM IN GREEK CIVILIZATION

A series of seminars in the Program for Greek Civilization. Open to participants and to other undergraduates by invitation.

### GREEK CIVILIZATION 201-202, 203-204. GREEK LANGUAGE

Throughout the year. Credit four hours a term. Open by invitation to freshmen and sophomores. Hours to be arranged. Mr. Spofford.

The introduction to ancient Greek is designed to allow for the reading of important works beginning early in the second semester with Plato's *Euthyphro*. In the second year works will sometimes be chosen for simultaneous treatment in the language course, and in translation in another course so that contact with the original will allow a closer and fuller study of its meaning. The works chosen will vary from year to year, but will be drawn from such writers as Homer, Euripides, Plato and Sophocles.

### [GREEK CIVILIZATION 205-206. GREEK LITERATURE IN TRANSLATION]

Credit four hours a term. Open by invitation to freshmen and sophomores. Not offered in 1968-69.

Emphasis will be on the slow reading of a few masterpieces. At the center of the first semester will be Homer's *Iliad* and Aeschylus' *Oresteia*. Aspects considered will include the representation of human action as a sphere in which divine as well as human agents are operative. Occasional rapid reading will be done to broaden the basis for discussion. The term will end with a study of Sophocles' *Oedipus Tyrannus*. The second semester will concentrate on Euripides and Aristophanes. The relationship between drama and radical thought will serve as introduction to a few of Plato's shorter dialogues.

### GREEK CIVILIZATION 207-208. GREEK HISTORY

Throughout the year. Credit four to six hours a term. Open by invitation to freshmen, sophomores and juniors. Hours to be arranged. Mr. Kagan.

Studies in the nature and development of the *polis* from its origins to its decline. The *polis* will be studied as a unique attempt to achieve a rich and meaningful life for its citizens. The political, constitutional, economic, and social institutions of the *polis* will be examined, and the attempt will be made to establish the relationship between them, the values which underlay them, and the ideas to which they gave rise. Members will read the ancient authors and the interpretations of modern scholars as well.

### GREEK CIVILIZATION 209-210. GREEK POLITICAL PHILOSOPHY

Throughout the year. Credit four to six hours a term. Open by invitation to freshmen, sophomores and juniors. Hours to be arranged. Mr. Bloom.

An attempt to understand political alternatives as viewed by the greatest thinkers of antiquity, concentrating on their presentations of human nature, virtue and the best regime. Plato, Aristotle, and Xenophon will be the central authors treated, but there will also be some consideration of historians and poets. Emphasis will be upon careful interpretation of texts.

[GREEK CIVILIZATION 211. CLASSICAL ARCHAEOLOGY]

Credit four to six hours a term. Open by invitation to freshmen, sophomores and juniors. Miss Milburn. Not offered in 1968-69.

The material covered will range from approximately 750 B.C. to at least the fourth century; no precise terminal date is set, in order to avoid the limitations imposed by attempting to cover a specific amount of material, and so as to allow the greatest possible freedom for full discussion of problems which particularly interest the class. The course is not designed as a survey; assigned readings will provide the necessary background, while lectures and discussions in class will center on significant questions. The various types of archaeological evidence (architecture, sculpture, vases, coins, inscriptions, the minor arts) will all be examined, and their relationship to contemporary history and literature will be stressed, so as to provide as complete a picture as possible of the civilization of Classical Greece.

[GREEK CIVILIZATION 212. GREEK SCIENCE]

Credit four to six hours a term. Open by invitation to freshmen, sophomores and juniors. Mr. Williams. Not offered in 1968-69.

Science began with the Greeks. Making extensive use of original sources, the students will trace the evolution of science from the early speculations of the Ionians through the mature philosophical systems of Plato and Aristotle, to its fragmentation into specialized sciences in the Hellenistic period. Particular attention will be paid to the kind of questions the Greeks asked of nature and to the metaphysical and mathematical instruments devised by them to find answers.

