

CORNELL

U N I V E R S I T Y

Courses of Study

1992-1993

Cornell University Calendar

Fall Semester

Residence halls open
Freshman Orientation begins
New-student orientation begins
Registration—Course exchange
Instruction begins
Physical education classes begin
New-Student Parents' Weekend
Fall recess: instruction suspended
Instruction resumes
Pre-course enrollment for spring

Homecoming Weekend
Thanksgiving recess:
instruction suspended, 1:10 p.m.
Instruction resumes
Instruction ends
Study period
Final examinations begin
Final examinations end
Residence halls close

Winter Session

Variable periods between
December 25 and January 18

Spring Semester

Residence halls open for continuing students
Residence halls open for new students
Registration—Course exchange
Instruction begins
Physical education classes begin
Spring recess: instruction suspended
Instruction resumes
Pre-course enrollment for fall
Instruction ends
Study period
Final examinations begin
Final examinations end
Residence halls close (students who are graduating
may stay through Commencement Day)
Senior Week
Commencement

Summer Session 1993

Three-Week Session
Eight-Week Session
Six-Week Session

1992-93

Friday, August 21
Friday, August 21
Sunday, August 23
Tuesday—Wednesday, August 25–26
Thursday, August 27
Monday, September 7
Friday—Sunday, November 6–8
Saturday, October 10
Wednesday, October 14
Wednesday—Wednesday,
October 21—November 4
Saturday, October 24

Wednesday, November 25
Monday, November 30
Saturday, December 5
Sunday—Wednesday, December 6–9
Thursday, December 10
Saturday, December 19
Saturday, December 19

1993-94

Friday, August 20
Friday, August 20

Tuesday—Wednesday, August 24–25
Thursday, August 26
Monday, September 6
Friday—Sunday, October 22–24
Saturday, October 9
Wednesday, October 13
Wednesday—Wednesday,
October 20—November 3
Saturday, November 6

Wednesday, November 24
Monday, November 29
Saturday, December 4
Sunday—Wednesday, December 5–8
Thursday, December 9
Saturday, December 18
Saturday, December 18

Sunday, January 17
Monday, January 18
Thursday—Friday, January 21–22
Monday, January 25
Monday, February 8
Saturday, March 20
Monday, March 29
Wednesday—Wednesday, March 24–April 7
Saturday, May 8
Sunday—Wednesday, May 9–12
Thursday, May 13
Saturday, May 22

Saturday, May 22
Sunday—Saturday, May 23–29
Sunday, May 30

Sunday, January 16
Monday, January 17
Thursday—Friday, January 20–21
Monday, January 24
Monday, February 7
Saturday, March 19
Monday, March 28

Saturday, May 7
Sunday—Wednesday, May 8–11
Thursday, May 12
Saturday, May 21

Saturday, May 21
Sunday—Saturday, May 22–28
Sunday, May 29

Wednesday, June 2—Friday, June 25
Monday, June 14—Tuesday, August 10
Monday, June 28—Tuesday, August 10

The dates shown in this calendar are subject to change at any time by official action of Cornell University.

In this calendar, the university has scheduled classes, laboratories, and examinations on religious holidays. It is the intent of the university that students who miss those activities because of religious observances be given adequate opportunity to make up the missed work.

The Law School and College of Veterinary Medicine calendars differ in a number of ways from the university calendar. Please consult the catalogs of those colleges for details.

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

The rules and regulations stated in this catalog are for information only and in no way constitute a contract between the student and Cornell University. The university reserves the right to change any regulation or requirement at any time.

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CORNELL UNIVERSITY

COURSES

O F S T U D Y

1992-1993

Cornell University

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Abbreviations and symbols used in this catalog:

M	Monday	S-U	Satisfactory-Unsatisfactory
T	Tuesday	disc	discussion
W	Wednesday	lab	laboratory
R	Thursday	lec	lecture
F	Friday	rec	recitation
S	Saturday	sec	section
		TBA	To be announced
		@	geographic breadth
		*	historical breadth

Courses with names and descriptions enclosed in brackets—
 []—are not offered fall 1992 and spring 1993.

CORNELL UNIVERSITY—GENERAL INFORMATION

Introduction

Courses of Study contains information primarily concerned with academic resources and procedures, college and department programs, interdisciplinary programs, and undergraduate and graduate course offerings of the university. Not included in this publication is information concerning the Medical College and the Graduate School of Medical Sciences, located in New York City. Information about other important areas is available from other offices of the university or is included in publications distributed to students. Students should consult with their college's advising office for specific information on academic policies and procedures, degree programs and requirements. The following is a list of offices and information sources for specific information:

Undergraduate admissions. Information pertinent to prospective applicants is available from the Undergraduate Admissions Office, 410 Thurston Avenue, Ithaca, New York 14850-9988 (telephone: 607/255-5241).

Graduate School. Information pertaining to admission to the Graduate School may be obtained by contacting the Graduate School, 100 Sage Graduate Center, Ithaca, New York 14853-6201 (telephone: 607/255-4884).

Law School. Admission information for the Law School is available from the Law School, Myron Taylor Hall, Ithaca, New York 14853-4901 (telephone: 607/255-5141).

Samuel Curtis Johnson Graduate School of Management. Information is available from the Office of Admissions, 315 Malott Hall, Ithaca, New York 14853-4201 (telephone: 607/255-2327).

College of Veterinary Medicine. Admission information is available from the Admissions Office, Schurman Hall, Ithaca, New York 14853-6401 (telephone: 607/253-3000).

Medical College and Graduate School of Medical Sciences. Information regarding admissions is available from the Office of Admissions, 1300 York Avenue, New York, New York 10021 (telephone: 212/746-1067).

Financial aid, loans, and student employment. Information is available from the Office of Financial Aid, 203 Day Hall, Ithaca, New York 14853-2801 (telephone: 607/255-5145).

Student accounts. Information on Cornell Card, a student charge card, and payment of bills is available by contacting the Office of the Bursar, 260 Day Hall, Ithaca, New York 14853-2801 (telephone: 607/255-2336).

Dining and residence halls. Information is available from Cornell Dining, 1140 North Balch Hall, Ithaca, New York 14853-1401, and the Department of Residence Life, 2117 North Balch Hall, Ithaca, New York 14853-1401.

Student responsibility and regulations. The *Campus Code of Conduct* describes the regulations and policies for maintaining public order on campus. *The Code of Academic*

Integrity and other statements of student responsibility are set forth in the *Policy Digest for Students, Faculty and Staff*. Publications are available for viewing on CUINFO, the university's electronic information system, and in print at the various university libraries, the Office of the Dean of Students, the Office of the Dean of the University Faculty, the Office of University Counsel, the Office of the Judicial Administrator, and the college offices.

Health services. University Health Services provides comprehensive medical and psychological care at the Gannett Health Center, 10 Central Avenue, Ithaca, New York 14853-3101 (telephone: 607/255-4082), adjacent to Willard Straight Hall. Information may be obtained by writing or visiting the center.

EXPLANATION OF COURSE NUMBERING SYSTEMS

The course levels have been assigned as follows:

100-level course—introductory course, no prerequisites, open to all qualified students

200-level course—lower-division course, open to freshmen and sophomores, may have prerequisites

300-level course—upper-division course, open to juniors and seniors, prerequisites

400-level course—upper-division course, open to seniors and graduate students, 200- and 300-level course prerequisites or equivalent

500-level course—professional level (e.g., management, law, veterinary medicine)

600-level course—graduate-level course, open to upper-division students

700-level course—graduate-level course

800-level course—master's level, thesis, research

900-level course—doctoral level, thesis, research

The list of courses that follows is arranged in two broad groups.

Group 1: Divisions that offer both undergraduate- and graduate-level courses

Agriculture and Life Sciences
Architecture, Art, and Planning
Arts and Sciences
Biological Sciences
Engineering
Hotel Administration
Human Ecology
Industrial and Labor Relations
Nutritional Sciences
Officer Education

Group 2: Graduate professional divisions
Law

Management

Veterinary Medicine

There are no courses offered by the Graduate School as a unit; graduate-level courses are contained in the various departments that offer the instruction.

Within each division, courses are generally arranged in alphabetical order by department and in numerical order within the departments. All courses, 0-999 are briefly described for those divisions (group 1) offering instruction to both undergraduate and graduate students. Courses in the graduate professional divisions (group 2) are designated by number and title only.

It is not possible to keep this single-volume course list completely up-to-date. The most current information regarding course schedules, sections, rooms, credits, and registration procedures may be found on CUINFO, in the *Course and Time Roster*, and in the *Course and Room Roster*, each issued twice a year by the Office of the University Registrar. Students are also advised to consult the individual college and department offices for up-to-date course information.