## INTERDEPARTMENTAL COURSES

### 372. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT

For a description of content, see Economics 372.

### 572. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT

Same course as 372 but 572 is registration number for graduate students.

## LATIN AMERICAN STUDIES

The attention of students interested in Latin American Studies is called to the variety of courses in this field offered in different departments and colleges: Agricultural Economics (Agr.) 364, 665, 667, 668; Agronomy (Agr.) 401, 481; Animal Science (Agr.) 400, 401; Anthropology 432, 494, 502, 527, 533, 565; Economics 325, 565; Government 340, 540; History 319, 320, 488, 489; Housing and Design (Ho. Ec.) 545, 546, 547; Industrial and Labor Relations (ILR) 533, 534, 632, 662; Linguistics 516; Portuguese 101-102, 131-132, 203-204, 303-304, 305; Quechua 133-134, 600; Rural Sociology (Agr.) 420; Sociology 230, 350, 362, 433, 530, 632,

657; Spanish 201a, 311-12, 384, 390, 397-398, 429-430, 440, 455, 457-458, 464, 466, 483, 489, 541, 590, 600, 629, 639-640.

**SEMINAR: LATIN AMERICAN STUDIES 602**

Spring term. Credit four hours. Hours to be arranged. (Staff)

A required course for all graduate students minoring in Latin American Studies. Students will work on projects in their field of interest under the direction of a faculty member. Various faculty specialists in Latin American affairs will participate in the seminar.

## THE SIX-YEAR PH.D. PROGRAM

Limited to forty entering students a year, this program leads to the A.B. degree in three years, the M.A. in four, and the Ph.D. in six. It is designed for superior students who are bound for advanced study in the liberal arts or sciences. All students admitted to it will be given financial aid based on need, renewable for their three undergraduate years (so long as their performance is satisfactory). For each of their three graduate years, provided that they meet graduate-school admission standards, they will be awarded fellowships worth \$3000 plus tuition and fees.

**AIMS OF THE PROGRAM.** The Six-Year Ph.D. Program is intended for the exceptionally able, committed student who is likely to find undergraduate routines confining and the pace of the regular A.B. course too slack. Students of this sort, to avoid the let-down that can follow the transition from school to college, sometimes accelerate on their own power, at the cost either of early, narrow specialization, or of shallow grounding for graduate work. For these students and others, the Six-Year Ph.D. Program balances acceleration with enrichment, providing an integrated course of study with a strong liberal-arts core. By making undergraduate study continuous with study for the graduate degrees, the program also reduces the waste that can follow the unsettling transition to graduate work, and shortens the long, disheartening apprenticeship that graduate life too commonly involves.

**SUMMER STUDY.** Students accepted for the program will be brought to Cornell for a preliminary summer session of six weeks (with room, board, and travel paid) following their school graduation. Work in the summer will be divided between a small seminar in a special topic, designed to introduce students to college study, and intensive work in languages.

Later summers are free, but students who have special needs may be supported in research under the guidance of faculty members at Cornell or in travel and study abroad. Summer work will not be looked upon as a way to accelerate more rapidly (to reach the total of 120 hours needed for graduation, each student need earn only 10 hours of advanced standing credit) but as a way to enrich and fill out a student's education.

During their first years in the program, all students will be expected to be able to read two foreign languages (French and German are the

most useful, with Latin, Greek, and Italian of special importance for the humanities, and Russian of growing importance in the sciences). The seminars will take this competence for granted. Students who fall short of these expectations may use the first summer to develop (or even to begin) a language. All students will also be expected to have an acquaintance with the differential calculus, but again, the first summer may be used to gain or improve this acquaintance. All students will further be expected to know the subtlety and power of the English language and to use it well.

**THE SEMINARS AND THE ADVISERS.** During their three undergraduate years students in the program will be freed of formal requirements. They need not even designate a major. Each student will be expected to work out, by consultation with his adviser, an individual program of study that suits his needs and leads him into graduate study in his chosen field. All students are expected to take one of the special seminars each year, and three or four other courses each term chosen from the regular college offerings. In the first year this will ordinarily represent a load of sixteen hours a term; in later years, eighteen hours a term.