ACCREDITATION

Cornell University is accredited by the Middle States Association of Colleges and Schools. Requests to review documentation supporting its accreditation should be addressed to the Vice President of Planning, Cornell University, 433 Day Hall, Ithaca, New York 14853-2801.

Advanced Placement

CREDIT FOR ADVANCED PLACEMENT

1. Definition and Purpose of Advanced Placement Credit

Advanced placement credit is college credit that students earn before they matriculate as freshmen. Students may use credit they receive for advanced placement to satisfy degree requirements only as specified by the individual college at Cornell. Although such credit counts toward the bachelor's degree, its primary purpose, is to exempt students from introductory courses and to place them in advanced courses. Its value is that it allows students to include more advanced courses in their undergraduate curricula.

2. Advanced placement credit may be earned from one of the following:

- Achieving the requisite score on a departmental examination at Cornell (usually given during Orientation Week) or from the *Advanced Placement Examinations from the College Board Admissions Testing Program (ATP)*. The requisite scores which vary by subject, are determined by the

relevant departments at Cornell, and are published elsewhere in the *Courses of Study*.

- b. Passing a regular course taught at an accredited college to college students and approved by the relevant department at Cornell. Some departments have delegated the review of courses to college staff according to guidelines they have formulated. Some departments review each request individually. Some departments accept credit from virtually all accredited colleges; some do not.

Credit for international credentials are evaluated individually.

Advanced placement credit is established by each department and administered by each college.

Please note: *Cornell University does not accept credit for courses sponsored by colleges but taught in high schools to high school students, even if the college provides a transcript of such work.* Students who have taken such courses may, however, take the appropriate Advanced Placement Examination offered by the College Board Admissions Testing Program in Princeton, New Jersey, to qualify for credit as in paragraph 2a above.

This statement was agreed upon by members of the Committee on Academic Records and Registration, 30, November 1990.

The final decision for awarding advanced placement credit at Cornell rests with each individual college. The appropriate department of instruction within the university sets the standards of achievement that must be met for advanced placement and recommends AP credit for those who meet the standards. This recommendation is almost always based on some examination score. For policies governing advanced placement in a specific college, see the academic information section of that college. Students need not accept advanced placement. They may repeat the course, thereby relinquishing the advanced placement credit.

The Advanced Placement (AP) Program of the College Entrance Examination Board (CEEB) is the best known and most generally used of the programs that provide students with an opportunity to document participation in a college-level curriculum at the secondary level.

Advanced placement examinations.

Examinations sponsored by the Advanced Placement Program of the College Entrance Examination Board are considered. Entering freshmen should have their scores sent to their college or school office (see the list at the end of this section). Placement and credit on the basis of these examinations will usually be determined during the summer, and students will be notified before course scheduling.

Departmental advanced standing examinations. In certain subjects, students may also qualify for advanced placement or credit, or both, on the basis of departmental examinations given on campus during orientation week. A schedule of these examinations will appear in the orientation booklet that will be mailed to entering students in late summer. The departments that award advanced placement and credit on the basis of CEEB Advanced Placement

Examinations or departmental examinations are shown below.

Transfer of credit. Entering freshmen who have completed college courses for which they want to receive credit toward their Cornell degree should send transcripts and course descriptions to their college or school office (see the list at the end of this section). The award of credit or placement for such courses is determined by the appropriate departments according to individual school and college guidelines. Because policy for using advanced placement credit varies according to each college's or school's professional and academic goals, students should consult their college or school office to determine how they may use such credit.

Foreign credentials. Information regarding Cornell's advanced standing policy for foreign credentials may be obtained by contacting the Associate Director of International Admissions, Cornell University, 410 Thurston Avenue, Ithaca, New York 14850-2488, U.S.A. Students holding foreign credentials who feel they may be eligible for advanced standing consideration should contact the International Students and Scholars Office before enrollment for clarification of the advanced standing policy.

Written inquiries. Many department, school, and college offices encourage students to contact them with any questions they may have. Addresses given in the following sections may be completed by adding Ithaca, New York 14853.

Forwarding of scores and transcripts.

Entering freshmen should have their advanced placement test scores sent to their school or college registrar's office.

College of Agriculture and Life Sciences
177 Roberts Hall

College of Architecture, Art, and Planning
B2 West Sibley Hall

College of Arts and Sciences
M46 Goldwin Smith Hall

College of Engineering
170 Olin Hall

School of Hotel Administration
138 Statler Hall

College of Human Ecology
N101 Van Rensselaer Hall

School of Industrial and Labor Relations
101 Ives Hall

BIOLOGICAL SCIENCES

The Division of Biological Sciences grants advanced placement credits and exemption from introductory biology courses based on superior performance on the CEEB Advanced Placement Examination in biology.

Any student who earns a score of 5 on this examination may elect to receive eight credits and be permitted exemption from all introductory biology courses.

Students not majoring in biological sciences who score a 4 or 5 may receive, respectively, six or eight advanced placement credits. This will satisfy the distribution requirement in biological sciences for students in the College of Human Ecology, half of the distribution requirement in biological sciences for students in the College of Arts and Sciences through the Class of 1995, and a portion of the group B distribution requirement for students in the

College of Agriculture and Life Sciences. For students in the College of Arts and Sciences in the class of 1996 and beyond, credits may be applied to the Group 1 distribution area in accordance with regulations stipulated by the college.

Biological sciences majors who receive a score of 5 may receive eight credits and be exempt from all introductory biology courses or elect to receive four credits and select one of the options allowed for majors with a score of 4. The student receiving a score of 4 must fulfill the introductory biology requirement by taking Biological Sciences 101-102, 101/103, 102/104, or 103-104 (Biological Sciences, Lectures and Laboratory). These students should consult information available in the course office (1140 Comstock Hall) and in the Biology Center (21 Stimson Hall) to determine which semester to take to complete the introductory biology requirement. For students in doubt, Biological Sciences 101/103 is advised. These students will receive a total of eight introductory biology credits (four advanced placement credits plus four course credits).

CHEMISTRY

The Department of Chemistry offers two sequences that satisfy prerequisites for further work in the department: Chemistry 207-208, an eight-credit sequence that includes qualitative analysis, and Chemistry 215-216, a nine-credit sequence that includes qualitative and quantitative analysis.

Freshmen may qualify for advanced placement and advanced standing credits in chemistry by satisfactory performance on the CEEB Advanced Placement Examination in chemistry or by passing an advanced standing examination offered by the department. A score of 5 on the CEEB examination entitles a student to four credits. A student may earn four or eight credits by suitable performance on the departmental examination. To take the departmental examination students must sign up beforehand with Mrs. Virginia Marcus, in 158 Baker Laboratory.

The specific course in which a student will register after having received a certain advanced placement standing will be decided by consultation between the student, his or her adviser, and the professors teaching the courses. Students receiving advanced placement who are interested in a major in chemistry or a related science should consider taking Chemistry 215-216 and should consult the Chemistry 215 instructor.

CLASSICS

For advanced placement and credit in Latin and Greek, students should consult the Department of Classics, Cornell University, 120 Goldwin Smith Hall.

Latin. Credit and placement are determined on the basis of a departmental examination. A student who is permitted to register in a 300-level course will be given six advanced placement credits.

Greek and Modern Greek. Credit and placement are determined on the basis of a departmental examination. A student who is permitted to register in a 300-level course will be given six advanced placement credits.

Summary of Credit and Placement

<i>Subject</i>	<i>Score</i>	<i>Advanced Placement Credit</i>	<i>Placement</i>
Arabic	Department of Near Eastern Studies determines credit and placement based on departmental examination.		
Biology†	5 (majors)*	8 credits or 4 credits	Placement out of all introductory courses. Students may choose to accept only 4 credits and select one of the options allowed for majors with a score of 4.
	4 (majors)*	4 credits	4 AP credits awarded after completion of any combination of 4 credits from 101–104. Consult department to determine which semester to take to complete introductory biology.
	5 (nonmajors)	8 credits	Placement out of all introductory courses.
	4 (nonmajors)	6 credits	Placement out of 109–110. Does not always satisfy the prerequisite for second- and third-level courses in biology.
Chemistry‡	5	4 credits	Department determines placement.
Computer science	4,5	4 credits	Placement out of C.S. 100.
Economics	4,5	3 credits	3 credits each for micro and macro; 6 credits maximum.
English	4,5	3 credits	
French language	4,5	3 credits	Department of Modern Languages and Linguistics determines placement. Students may earn additional credit by taking CASE examination.†
French literature	4,5	3 credits (and proficiency)	Department of Romance Studies determines placement.
German language	4,5	3 credits	Department of Modern Languages and Linguistics determines placement. Students may earn additional credit by taking CASE examination.†
German literature	4,5	3 credits (and proficiency)	Department of German Studies determines placement.
American government and politics	4,5	3 credits	Placement out of Government 111.
Greek, Ancient and Modern	Department of Classics determines credit and placement based on departmental examination.		
Hebrew	4,5	3 credits	Department of Near Eastern Studies determines placement based on departmental examination.
American history	4,5	4 credits	
European history	4,5	4 credits	
History of art	4,5	3 credits	
Italian literature	4,5	3 credits (and proficiency)	Department of Romance Studies determines placement.
Latin	Department of Classics determines credit and placement based on departmental examination.		
Mathematics BC (excluding engineering students)	4,5	8 credits	Placement out of 111, 112. Permission to take 221, 293, or 213.
	3	4 credits	Placement out of 111. No advanced placement credit for students who take 111. Permission to take 112 or 192.
Mathematics AB (excluding engineering students)	4,5	4 credits	Placement out of 111. Permission to take 112, 122, or 192.
	3	4 credits	Placement out of 111. Permission to take 112 or 192.
	2	none	Students are strongly urged to take the mathematics placement examination.
Music	Department determines credit and placement based on departmental examination.		
Physics B‡	4,5	8 credits	Placement out of Physics 101–102.
	3	4 credits	Placement out of Physics 101.
Physics B, and Mathematics BC‡	5		
	4,5	4 credits in physics	Student may choose placement out of Physics 112 or 207 instead or Physics 101–102.
or Mathematics AB‡	5	4 credits in physics	Student may choose placement out of Physics 112 or 207 instead or Physics 101–102.
Physics C—Mechanics‡	4,5	4 credits	Student may choose placement out of Physics 112 or 207, or placement into Physics 116 with no AP credit. For more information, contact department representative.
Physics C—Electricity and Magnetism‡	5	Student may choose 4 credits for Physics 208 (or 213) or placement into Physics 217 with no AP credit. For more information, contact department representative.	
	4	Student may choose 4 credits for Physics 208 or placement into	
Physics 217 with no AP credit.	For more information, contact department representative.		
Psychology	4,5	3 credits	
Sociology	Department determines credit and placement.		
Spanish language	4,5	3 credits	Department of Modern Languages and Linguistics determines placement. Students may earn additional credit by taking CASE examination.†
Spanish literature	4,5	3 credits (and proficiency)	Department of Romance Studies determines placement.
Turkish	Department of Near Eastern Studies determines credit and placement based on departmental examination.		

*Biological sciences majors and other students who expect to take advanced biology courses. These students will receive a total of 8 introductory biology credits (4 advanced placement credits and 4 course credits).

†Cornell Advanced Standing Examination. Contact the Department of Modern Languages and Linguistics, 203 Morrill Hall.

‡In the College of Arts and Sciences, AP credit may be used to satisfy half the distribution requirement in science.

COMPUTER SCIENCE

Students who receive a score of 4 or 5 on the CEEB Advanced Placement Examination in computer science will receive four advanced placement credits and may take Computer Science 211, 212, or 222 (provided, in the case of Computer Science 222, the mathematics prerequisites are met). These credits may be used to satisfy the requirement in computer programming for students in the College of Engineering or half the distribution requirement in mathematics for students in the College of Arts and Sciences.

Freshmen may also earn four credits by suitable performance on a departmental examination to be given during orientation week. Students who receive a score of 3 on the CEEB Advanced Placement Examination may choose, at their own risk and in consultation with their advisers, to go directly into a 200-level course without receiving credit for Computer Science 100. These students are strongly urged to take the departmental placement test. To take the departmental examination, students must sign up beforehand in the Undergraduate Office, 303 Upson Hall.

ECONOMICS

Students with a strong background in introductory economics may, with the consent of the instructor, register for intermediate courses without taking Economics 101–102.

ENGLISH

The English department will grant 3 credits to students who score 4 or 5 on the CEEB Advanced Placement Examination. The credits are granted automatically: no application to the department is required.

Students who receive scores of 700 or better on the CEEB College Placement Test in English composition, 700 or better on the CEEB College Placement Test in literature, or 4 or 5 on the CEEB Advanced Placement Examination are eligible to enroll, space permitting, in the following English freshman writing seminars: 270, 271, 272.

Advanced placement credits may not be used to fulfill requirements of the English major or distribution requirements of the College of Arts and Sciences.

GERMAN LITERATURE

The Department of German Studies will grant three credits to students with a score of 4 or 5 on the Advanced Placement Examination.

For information about the College Placement Test, see "Modern Languages," below.

HISTORY

The Department of History will grant four credits to students who score 4 or 5 on the CEEB Advanced Placement Examination in European history and four credits to those with such scores in the American history examination. Such credits are granted automatically, without application to the department.

These credits may not be used to fulfill requirements of the history major or distribution requirements of the College of Arts and Sciences.

HISTORY OF ART

The Department of History of Art will grant three credits to students who score 4 or 5 on the CEEB Advanced Placement Examination. Such credits are granted automatically, without application to the department.

These credits may not be used to fulfill requirements of the history of art major or distribution requirements of the College of Arts and Sciences.

MATHEMATICS

The Cornell calculus sequences discussed below are described under "Basic Sequences" in the Department of Mathematics section of this catalog.

The regular freshman calculus courses at Cornell do not differ substantially from calculus courses given in many high schools, and it is best to avoid repeating material that has already been covered at an appropriate level. Secondary school students who have had the equivalent of at least one semester of analytic geometry and calculus should, if possible, take one of the CEEB's two Advanced Placement Examinations (calculus AB or calculus BC) during their senior year.

The following rules do not apply to students being admitted to the College of Engineering. See the college's brochure for a detailed statement.

Students with a grade of 4 or 5 on the BC examination may take the appropriate third-semester course (Mathematics 213, 221, or 293), but students entering Mathematics 293 may have to make up some material on partial differentiation. Students with a 3 on the BC examination or a 4 or 5 on the AB examination may take the appropriate second-semester course (Mathematics 112, 122, or 192). Students with a 2 on the BC examination or a 3 on the AB examination may take one of the second-semester courses (Mathematics 112 or 192). Advanced placement credit will be awarded appropriately; however, no credit will be granted for a grade of 1 on the BC or 1 or 2 on the AB examination.

A grade of 3 or higher on the BC examination satisfies the distribution requirement in mathematics for students in the College of Arts and Sciences.

Note, however, that the grade of 3 is not sufficient for a full year of advanced placement credit in mathematics.

The placement examination in mathematics is offered at Cornell only during orientation week and should be taken by students who

- 1) have had at least a semester of calculus but did not take a CEEB Advanced Placement Examination;
- 2) have received a 2 on the BC examination or a 3 on the AB examination and want to enter the upper sequence; or
- 3) believe that the placement assigned on the strength of the CEEB Advanced Placement Examination is not high enough in their case.

Students are strongly urged to take the departmental placement test even if they feel that their grasp of the material is uncertain. The grade on this test does not become part of a student's record. No advance registration for the departmental examination is necessary.

MODERN LANGUAGES

Language placement tests. Students who have studied a language for two or more years and want to continue study in that language at Cornell must present the results of a Placement Test. In cases where no placement test exists for a particular language, the Department of Modern Languages and Linguistics designates a professor to handle placement for that language. Students who have had a year of formal study or substantial informal study since they last took a placement test should take the examination again during orientation week if they plan to continue course work.

Advanced standing credit. Advanced standing credit may be entered on a student's record as follows:

- 1) For three years of high school study in any one language, 3 credits are granted. Students with a score of 4 or 5 on the language AP Exam, or a minimum score of 650 on the language placement test, are eligible to take Cornell's Advanced Standing Examination (CASE). Outstanding performance on this examination could provide three additional credits.
- 2) For formal language work at an accredited college, credit is considered by the department on submission of a transcript and may be entered on the student's Cornell record.
- 3) Native speakers of languages other than English may, on examination by the appropriate professor, be granted a maximum of six credits if they can demonstrate proficiency equivalent to course work on the 200 level or above at Cornell. Additional credit will be considered only for those who pursue advanced work in their native language.

Information about times and places to take placement tests is available in the orientation booklet, from Academic and Career Counseling Services, and from the Department of Modern Languages and Linguistics. For more information, see the College of Arts and Sciences section on language course placement, or contact the Department of Modern Languages and Linguistics, Cornell University, 203 Morrill Hall.