The seminars are intended to provide a center for the student's general education, and to introduce him to areas in which his special interests may develop. The courses will serve a variety of aims, among them that of giving training in depth in the subjects of students' special interests. The seminars are of different kinds. Some are broad in scope, some rather sharply focused upon special problems. Some are more advanced than others and may require special background, but all are open to any student in the program, at any level. All seminars will demand sustained independent work and clear, accurate writing.

The seminars will be as shown below. Each student in the program will enroll in one seminar, and regular students in the College may also apply for admission, up to the limit of fifteen participants.

## Group A: Humanities

### KO. SEMINAR IN GREEK HISTORY

Throughout the year. Credit four or six hours a term, as arranged. Hours to be arranged. Donald Kagan, Professor of Ancient History. Topic: The *Polis*.

Studies in the nature and development of the *polis* from its origins to its decline. The *polis* will be studied as a unique attempt to achieve a rich and meaningful life for its citizens. The political, constitutional, economic, and social institutions of the *polis* will be examined, and the attempt will be made to establish the relationship between them, the values which underlay them, and the ideas to which they gave rise. Members will read the ancient authors and the interpretations of modern scholars as well.

### HO. SEMINAR IN INTELLECTUAL HISTORY

Throughout the year. Credit six hours a term. Hours to be arranged. Cushing Strout, Professor of English, and member, American Studies Committee. Topic: Dimensions of freedom.

An examination of the multiple meanings and problems of freedom in American culture. Selection of texts will emphasize classic themes and spokesmen in a variety of forms: histories, theories, cases, fiction. The issues centering in the ideal of freedom will be topically studied in historical context, and analysis will be made of such different dimensions as free will and determinism, majority rule and minority rights, church and state, individualism and conformity, alienation and community. Texts will include de Tocqueville's *Democracy in America*, Reisman's *The Lonely Crowd*, and *The Federalist*; essays by Edwards, Emerson, Thoreau, and James; novels by Twain, James, Dos Passos, Bellow, and Ellison; and famous cases like the Scopes trial, Sacco-Vanzetti, and the Oppenheimer security hearing.

#### CO. SEMINAR IN THE MIDDLE AGES

Throughout the year. Credit six hours a term. Hours to be arranged. John Freccero, Professor of Romance Studies and member, Department of Comparative Literature. Topic: Confessional writings and the origins of the novel.

The seminar will begin with an analysis of the *Confessions* of St. Augustine in an attempt to define its structure and to distinguish it from its classical antecedents. A series of meetings will then be devoted to a study of the continuity of the Augustinian tradition and the "Literature of Love" of the late middle ages, with special emphasis on Dante's *Divine Comedy* and Petrarch's *Canzoniere*. On the basis of these readings, an effort will be made to evolve a theory of the "Novel of the Self" whose applicability to later autobiographical writing will be tested in individual analyses of various works to be selected according to the interests and experience of members of the seminar.

#### LO. SEMINAR IN LITERATURE

Fall term. Credit six hours. Hours to be arranged. Arthur Mizener, Old Dominion Foundation Professor of the Humanities. Topic: The individual and society in twentieth-century English literature.

The crisis of consciousness out of which the great works of twentieth-century literature emerged took the form of a conflict between the needs of the individual and the demands of society. The history of that conflict can be studied in representative writers in almost any literature of western Europe. This seminar will concern itself with the history of that conflict in Anglo-American literature from the breakdown of the Victorian compromise to the present. It will concentrate on the following texts: Kingsley Amis, *Take a Girl Like You*; H. G. Wells, *Experiment in Autobiography*; Joseph Conrad, *Heart of Darkness*; Henry James, *The Wings of the Dove*; *Decline of the West*; Pound's *Maubertley*, *Selected Cantos*; Eliot's *The Waste Land*; Yeats, selected lyrics; *The Coming Struggle for Power*; Fitzgerald's *The Great Gatsby*; Dos Passos' *The Big Money*; Robert Penn Warren, *All the King's Men*.