MUSIC

Advanced placement and credit are awarded only in music theory and only on the basis of a comprehensive examination administered by the Department of Music, normally during orientation week. If special arrangements are made, the examination may be administered at other times during the academic year. All students interested in taking this examination should consult Professor E. Murray, 311 Lincoln Hall (telephone: 607/255-4675). Inquiries may be directed to the Department of Music, Cornell University, 104 Lincoln Hall (telephone: 607/255-4097).

NEAR EASTERN STUDIES

For advanced placement and credit in Arabic and Turkish, students should consult the Department of Near Eastern Studies, 360 Rockefeller Hall. All advanced placement and credit are determined by departmental examination.

PHYSICS

Advanced placement and credit are awarded on the basis of the CEEB Advanced Placement Examination in physics (physics B or physics C), certain international examinations, or the departmental examination (which may be taken during orientation week or at other times as arranged). For information about the departmental examination, students should consult Professor R. Cotts, 522 Clark Hall.

Physics B. Students earning a score of 4 or 5 may receive eight credits for Physics 101 and 102. Those earning a score of 5 in physics B with a score of 4 or 5 in calculus BC or a score of 5 in calculus AB may choose to accept four credits in Physics 112 or 207 instead of eight credits in Physics 101 and 102. Those earning a score of 3 will receive four credits in Physics 101.

Physics C.

- 1) **C—Mechanics** Students earning a score of 4 or 5 may receive four credits for Physics 112 or 207, or for placement into Physics 116 with no AP credit.
- 2) **C—Electricity and Magnetism** Students earning a score of 5 will be eligible for four credits for Physics 208 or 213, or for placement into Physics 217 with no AP credit. Students earning a score of 4 will be eligible for four credits for Physics 208 or placement into Physics 217 with no AP credit. Students with scores of 4 or 5 and who have questions may first meet with the department representative, Professor R. Cotts, 522 Clark Hall, for advice on making a selection.

Advanced placement into a next-in-sequence course depends on the completion of the appropriate mathematics prerequisites before enrolling. To qualify for advanced placement credit, it is not necessary to continue the study of physics.

General information and advice may be obtained from Professor R. Cotts, 522 Clark Hall, or from the Department of Physics, Cornell University, 109 Clark Hall.

PSYCHOLOGY

Students who scored 4 or 5 on the CEEB College-Level Examination Program psychology test may receive three advanced placement credits in psychology. Those interested in taking further courses in psychology should consult a faculty member in the Department of Psychology, Cornell University, 226 Uris Hall.

Advanced placement based on the CEEB test may not be used to satisfy the distribution requirement in the College of Arts and Sciences. Credit toward the requirements of a major in psychology will depend on the recommendation of the student's major adviser.

ROMANCE STUDIES (FRENCH, ITALIAN, AND SPANISH LITERATURE)

The Department of Romance Studies grants three credits to students with a score of 4 or 5 on the Advanced Placement Examination in French, Italian, or Spanish literature.

For information about the Placement Test in languages, see "Modern Languages," above.

University Registration

University registration is the official recognition of a student's relationship with the university and is the basic authorization of that student's access to services and education. Completion of registration is essential to enable the university to plan for and provide services and education, guided by the highest standards for efficiency and safety. Unauthorized, unregistered persons who use university services and attend classes have the potential to use university resources inappropriately and to displace properly registered students. In addition, the university assumes certain legal responsibilities for persons who participate as students in the university environment. For example, registration policy states that New York State health requirements must be satisfied. These requirements are intended to safeguard the public health of students, and the university has a responsibility to enforce the state regulations through registration procedures.

The policy on university registration is intended to describe clearly the meaning of and the procedures for registration so that students can complete the process efficiently and be assured of official recognition as registered students. With the clear communication of the steps for registration, it is hoped that compliance will occur with a minimum of difficulty.

To become a registered student at Cornell University, a person must

- complete course enrollment according to individual college requirements.
- pay tuition for the current semester.
- satisfy New York State health requirements.
- have no holds from the college, the office of the Judicial Administrator, Gannett Clinic, the University Registrar, or the Bursar.

Students must accomplish the above tasks by the end of the third week of the semester.

Cornell University does not allow persons who are not registered with the university or enrolled in courses in a given semester to attend classes. The university reserves the right to require unauthorized, unregistered persons who attend classes or in other ways seek to exercise student privileges to leave the university premises. The university does not permit retroactive registration and does not record courses or grades for unregistered persons.

COURSE ENROLLMENT

Pre-course enrollment for each semester at Cornell takes place partway through the preceding semester. Dates are announced in advance and are usually posted in school and college offices. Each college or school notifies students about special procedures. Students are often expected to meet with their advisers during this period to affirm that the courses they plan to take will ensure satisfactory progress toward a degree. Students complete a course enrollment form, then return the form to their college office. Each student is sent a course confirmation statement listing the courses processed from the enrollment form. Class schedules are distributed later by the college offices, often during the same days as university registration.

New students and transfer students are sent course enrollment instructions by their college offices before they arrive on campus. Procedures vary from college to college.

Students who fail to submit a course enrollment form during the designated period may be charged a penalty fee. The fees are listed in the chart in the following section.

COURSE DROP/ADD/CHANGE PERIOD

Students may adjust their schedules during drop/add/change periods. A form is completed by the student and signed by both the student's adviser and an appropriate representative of the department offering the course (an instructor, department staff member, or college registrar, depending on the college). The completed and signed form must be returned to the student's college office to be processed. See the chart on the following page for the course drop/add/change fees. Professional schools and the physical education department have different add-drop policies.

Late Course Enrollment and Late Drop/Add/Change Fees

Academic Unit	Late Course Enrollment Fee	Late Course Drop/Add/Change Fee
College of Agriculture and Life Sciences	No fee	No fee
College of Architecture, Art, and Planning	No fee	No fee
College of Arts and Sciences	No fee	No fee
School of Continuing Education and Summer Sessions	†	†
College of Engineering	No fee	No fee
School of Hotel Administration	No fee	No fee
College of Human Ecology	No fee	No fee
School of Industrial and Labor Relations	No fee	No fee
Johnson Graduate School of Management	\$100	\$100
Athletics and physical education	\$30	\$20*
Internal Transfer Division	No fee	No fee
Veterinary medicine	15*	15*

*Consult the college office for special considerations and requirements.

†Consult the Summer Session catalog and the Division of Extramural Study brochure for fees.

AUDITING COURSES

Summer school and extramural students may officially register as visitors (auditors) in courses and have this entered on their permanent records if their attendance is reported as satisfactory. Graduate students may register for courses as auditors but will not have the courses listed on their transcripts. Undergraduates may not register to audit courses.

LEAVES AND WITHDRAWALS

A leave of absence must be requested from the college in which the student is enrolled. A leave of absence is granted for a specified time, after which the student is expected to return to resume course work. The student should inform the college of enrollment of his or her intent to return.

A student may withdraw from the university at the student's discretion. However, a college may withdraw a student who fails to return at the end of a period of authorized leave.

Medical leaves are granted and processed through University Health Services.

Internal Transfer Division

Students may not always be satisfied with the original Cornell school or college into which they've been admitted. They may decide to transfer from one college to another, within the university. This process is called internal transfer, and application procedures and deadlines vary by college. It may be possible to be admitted directly into the new program. Students who are uncertain if they immediately qualify for direct transfer, however, should apply to the Internal Transfer Division (ITD). To apply, candidates must interview with the division's director and submit an essay to the ITD office outlining their reasons for wanting to transfer. Internal Transfer Division applicants must also fulfill the application requirements (e.g., interviews, essays) of their target college as if they were applying for direct transfer. In many cases, colleges formally sponsor students in ITD and essentially guarantee admission if students successfully complete the requirements (taking particular courses, earning a specified grade point average while enrolled in ITD) that are outlined in their letter of sponsorship. Although sponsorship does not guarantee admission to the Internal Transfer Division, it is the most important factor determining acceptance into ITD. Students can apply simultaneously for direct transfer and to ITD, so that if direct transfer is denied they might be offered the option of being sponsored in the Internal Transfer Division. For more information about transfer requirements, students should contact the admissions office of the college they hope to enter and the office of the Internal Transfer Division, 220 Day Hall (255-4386).

Bursar Information**TUITION, FEES, AND EXPENSES****Tuition for Academic Year 1992-93****Endowed Divisions****Undergraduate**

Architecture, Art, and Planning	
Arts and Sciences	
Engineering	
Hotel Administration	\$17,276

Graduate

Graduate School (with major chair in an endowed division)	17,252
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Professional

Law School	18,132
Management	18,532

Statutory Divisions**Undergraduate**

Agriculture and Life Sciences	
Human Ecology	
Industrial and Labor Relations	
New York resident*	7,056
Nonresident*	13,306

Graduate

Graduate School (with major chair in agriculture, human ecology, or industrial and labor relations),	\$8,232
Graduate School—Veterinary Medicine	9,132

Professional

Veterinary Medicine	
New York resident*	11,032
Nonresident*	14,032

Summer Session

Per credit	375
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Other Tuition and Fees**In absentia fees**

Graduate	\$200 per term
Undergraduate	15 per term
Law and Management	75 per term

The amount, time, and manner of payment of tuition, fees, or other charges may be changed at any time without notice.

*Residency status is determined at the time of admission by the college. Change in residency status is determined by the bursar.

Fees and Expenses

Undergraduate applicants to Cornell pay a non-refundable \$60 application fee when submitting an application for admission. The graduate application fee is \$60. Application to the Johnson Graduate School of Management costs \$75.

Tuition Refund Policy

Amounts personally paid for tuition may be refunded if the student requests a leave of absence or withdrawal from the office of the dean of his or her college of enrollment. The date of this request will determine the tuition liability for the semester. Students who terminate their registration with the university during a fall or spring semester in this manner will be charged tuition from the university registration day through the date of their request as follows: first six days of the semester (including university registration day), no charge; seventh day of the semester, 10 percent; second week, 20 percent; third week, 30 percent; fourth week, 40 percent; fifth week, 60 percent; sixth week, 80 percent; seventh week to the end of the semester, 100 percent.

Repayment policy. Students receiving financial aid from the university who withdraw during a term will have their aid reevaluated, possibly necessitating repayment of a portion of aid received. Repayment to aid accounts depends on the type of aid received, government regulations, and the period of time in attendance. A partial semester will generally count as one of the eight semesters of financial aid eligibility normally allowed a student.

BILLING AND PAYMENT**Billing**

Tuition and room and board charges will be billed in July and December and must be paid prior to registration. The due date for these semester bills will normally be five to ten working days prior to ID validation day. All

other charges, credits, and payments will appear on monthly statements mailed before the twenty-fifth of every month.

It is possible that some charges will not be listed on the first bill and will appear on a subsequent monthly bill. *A student must be prepared to pay any charges appearing on a subsequent bill even though the student receives a financial aid stipend before the charges are billed.*

All bills are due by the date stated on the bill; all payments must be *received* by that date to avoid *finance charges*. Payments are *not* processed by postmark.

Please inform the Office of the Bursar of any change in billing address. *Address changes made at other offices will not change the billing address.* The address initially used on billing statements will be the home address as listed on each student's application for admission.

Payments

An individual who has outstanding indebtedness to the university will not be allowed to register* or reregister in the university, receive a transcript of record, have academic credits certified, be granted a leave of absence, or have a degree conferred. If students' bills show a previous unpaid balance, they must make payment by August 9 for current semester's charges if they plan to register for the fall semester. University policy precludes the use of any current financial aid for payment of past-due charges.

The Office of the Bursar acts as a clearing-house for student charges and credits that are placed directly on a student's bill by several departments and offices of the university. *Since the Office of the Bursar does not have detailed records concerning many items that appear on a bill, students should contact the office involved if they have questions.*

For further information, students should contact the Office of the Bursar, Cornell University, 260 Day Hall, Ithaca, New York 14853-2801 (telephone: 607/255-2336).

*For specific exceptions, see "Bursar and Cornellcard Procedures," published by the Office of the Bursar, 260 Day Hall.

ACCIDENT AND SICKNESS INSURANCE

The accident and sickness insurance charge on the July billing statement is for insurance for hospitalization, surgical fees, and major medical coverage for the period of August 26, 1992, through August 24, 1993. The cost of this insurance is lower than the average cost of comparable coverage under other group accident and health insurance policies. Information is included with the July bill.

For those who do not want medical insurance coverage, a medical insurance waiver must be signed. More information can be obtained by contacting the Gannett Health Center (telephone: 607/255-6363).

University Requirements for Graduation

For degree requirements such as residency, number of credits, distribution of credits, and grade averages, see the individual requirements listed by each college or school or contact the college offices.

PHYSICAL EDUCATION

All undergraduate students must complete two terms of work in physical education unless exempted from this requirement for medical or other special reasons or by virtue of advanced standing on admission. For transfer students the requirement is reduced by the number of terms satisfactorily completed, not necessarily including physical education, in a college of recognized standing before entering Cornell.

Credit in physical education may be earned by participating in courses offered by the Department of Athletics and Physical Education, participating on an intercollegiate athletic team as a competitor or manager, or performing in the marching band.

Physical education is a requirement of the first two terms at Cornell. Students must register for it in each term, except those in which postponements are granted, until the requirement is satisfied.

Temporary postponements may be granted on the basis of physical disability, schedule conflicts, or excessive work load (employment exceeding twenty hours a week). The Gannett Health Center can provide certifications based on health, and the Financial Aid Office can provide certifications of employment. Students should see the director or assistant director of Physical Education to establish postponements or waiver of the requirement. Questionable or unusual cases may be resolved by petition to the Faculty Advisory Committee on Athletics and Physical Education.

Swim test. All new students who do not pass a basic seventy-five-yard swim test are required to include swimming in their program of physical education unless they are excused by Gannett Health Center. All nonswimmers are required to register in beginning swim classes. Completion of two semesters of beginning swimming will satisfy the swimming requirement.

STUDENT RESPONSIBILITIES

Students are responsible for meeting all requirements for the courses in which they are enrolled, as defined by the faculty members teaching the courses. It is also the student's responsibility to be aware of the specific major, degree, distribution, college, and graduation requirements for completing his or her chosen program of studies. Students should know how far they have progressed in meeting those requirements at every stage of their academic career.

Class Schedules and Examinations

CLASS ATTENDANCE AND ABSENCES

Students are expected to be present throughout each term at all meetings of courses for which they are registered.

The right to excuse a student from class rests at all times with the faculty member in charge of that class.

All lectures, recitations, and similar exercises start at 8 a.m., 9:05 a.m., 10:10 a.m., 11:15 a.m., 12:20 p.m., 1:25 p.m., 2:30 p.m., or 3:35 p.m. and last fifty minutes, except that on Tuesday and Thursday the first and second, the third and fourth, the fifth and sixth, and the seventh and eighth periods may be combined to allow for longer meeting times.

All laboratories and similar exercises that continue for 1 hour and 55 minutes, 2 hours and 25 minutes, or 3 hours are scheduled as shown below.

Schedule for Classes Longer than Fifty Minutes

1 hour and 55 minutes

8:00 a.m.–9:55 a.m.

10:10 a.m.–12:05 p.m.

12:20 p.m.–2:15 p.m.

2:30 p.m.–4:25 p.m.

7:30 p.m.–9:25 p.m.

2 hours and 25 minutes

7:30 a.m.–9:55 a.m.

10:10 a.m.–12:35 p.m.

2:00 p.m.–4:25 p.m.

7:30 p.m.–9:55 p.m.

3 hours

8:00 a.m.–11:00 a.m.

10:10 a.m.–1:10 p.m.

1:25 p.m.–4:25 p.m.

7:30 p.m.–10:30 p.m.

On Monday, Tuesday, Wednesday, and Thursday the hours of 4:25 to 7:30 p.m.; on Friday the hours after 4:25 p.m.; on Saturday the hours after 12:05 p.m.; and all day Sunday are free from all formal undergraduate class or laboratory exercises.

Evening classes are held only on Monday and Wednesday and only when regularly scheduled and included in written college announcements or when recommended by the Committee on Academic Records and Registration. Evening lectures, recitations, and similar exercises start at 7:30 and 8:35 p.m.; evening laboratories and similar exercises start at 7:30 p.m.

Evening preliminary examinations that will be given outside of normal class hours may be scheduled on Tuesday and Thursday evenings only, beginning at 7:30 p.m. All room assignments are scheduled by the Office of the University Registrar. The dates and times of these examinations are listed in the *Course and Room Roster* for each term.

Any exception to the above regulations, other than those for evening preliminary examinations, will require permission of the dean or

director of the college or school offering the course. Exceptions to the regulations on evening preliminary examinations require approval of the dean of the University Faculty. All such exceptions must include provision of special arrangements for the students for whom conflicts are generated by such an exception.

FINAL EXAMINATIONS

Final examinations for undergraduate courses are scheduled by the Office of the University Registrar. Examinations may be one, two, or two and one-half hours in length at the discretion of the department concerned. The schedule of final examinations is available in the *Course and Time Roster* and the *Course and Room Roster*, both of which are published through the Office of the University Registrar twice per year. Examinations not listed in the registrar's examination schedule will be arranged by the professor in charge and must fall within the announced examination period, except by permission of the dean of the faculty in accordance with existing faculty legislation.