#### FO. SEMINAR IN PHILOSOPHY AND LITERATURE

Spring term. Credit six hours. Hours to be arranged. Stuart Brown, Professor of Philosophy, and Dean, College of Arts and Sciences. Topic: The Bloomsbury group.

The seminar will be a study of the writings and the influence of a group of friends, formed about a nucleus of young men who had been students together at Cambridge at the turn of the twentieth century. Most had come strongly under the influence of G. E. Moore, a young philosopher and don; all were passionately devoted to art and truth. Among the members of the group were the novelists, E. M. Forster and Virginia Woolf; the historian

and biographer, Lytton Strachey; the economist, J. M. Keynes; the novelist and political scientist, Leonard Woolf; and the art critics, Clive Bell and Roger Fry. Special attention will be given to the philosophy of G. E. Moore.

## Group B: Science and Mathematics

### MO. SEMINAR IN ASTRONOMY

Fall term. Credit six hours. Hours to be arranged. Carl Sagan, Associate Professor of Astronomy. Topic: The astronomical perspective.

A discussion of the comparative position of the earth and its inhabitants in the universe. Material will be drawn from astronomy, physics, and biology. Main emphasis will be placed on planetary motions, the scale of the universe, stellar evolution, the origin of the solar system and of life, and the prospects for extraterrestrial intelligence.

### NO. SEMINAR IN CHEMISTRY AND BIOLOGY

Spring term. Credit six hours. Hours to be arranged. Roald Hoffmann, Associate Professor of Chemistry. Topic: The architecture and dynamics of molecules, both natural and unnatural.

An infinite variety of three-dimensional shape characterizes the structure of molecules, and with each geometrical arrangement there is associated a specific set of chemical reactions. The shapes of molecules, the methods of structure determination, the mechanisms of chemical transformation and the synthesis of both natural and unnatural molecules will be discussed. The goal is to work up to an understanding of the structure and function of biological systems at a molecular level.

### GO. SEMINAR IN THE DEVELOPMENT OF MATHEMATICS

Either term. Credit six hours. Hours to be arranged. Peter Hilton, Professor of Mathematics. Topic: The art and science of mathematics.

The objective will be to present basic notions of mathematics within the framework of a study of the development of mathematics. The following topics will receive attention: differential and integral calculus; elementary number theory; group theory; foundations of geometry; linear algebra; elementary theory of differential equations. The approach will be designed to show why the fundamental concepts of mathematics arise and why they survive; this will bring out the criteria of generality and applicability but will not preclude the acquisition by those attending the seminar of good and efficient technique. Suggested readings: Courant and Robbins, *What is Mathematics?*; Klein, *Elementary Mathematics from the Advanced Standpoint*; Davenport, *The Higher Arithmetic*; Hardy, *A Mathematician's Apology*; Birkhoff and MacLane, *Survey of Modern Algebra*.

### DO. SEMINAR IN PHYSICAL SCIENCE

Either term. Credit six hours. Hours to be arranged. Fall term: David Mermin, Associate Professor of Physics. Spring term: Vinay Ambegaokar, Associate Professor of Physics. Topic: Laws of nature.

Selected topics in physical science will be pursued, with a view to illustrating that a law of nature is both a useful synthesis of experience and a thing of beauty. An occasional demonstration will be attempted. Facility with calculus will not be assumed.

## Group C: Social Sciences

### AO. SEMINAR IN ANTHROPOLOGY

Fall term. Credit six hours. Hours to be arranged. Charles F. Hockett, Professor of Linguistics, Anthropology, and Modern Languages. Topic: Man's place in nature.