General Rules Governing Final Examinations

Legislation of the University Faculty governing study periods and examinations is as follows:

1. No final examinations can be given at a time other than the time appearing on the official examination schedule promulgated by the University Registrar's office without prior written permission of the Dean of the Faculty.
2. No permission will be given, for any reason, to schedule final examinations during the last week of classes or the designated study period preceding final examinations.
3. Permission will be given by the Dean of the Faculty to reschedule examinations during the examination period itself if requested in writing by the faculty member, but only on condition that a comparable examination also be given for those students who wish to take it at the time the examination was originally scheduled. The faculty member requesting such a change shall be responsible for making appropriate arrangements for rooms or other facilities in which to give the examination. This should be done through the Registrar's Office.
4. No tests are allowed during the last week of scheduled classes unless such tests are part of the regular week-by-week course program and are followed by an examination (or the equivalent) in the final examination period.
5. Papers may be required of students during the study period if announced sufficiently far in advance that the student did not have to spend a significant segment of the study period completing them.
6. Faculty can require students to submit papers during the week preceding the study period.
7. Take-home examinations should be given to classes well before the end of the regular term and should not be required to be submitted during study period but rather well into the examination period.

The university policies governing study period and final examinations are:

- a) Each course should require that a final examination or some equivalent exercise (for example, a term paper, project report, final critique, oral presentation or conference) be conducted or due during the period set aside for final examinations.
- b) Although not specifically prohibited, it is university policy to discourage more than two examinations for a student in one twenty-four hour time period and especially on any one day. It is urged that members of the faculty consider student requests for a make-up examination, particularly if their course is the largest of the three involved and thus has the strongest likelihood of offering a make-up for other valid reasons, i.e., illness, death in the family, etc.
- c) Students have a right to examine their corrected exams, papers, etc., to be able to question their grading. (Note that students have no absolute right to the return thereof.) Exams, papers, etc., as well as grading records, should be retained for a reasonable time after the end of the semester, preferably till the end of the following term, to afford students such right of review.

EVENING PRELIMINARY EXAMINATIONS

The most convenient times and places for "prelims" are the normal class times and classrooms. In cases where the only alternative is to hold evening preliminary examinations, they may be scheduled only on Tuesday and Thursday evenings and only after 7:30 p.m.

An alternative time to take the examination *must* be provided for those students who have academic, athletic, or employment conflicts at the time scheduled.

Note that instructors holding evening examinations are strongly urged to indicate this in the course descriptions listed in *Courses of Study* and *must* notify students of the dates of such examinations as early as possible in the semester, preferably when the course outline is distributed. For more information on the policy governing evening examinations, contact the office of the dean of the faculty, 315 Day Hall.

Grading Guidelines

The official university grading system uses letter grades with pluses and minuses. Passing grades range from A+ to D-; F is failing. INC denotes a grade of incomplete, and R is the grade given at the end of the first semester of a year-long course. The grades of INC and R do not have quality-point equivalents attached. These are the quality-point equivalents:

A+ =4.3	B+ =3.3	C+ =2.3	D+ =1.3
A =4.0	B =3.0	C =2.0	D =1.0
A- =3.7	B- =2.7	C- =1.7	D- =0.7
		F =0.0	

This is how a term average is computed:

Course	Grade	Quality Points	Credits	Product
Chemistry 103	B+	3.3	3	9.9
English 151	C-	1.7	3	5.1
DEA 145	B	3.0	x 4	= 12.0
CEH 100	B	3.0	3	9.0
DEA 111	C	2.0	3	6.0
Total			16	42.0

To arrive at the term average, add the products (credits x quality points) and divide by the number of credits taken. Here, 42 divided by 16 equals 2.63.

The cumulative average (an average of grades from two or more terms) equals the sum of the products of all the grades at Cornell divided by the total number of credits taken.

S-U GRADES

On September 6, 1972, the Faculty Council of Representatives passed the following legislation:

"Resolved, that:

- A. the S-U system have symbol equivalents which are uniform within the university: "S" means C- or above; "U" means D+, D, D-, or failure.
- B. S-U options be chosen by the student during the first three weeks of the term.
- C. the Announcements and/or supplementary course registration material describing each course include a description of the course grading options, particularly if the course is graded with an exclusive S-U. Any change in grading options must be announced by the instructor within the first two weeks of the term.
- D. course requirements (required reading, term paper, etc.) be the same for students electing S-U grades as for those electing letter grades."

The rules for the S-U option are further defined by each of the Academic Units. They are as follows:

Agriculture and Life Sciences. (a) Must have 100 credit hours with A, B, C, D grades. (b) The S-U option is available only in those courses so designated in the course catalog after approval by the Educational Policy Committee. (c) Freshmen may not exercise the S-U option.

Architecture, Art, and Planning. (a) All courses specifically required for a degree excluded. Various departments may designate specific required courses where S-U will be permitted. (b) In a course designated as S or U, the entire class is so graded. The instructor must announce this decision within the first two weeks of class. (c) Where the option for S or U exists, both student and instructor must agree on the option. This agreement must be made by the end of the third week of classes on the appropriate form in the College Office. Once agreed upon, this grade option will be used for the final grade.

Arts and Sciences. (a) Courses that count toward satisfaction of major requirements should not be taken for an S or U grade unless the department grants permission. (b) Permission of instructor. (c) A minimum of 80

of the 120 hrs. required for the A.B. degree must be in courses for which the student has received letter grades.

Engineering. (a) May take one Humanities and Social Sciences, Approved, or Free Elective per term after completing first semester. (b) This option may be elected during Pre-Course Enrollment or with the written permission of the instructor and adviser on an add/drop form in the first 3 weeks of classes. (c) Decision irrevocable after first 3 weeks of term.

Graduate School. (a) Seminars and Thesis Research courses are usually graded S/U, and should be registered accordingly or a grade error results at semester's end. Other courses may be registered as S-U only if offered as S-U option.

Hotel. (a) Maximum of four free-elective credit hours per term. (b) Exceptions are required hotel courses or elective hotel courses offered only on S-U basis.

Human Ecology. (a) Not part of student's major. (b) May be used in the 15 hours required outside the major in Human Ecology courses. (c) Not part of 39 hours required in humanities, natural sciences, and social sciences. (d) A department may approve S-U grading in specific courses if approved by Educational Policies Committee. (e) Only juniors and seniors may take courses in which both letter grades and S-U are options. (f) Sophomores may take courses in which S-U is offered but letter grades are not offered. (g) Freshmen enrolled in English 137 and 138, which are only offered for S-U credit, are permitted to apply these courses to the freshman seminar requirements. (h) Total of four S-U courses during student's college career.

Industrial and Labor Relations. (a) This option may be elected, if available in I&LR electives, or in out-of-college electives but not including directed studies. (b) Degree requirements include a minimum of 105 lettergrade (A + to D -) credits. (c) Student must also be in good academic standing. (d) A "U" is considered the equivalent of an "F" in determining a student's academic status. (e) Limited to two courses per term, not to exceed four hours in any one course.

Unclassified. (a) S-U grades permitted only when it is the only option or (b) when specifically approved by an admissions officer in the school or college to which the student plans to transfer.

Veterinary Medicine. (a) There are seven courses in the veterinary core curriculum that are offered on an S-U basis only. All other required core courses must be taken for a letter grade. (b) Elective courses for veterinary students may be offered on a S/U basis at the option of the professor.

INCOMPLETE

The grade of incomplete is appropriate only when two basic conditions are met:

- 1) the student has a substantial equity at a passing level in the course with respect to work completed, and
- 2) the student has been prevented by circumstances beyond the student's control, such as illness or family emergency, from completing all of the course requirements on time.

A grade of incomplete may not be given merely because a student fails to complete all course requirements on time. It is not an option that may be elected at the student's own discretion.

While it is the student's responsibility to initiate a request for a grade of incomplete, reasons for requesting one must be acceptable to the instructor, who establishes specific make-up requirements. The instructor has the option of setting a shorter time limit than that allowed by the student's college for completing the course work. Several colleges require that a statement signed by the instructor be on file indicating the reason for the grade of incomplete and the restriction, if any.

It is the responsibility of the student to see that all grades of incomplete are made up within the deadline and that the grade has been properly recorded with the student's college registrar.

CHANGES IN GRADES

Changes in a grade may be made only if the instructor made an error in assigning the original grade.

OFFICIAL TRANSCRIPTS

An official transcript is one that bears the official seal of the university and the signature of the university registrar, sent in a sealed envelope directly from the Office of the University Registrar to another institution or agency as directed by the student. Transcripts can be obtained through the Office of the University Registrar, 222 Day Hall.