A survey of what is known and what is suspected of man's nature and his place in the universe. Human communities and their lifeways; norms and extremes; similarities to and differences from the ways of life of other animals. The nature of language and its function in human life. The nature of our knowledge of the past. How language and culture change with the passage of time. The principal steps and stages of human evolution (genetic and cultural) from proto-Hominoid times to the present.

### PO. SEMINAR IN ECONOMIC HISTORY

Fall term. Credit six hours. Hours to be arranged. Douglas F. Dowd, Professor of Economics. Topic: The seventeenth century.

The seventeenth century will be approached as a period of great turbulence and social change, resulting from combinations of strong elements of continuity and of innovation, and resulting in marked tendencies toward destructive as well as constructive developments. The seminar will attempt to identify, to relate to each other, and to explain these processes (probably with an emphasis on England and France, but not necessarily to the exclusion of other regions) in their various economic, political, cultural, religious, scientific, and military manifestations, as the abilities and inclinations of the seminar members suggest.

### QO. SEMINAR IN ECONOMIC HISTORY

Spring term. Credit six hours. Hours to be arranged. Douglas F. Dowd, Professor of Economics. Topic: The United States today.

The approach in this seminar will be quite similar to that noted above for the seventeenth century, with modifications appropriate to the changed time and place, and with the further modification that participants will severally and individually spend the semester, in discussion and in research papers, attempting to answer an important and relevant question about the contemporary American scene.

### SEMINAR ON GREEK POLITICAL PHILOSOPHY

(Society for the Humanities 301-302)

Throughout the year. Credit four hours a term. Allan Bloom, Associate Professor of Government.

### IO. SEMINAR IN PSYCHOLOGY

Throughout the year. Credit six hours a term. Hours to be arranged. Robert B. MacLeod, Susan Linn Sage Professor of Psychology. Topic: Conceptions of human nature.

Reading and discussion will center about the major attempts to identify and explain what is distinctively human about man. While the emphasis will be on psychological theory, classical as well as contemporary, a good deal of attention will be paid to problems of current research interest. In the first term the psychological basis of cognition will be the topic: perception, memory, imagination, thinking; in the second term, the psychological basis of conduct: motivation, emotion, personality, social behavior. Students will be expected to present short reports on special topics and to prepare a longer term paper on a more general topic of their own choosing. While the two

seminars constitute a sequence, students may with permission take the second without having had the first.

The director of each seminar will serve as adviser to ten or twelve students in the program, consulting with them, helping them to select courses, and guiding them ultimately in their choices of a field and a director for their graduate work.

**ADMISSION TO THE PROGRAM.** Candidates for the program need not have decided upon their major subject, but they should feel a strong commitment to advanced study in the liberal arts or sciences. To apply, they should file the regular application for admission to the College of Arts and Sciences and at the same time ask for a copy of the *Application for Cornell Six-Year Ph.D. Program*. Both applications must be turned in by the middle of January. So that scores will be available early, all candidates are urged to take the College Board Scholastic Aptitude Test no later than December. Three College Board Achievement Tests are also required, no later than January: English composition, a foreign language, and either a second language, mathematics, or a subject which is likely to be the student's major interest in college. All candidates are further urged to submit scores of the PSAT and achievement tests taken in their junior year.

Candidates who pass the first screening of applications will be invited to an interview by a member of the program staff.

While the program is an integrated six-year design, it is not meant to be binding or inflexible. Students whose needs appear to be better served outside the program, or who desire from one motive or another to leave it, may transfer to the regular Cornell curricula. Their places will be filled by qualified students from the College of Arts and Sciences. To apply, students already at Cornell should see the Director of the program, Dean S. M. Parrish, College of Arts and Sciences, Goldwin Smith Hall.

## Freshman Seminars

Supported by the Six-Year Ph.D. Program, each seminar is open to twelve selected freshmen not in the program. Application may be made on forms in Goldwin Smith 159. Final selection of candidates will be made at the beginning of the spring term.

In the spring of 1969, the seminars will be:

### 4. FRESHMAN SEMINAR IN LINGUISTICS

Credit four hours. Hours to be arranged. James Marchand, Professor of Linguistics and Modern Languages. Topic: Language and culture.

The study of language as a means of articulating culture. Emphasis will be placed on the philosophy of language and the general field of language study rather than purely technical aspects of linguistic analysis. Textbook: Dell Hymes, *Language and Culture*.

### 6. FRESHMAN SEMINAR IN ASTRONOMY

Credit four hours. Hours to be arranged. Carl Sagan, Associate Professor of Astronomy. Topic: Planetary astronomy.

A modern discussion of the atmospheres, surfaces, and interiors of the planets, with emphasis on Venus, and, particularly, Mars. Attention will also be paid to such historical controversies as the Martian canal problem. In studies of impact cratering, students will deal with Lunar Orbiter and Mariner 4 photos. Consideration of the social and philosophical implications of planetary exploration will be encouraged.

## SOCIETY FOR THE HUMANITIES

Mr. Max Black, Director. Fellows (1968-69): Messrs. Allan D. Bloom, Harold Bloom, Herbert Dieckmann, Alexander Gelley, George P. Landow, Eric Regener, Lynn T. White, Jr.

The Society awards fellowships for research in the humanities in three categories: Senior Visiting Fellowships, Faculty Fellowships, Postdoctoral Fellowships. The fellows offer, as adjuncts to their research, informal seminars intended to be off the beaten track. Detailed information about these seminars is circulated to interested departments.

Membership in the Society's seminars is open, by invitation, to suitably qualified undergraduates and graduate students. Credit can be earned at the discretion of the College, but no examinations or other formal exercises are required and the only grade given is S. All seminars are held in the Society's house at 308 Wait Avenue. Admittance is permitted only to those officially enrolled or specifically invited to attend as visitors. Hours will be announced later.

Students wishing to attend any of these seminars should leave their names, addresses, telephone numbers and brief summaries of their qualifications with the Secretary of the Society at 308 Wait Avenue (X4086).

Seminars offered in 1968-69 will include:

### 301-302. SEMINAR ON GREEK POLITICAL PHILOSOPHY

Throughout the year. Credit four hours a term. Open, by invitation, to freshmen, sophomores and juniors. Mr. Allan Bloom.

An attempt to understand political alternatives as viewed by the greatest thinkers of antiquity, concentrating on their presentations of human nature, virtue and the best regime. Plato, Aristotle, and Xenophon will be the central authors treated, but there will also be some consideration of historians and poets. Emphasis will be upon careful interpretation of texts.

### 405. SEMINAR ON SPACE IN THE NOVEL

Fall term. Credit four hours a term. Open, by invitation, to seniors and graduate students. Mr. Gelley.

More than any other genre, the nineteenth-century novel utilizes the encompassing locality with its full emotional resonance as an integral part of the artistic structure. The seminar will try to delineate the personal spatial imagination of each author. Techniques of landscape description will be studied in order to view the problem in a historical dimension. The final goal is that of finding a uniquely appropriate manner for seeing how the "world" of the novel comes into being. Selected for interpretation are works of Rousseau, Dickens, Stifter, Flaubert, Hardy, and Proust, among others. Approaches from

disciplines other than literary criticism—philosophy, art criticism, and psychology—will be utilized where appropriate.

#### 407. SEMINAR ON THE SISTER ARTS IN THE NINETEENTH CENTURY

Fall term. Credit four hours a term. Open, by invitation, to seniors and graduate students. Mr. Landow.

After beginning with the history of the notion that painting, poetry, and architecture are sister arts, the seminar will explore selected topics in the theory and practice of the arts in the nineteenth century. The seminar, which will examine both the basis of this notion in psychological theory and the implications of imposing words upon form and image, will be particularly concerned with the way in which artists and critics "read" literature, painting, and architecture. The seminar will concentrate upon the works of Ruskin, Turner, Baudelaire, Delacroix, and other major figures of the nineteenth century.