STUDENT RECORDS POLICY

Under the Family Educational Rights and Privacy Act of 1974 (FERPA), Cornell University is required to advise students of their rights concerning their education records. Education records include records directly related to a student and maintained by an educational institution or party acting on its behalf. The law gives students the right to

- a) inspect and review their education records;
- b) challenge contents of education records;
- c) a hearing if the challenge is unsatisfactory;
- d) include an explanatory statement in the education records if the outcome of the hearing is unsatisfactory;
- e) prevent disclosure of personally identifiable information*;
- f) secure a copy of the institutional policy which includes the location of all education records**; and
- g) file complaints with the Department of Education concerning institutional failure to comply with the act.

*Directory information is a category of personally identifiable information that includes name, home address, local address, local telephone listing, dates of attendance at Cornell, major field of study and college attended, previous educational agency or institution attended, participation in officially recognized activities (in athletics, the weight and height of members of athletic teams),

degrees earned and awards. Directory information may be released unless the student indicates otherwise at the time of registration. Students who wish no release of their directory information must inform the Office of the University Registrar in writing within 10 days of the date of official university registration each academic year. Students may rescind their no release request at any time in writing to the Office of University Registrar.

**Copies of the "Cornell University Policy on Access to and Release of Student Education Records" are available at the Office of the University Registrar, 222 Day Hall.

POLICY ON POSTING OF STUDENT INFORMATION

In compliance with the university's policy on student educational records, and the U.S. Department of Education's Family Educational Rights and Privacy Act of 1974 (FERPA), restricted student information may not be posted.

Accordingly, the following student information is considered restricted and therefore may not be posted:

- Student social security number
- Student identification number
- Course elected
- Grades earned
- Grade point average
- Class rank
- Date of birth
- Place of birth
- Home telephone listing
- Academic and disciplinary actions
- Student or administrative committees
- The most recent student educational records from previous educational agency or institution
- Financial arrangements between the student and the university
- Any other education record containing personally identifiable information

For further information, please refer to the revised *Policy on Access to and Release of Student Education Records* from the Office of the University Registrar, 222 Day Hall, or from your college registrar.

Academic Integrity

Absolute integrity is expected of every Cornell student in all academic undertakings. Any fraudulent act by a student to advance his or her academic status merits a severe penalty and such cases are governed by the Code of Academic Integrity. A pamphlet entitled the *Code of Academic Integrity and Acknowledging the Work of Others* is distributed to new and transfer students by their college, and is also available from the Office of the Dean of Faculty. The policy is published in the *Policy Notebook*, available free of charge from the Office of the Dean of Students.

PROTECTION OF HUMAN SUBJECTS IN RESEARCH

The University Committee on Human Subjects is the official review board of all university projects that use humans as research subjects. Projects affected by this restriction include, but are not limited to, surveys, questionnaires, studies of existing data, documents, records in which there are no identifiers, as well as mental and physical tests of human subjects. Requests for student information must be submitted in writing to the Assistant Vice President for Academic Programs and Campus Affairs, 311 Day Hall. All proposals involving human subjects in any category must be submitted to the committee for review. Inquiries, communications, and requests for guidelines should be directed to the committee's Executive Secretary, 117 Day Hall (255-5014). The guidelines are also available on CUINFO under OSP (Office of Sponsored Programs).

USE OF ANIMALS FOR COURSES

The Cornell University Institutional Animal Care and Use Committee has made the following statement on the use of animals for courses: "In certain courses the use of vertebrate animals serves as an invaluable aid in instruction. It is recognized, however, that some students have ethical objections to the use of vertebrate animals in this manner. Courses that use vertebrate animals are identified as such in the course descriptions. Students who have concerns about the use of animals in these courses should consult the course instructor for more information about the precise ways in which the animals are used. A set of university guidelines on the use of vertebrate animals in teaching for faculty and students is available from departments in which the courses are offered. A student who is reluctant to voice his or her concerns about animal use in a particular course, or who thinks these concerns have not received proper attention, may seek assistance from the director of the Cornell Center for Research Animal Resources (253-3516)."

Interdisciplinary Centers, Programs, and Studies

ANDREW D. WHITE PROFESSORS-AT-LARGE

G60e Van Rensselaer Hall (255-0833).

The program has its origins in Cornell's early history. Andrew D. White, the first president of Cornell University, inaugurated the position of nonresident professor, to be held by eminent scholars, scientists, and intellectuals who periodically visit the university for the stated purpose of "contributing to the intellectual and cultural life of the university." Toward this end, Professors-at-Large engage in a variety of activities including public lectures, participation in ongoing courses, and collaborative research, as well as holding office hours for undergraduate and graduate students. Professors-at-Large serve for a six-year term and are full members of the faculty when in residence.

Term Ending in 1992

Choay, Françoise, historian of architecture and city planning. Institut d'Urbanisme, University of Paris
Mazrui, Ali A., Africanist, political scientist. University of Michigan and University of Jos, Nigeria
Thorne, Kip, astrophysicist. California Institute of Technology

Term Ending in 1993

Allegre, Claude J., geological scientist. University of Paris
Billington, David, civil engineer. Princeton University
Wehner, Rüdinger, zoologist and behavioral neurophysiologist. University of Zurich

Term Ending in 1994

Biggs, Peter M., veterinary scientist. President, United Kingdom Institute of Biology
Johnson, Barbara, literary critic. Harvard University
Panofsky, Wolfgang K. H., physicist. Committee on International Security and Arms Control, National Academy of Sciences; Stanford University

Term Ending in 1995

Doniger, Wendy, historian of religions. University of Chicago
Kon, Igor S., sociologist and ethnologist. USSR Academy of Pedagogical Sciences
Levine, Raphael D., chemical physicist. The Hebrew University of Jerusalem
Swaminathan, M. S., natural ecologist. President, National Academy of Sciences, India

Term Ending in 1996

Lloyd, Geoffrey E. R., Professor of Ancient Philosophy and Science and Master of Darwin College, Cambridge University
Myers, Norman, consultant scientist on conservation and management of tropical diversity
Rowlinson, John Shipley, chemical engineer, Oxford University

CENTER FOR APPLIED MATHEMATICS

305 Sage Hall (255-4335)

The Center for Applied Mathematics administers a broadly based interdepartmental graduate program that provides opportunities for study and research over a wide range of the mathematical sciences. Each student develops a solid foundation in analysis, algebra, and methods of applied mathematics. The remainder of the graduate student's program is designed by the student and his or her Special Committee. For detailed information on opportunities for graduate study in applied mathematics, students should contact the director of the Center for Applied Mathematics, Sage Hall.

There is no special undergraduate degree program in applied mathematics. Undergraduate students interested in an application-oriented program in mathematics may select an appropriate program in the Department of Mathematics, the Department of Computer Science, or some department of the College of Engineering.

Graduate students in the center take courses related to their program of study that are

offered by various departments. Below are listed selected courses in applied mathematics in the main areas of research interest of the center's members. Detailed descriptions of these courses can be found in the listings of the individual departments (Abbreviations: Bio S = Biological Sciences, Chem E = Chemical Engineering, CS = Computer Science, EE = Electrical Engineering, M&AE = Mechanical and Aerospace Engineering, OR&IE = Operations Research and Industrial Engineering, and T&AM = Theoretical and Applied Mechanics.)