#### 409-410. SEMINAR ON THEORY CONSTRUCTION IN MUSIC

Throughout the year. Credit four hours a term. Prerequisites, some background both in mathematics and in Western classical music. Open, by invitation, to juniors, seniors and graduate students. Mr. Regener.

An informal consideration of possible bases for a deductive scientific theory of musical structure, conceivably proceeding to the construction of specific mathematical models and means for testing them.

#### 505. SEMINAR ON TEXTUAL CRITICISM AND LITERARY INTERPRETATION

Fall term. Credit four hours. Open, by invitation, to seniors and graduate students. Mr. Dieckmann.

A study of the various stages in the composition of a literary work as a means of understanding its structure and meaning. Variants, revisions, and elaborations in the manuscript or in the printed version will be analyzed and evaluated. The works will be selected predominantly from French literature of the eighteenth century.

#### 507. SEMINAR ON INDIA AND MEDIEVAL EUROPE

Fall term. Credit four hours. Prerequisite, a knowledge of two foreign languages, preferably including Latin, is desirable. Open, by invitation, to seniors and graduate students. Mr. White.

Study and discussion of (1) contacts between the Indic world and Europe, (2) the European image of India, and (3) the routes, dates and significance of the percolation of elements of Indic culture to Europe during the millennium before Vasco da Gama.

#### 508. SEMINAR ON ANXIETY IN THE WESTERN MIDDLE AGES AND RENAISSANCE

Spring term. Credit four hours. Prerequisite, a knowledge of two foreign languages, preferably including Latin, is desirable. Open, by invitation, to seniors and graduate students. Mr. White.

Study and discussion of socially expressed anxiety, its fluctuations, and the development of scape-groups. The relevance of recent thinking in anthropology and social psychology to such historical problems will be explored.

## 601-602. SEMINAR ON A THEORY OF POETIC INFLUENCE AND MODERN REVISIONISM

Throughout the year. Credit four hours a term. Open, by invitation, to graduate students and faculty. Mr. Harold Bloom.

The seminar will seek to develop a theory of poetic influence, and to test this theory not only by a close study of the relation between poets and poems, but by an examination of the phenomenon of modern revisionism, in such areas as psychoanalytic and political theory. Significant poetic influence appears to proceed by modes of creative distortion or corrective vision, or even deliberate misunderstanding of earlier work, so that the imaginative value of accurate criticism of that work becomes highly questionable, which should be a burden for critics.

The main reading will be in a series of poets, including their writings on earlier poets. The principal sequence will be from aspects of Spenser and Milton and on to Blake and Wordsworth, and from them to a large company of nineteenth- and twentieth-century British and American poets, culminating in a large-scale consideration of W. B. Yeats and Wallace Stevens. If the resultant theory seems firm enough, it will be applied tentatively to the reading of certain Freudian and Marxist revisionists.

# COLLEGE OF ARTS AND SCIENCES

1968-69

## UNIVERSITY ADMINISTRATION

James A. Perkins, President of the University  
Dale R. Corson, University Provost  
Mark Barlow, Jr., Vice President for Student Affairs  
John E. Burton, Vice President—Business  
Lewis H. Durland, University Treasurer  
W. Keith Kennedy, Vice Provost  
Franklin A. Long, Vice President for Research and Advanced Studies  
E. Hugh Luckey, Vice President for Medical Affairs  
Thomas W. Mackesey, Vice President for Planning  
Paul L. McKeegan, Director of the Budget  
Robert D. Miller, Dean of the University Faculty  
Steven Muller, Vice President for Public Affairs  
Arthur H. Peterson, University Controller  
Robert L. Sproull, Vice President for Academic Affairs  
Neal R. Stamp, Secretary of the Corporation, and University Counsel

## PROFESSORS-AT-LARGE \*

Pierre Aigrain	Manfred Eigen	Sir Peter Medawar
Raymond Aron	Gino Gorla	Charles Singleton
Sir Eric Ashby	Mark Kac	Georg Henrik von Wright
Elliott Carter	L. S. B. Leakey	Elizabeth Mary Wilkinson
Daniel Cosío Villegas	Barbara McClintock	

## FACULTY †

Stuart MacDonald Brown, Jr., Dean of the College of Arts and Sciences  
Alexander J. Cheney, Associate Dean of the College of Arts and Sciences  
Stephen M. Parrish, Associate Dean of the College of Arts and Sciences  
F. Dana Payne, Jr., Associate Dean of the College of Arts and Sciences  
Robert A. Scott, Assistant Dean of the College of Arts and Sciences  
Barbara B. Hirshfeld, Assistant Dean of the College of Arts and Sciences

Meyer Howard Abrams, Ph.D., Frederic J. Whiton Professor of English  
Charles D. Ackerman, Ph.D., Assistant Professor of Sociology  
Barry Banfield Adams, Ph.D., Assistant Professor of English  
Caesar Blair Adams, A.B., Assistant Professor of English

\* Professors-at-Large are distinguished nonresident members of the University Faculty. During short visits to the campus, of up to a month's duration, made at irregular intervals, they hold seminars, give public lectures, and consult informally with students and faculty.

† Numbers following names indicate: (1) leave of absence, fall term, 1968-69; (2) leave of absence, spring term, 1968-69; (3) leave of absence, 1968-69.

- George Plimpton Adams, Jr., Ph.D., Professor of Economics  
 Howard Bernhardt Adelman, Ph.D., Professor of Histology and Embryology,  
 Emeritus  
 Frederick Browning Agard, Ph.D., Professor of Linguistics  
 Ralph Palmer Agnew, Ph.D., D.Sc., Professor of Mathematics, Emeritus  
 Andreas C. Albrecht, Ph.D., Professor of Chemistry  
 H. Darkes Albright, Ph.D., Professor of Theatre Arts  
 Henry A. Alker, III, Ph.D., Assistant Professor of Psychology  
 Vinay Ambegaokar, Ph.D., Professor of Physics  
 Archie Randolph Ammons, B.S., Assistant Professor of English  
 Benedict Richard O'Gorman Anderson, Ph.D., Assistant Professor of Govern-  
 ment  
 John Maxwell Anderson, Ph.D., Professor of Zoology, Section of Genetics,  
 Development and Physiology, Division of Biological Sciences  
 Judith Helena Anderson, Ph.D., Assistant Professor of English  
 Moshe Anisfeld, Ph.D., Assistant Professor of Psychology  
 Douglas Nelson Archibald, Ph.D., Assistant Professor of English  
 Robert Ascher, Ph.D., Professor of Anthropology and Archaeology  
 Neil William Ashcroft, Ph.D., Assistant Professor of Physics  
 Douglas E. Ashford, Ph.D., Associate Professor of Government  
 Claire Asselin, M.A., Assistant Professor of Linguistics  
 William Weaver Austin, Ph.D., Professor of Music  
 James Burton Ax, Ph.D., Professor of Mathematics  
 Michael Slavo Balch, Ph.D., Assistant Professor of Mathematics  
 Alfred L. Baldwin, Ph.D., Professor of Psychology  
 Cesáreo Bandera-Gómez, M.A., Assistant Professor of Romance Studies  
 Harlan Parker Banks, Ph.D., Professor of Botany  
 Evelyn Barish, Ph.D., Assistant Professor of English  
 LeRoy Leshner Barnes, Ph.D., Professor of Physics and Biophysics, Emeritus  
 Simon H. Bauer, Ph.D., Professor of Chemistry  
 Gordon E. Beck, Ph.D., Assistant Professor of Theatre Arts  
 Jonathan Mock Beck, Ph.D., Assistant Professor of Mathematics  
 Leroy James Benoit, Ph.D., Professor of Linguistics  
 Anne LeGrace Benson, M.F.A., Assistant Professor of the History of Art  
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