Selected Applied Mathematics Courses

Basic Graduate Courses in Applied Mathematics (and Analysis)

Math 413-414 Introduction to Analysis
Math 433-434 Introduction to Algebra
Math 511-512 Real and Complex Analysis
Math 521 Measure Theory and Lebesgue Integration
Math 522 Applied Functional Analysis
Math 531-532 Algebra
Math 551 Introductory Algebraic Topology
Math 515-516 Mathematical Methods in Physics
T&AM 612-613 Methods of Applied Mathematics

Analysis (and Differential Equations)

Math 427 Ordinary Differential Equations
Math 517 Dynamical Systems
Math 518 Smooth Ergodic Theory
Math 519-520 (also Math 428) Partial Differential Equations
Math 552 Differentiable Manifolds
Math 611-612 Seminar in Analysis
Math 613 Functional Analysis
Math 615 Fourier Analysis
Math 622 Riemann Surfaces
Math 623 Several Complex Variables
Math 627-628 Seminar in Partial Differential Equations

Logic and Theory of Computing

CS 671 Introduction to Automated Reasoning
CS 682 Theory of Computing
CS 715 Seminar in Programming Refinement Logics
Math 486 Applied Logic I
Math 487 Applied Logic II
Math 581 Logic
Math 681-682 Seminar in Logic
Math 683 Model Theory
Math 684 Recursion Theory
Math 685 Metamathematics
Math 687 Set Theory
Math 688 Topics in Applied Logic

Discrete and Numerical Mathematics

CS 621 Matrix Computations
CS 622 Numerical Optimization and Nonlinear Algebraic Equations
CS 624 Numerical Methods for Differential Equations
CS 681 Analysis of Algorithms
CS 721-722 Advanced Topics in Numerical Analysis
CS 729 Seminar in Numerical Analysis
EE 543 VLSI Architectures and Algorithms
Math 425 Numerical Solution of Differential Equations
Math 627-628 Seminar in Partial Differential Equations
Math 655 (also CS 655) Mathematical Foundations for Computer Modeling and Simulation
OR&IE 627 Dynamic Programming

- OR&IE 630-631 Mathematical Programming I and II
 OR&IE 632 Nonlinear Programming
 OR&IE 633 Graph Theory and Network Flows
 OR&IE 634 Combinatorial Optimization
 OR&IE 635 Interior-Point Methods for Mathematical Programming
 OR&IE 636 Integer Programming
 OR&IE 639 Convex Analysis

Information Communication and Control Theory

- EE 411 Random Signals in Communications and Signal Processing
 EE 425 Digital Signal Processing
 EE 468 Communication Theory
 EE 521 Theory of Linear Systems
 EE 522 Theory of Nonlinear Systems
 EE 526 Advanced Signal Processing
 EE 528 Multisensor Digital Signal Processing
 EE 561 Error Control Codes
 EE 562 Fundamental Information Theory
 EE 567 Digital Communication
 EE 573 Optimal Control and Estimation for Continuous Systems
 EE 574 Estimation and Control in Discrete Linear Systems

Mathematical Biology

- Bio S 662 Mathematical Ecology
 Stat & Biom 451 Mathematical Modeling of Populations

Mathematical Economics

- Econ 519 Econometrics I
 Econ 520 Econometrics II
 Econ 610 Stochastic Economics: Concepts and Techniques
 Econ 617-618 Mathematical Economics
 Econ 619-620 Advanced Topics in Econometrics

Mechanics and Dynamics

- Chem E 731 Advanced Fluid Mechanics and Heat Transfer
 Chem E 734 Fluid Mechanics in Suspensions
 Chem E 751 Mathematical Methods of Chemical Engineering Analysis
 Chem E 753 Analysis of Nonlinear Engineering Systems: Stability, Bifurcation, and Continuation
 EE 681 (also A&EP 761) Kinetic Theory
 M&AE 601 Foundations of Fluid Dynamics and Aerodynamics
 M&AE 602 Incompressible Aerodynamics
 M&AE 603 Compressible Aerodynamics
 M&AE 704 Viscous Flows
 M&AE 732 Analysis of Turbulent Flows
 M&AE 733 Stability of Fluid Flow
 M&AE 734 Turbulence and Turbulent Flow
 M&AE 736 Computational Aerodynamics
 M&AE 737 Computational Fluid Mechanics and Heat Transfer
 T&AM 570 Intermediate Dynamics
 T&AM 671 Advanced Dynamics
 T&AM 672 Celestial Mechanics (also Astro 579)
 T&AM 673 Mechanics of the Solar System (also Astro 571)
 T&AM 675 Nonlinear Vibrations
 T&AM 751 Continuum Mechanics and Thermodynamics
 T&AM 752 Nonlinear Elasticity
 T&AM 776 Applied Dynamical Systems

Probability and Statistics

- EE 562 Fundamental Information Theory
 EE 563 Communication Networks
 EE 564 Decision Making and Estimation
 EE 566 Queuing Networks
 EE 664 Foundations of Inference and

- Decision Making
 Math 571-572 Probability Theory
 Math 573 Experimental Design and Multivariate Analysis
 Math 574 Probability and Statistics
 Math 575 Sequential Analysis, Multiple Decision Problems
 Math 577 Nonparametric Statistics
 Math 670 Topics in Statistics
 Math 674 Multivariate Analysis
 Math 675 Statistical Decision Theory
 Math 677-678 Stochastic Processes
 OR&IE 561 Queuing Theory and Its Applications
 OR&IE 563 Applied Time-Series Analysis
 OR&IE 650 Applied Stochastic Processes
 OR&IE 651 Applied Probability
 OR&IE 662 Advanced Stochastic Processes
 OR&IE 663 Time-Series Analysis
 OR&IE 665 Advanced Queuing Theory
 OR&IE 670 Statistical Principles
 OR&IE 671 Intermediate Applied Statistics
 OR&IE 674 Design of Experiments
 OR&IE 675 Statistical Analysis of Discrete Data
 OR&IE 676 Statistical Analysis of Life Data

Theoretical/Mathematical Physics/Chemistry

- Chem 792 Molecular Collision Theory
 Chem 793 Quantum Mechanics I
 Chem 794 Quantum Mechanics II
 EE 407 Quantum Mechanics and Applications
 Phys 553-554 (Astro 509-510) General Relativity
 Phys 572 Quantum Mechanics I
 Phys 574 Quantum Mechanics II
 Phys 561 Classical Electrodynamics
 Phys 562 (Chem 796) Statistical Mechanics
 Phys 563 Statistical Physics
 Phys 651 Advanced Quantum Mechanics
 Phys 652 Quantum Field Theory

CENTER FOR THE ENVIRONMENT

425 Hollister Hall (255-7535)

The Center for the Environment is a campuswide center that promotes and coordinates interdisciplinary research, teaching, and outreach activities on environmental issues. Cfe's major programs are (1) the Cornell Laboratory for Environmental Applications of Remote Sensing (CLEARS), which conducts teaching, research, and outreach activities on remote sensing and resource inventory and analysis; (2) the Water Resources Institute, which conducts research and public service activities related to water quality and supply; (3) the Waste Management Institute, which conducts research and outreach on waste-management issues; (4) the Environmental Policy Program, which addresses the policy aspects of issues such as biotechnology, hazardous waste management, and regulation of toxic substances; (5) the Global Environment Program, which conducts research on environmental problems at the global scale such as climate change, stratospheric ozone depletion, and trans-boundary air pollution; and (6) the Biological Resources Program, which coordinates and conducts research activities on the conservation, regulation, and management of biological resources, especially in marine environments.

Courses

Courses related to Cfe programs are offered in a number of departments: (1) ecosystems science through the Section of Ecology and

Systematics and the Department of Natural Resources; (2) remote sensing through the departments of Civil and Environmental Engineering and Soil, Crop, and Atmospheric Sciences; (3) water resources primarily through the departments of Agricultural and Biological Engineering; Soil, Crop and Atmospheric Sciences; and Civil and Environmental Engineering; (4) waste management primarily through the departments of Environmental Engineering, Agricultural and Biological Engineering, and Agricultural Economics; (5) environmental policy through Toxicology, Natural Resources, and City and Regional Planning; (6) and biological resources through the Division of Biological Sciences.

Material relevant to global environmental issues is covered by courses in several departments, including Environmental Engineering, Mechanical and Aerospace Engineering, Agricultural Engineering, Geology, Natural Resources, Rural Sociology, Agricultural Economics, and the Section of Ecology and Systematics.

Because courses relating to environmental policy are not indexed by that title, representative courses are listed below that should be of interest to those who would like to study environmental policy.

- Religion, Ethics, and the Environment (Natural Resources 407)
 Policy, Planning and Administration (Natural Resources 608)
 Seminar in Environmental Values (Natural Resources 611)
 Environmental Policy (Natural Resources 661)
 Legal Aspects of Land-Use Planning (City and Regional Planning 653)
 Land Resources Protection Law (City and Regional Planning 656)
 Public Policy and Preservation Planning (City and Regional Planning 665)
 Environmental Politics (City and Regional Planning 480)
 Environmental Ethics (Philosophy 246 and Biological Sciences 206)
 Economic Analysis of Government (Civil and Environmental Engineering 322 and Economics 308)
 Risk Management of Toxic Chemicals (Biological Sciences 659)

THE MARIO EINAUDI CENTER FOR INTERNATIONAL STUDIES

170 Uris Hall (255-6370)

The Mario Einaudi Center for International Studies was established in 1961 to encourage, coordinate, and support comparative and interdisciplinary research on international subjects and was named for its founder in 1991. In a mutually dependent world, international problems require interdisciplinary collaboration, and the Einaudi Center coordinates and assists such collaborative efforts both on campus and in the field. Charged with the responsibility of furthering international and comparative research and teaching—involving efforts in almost every unit of the university—over the past three decades, the center has evolved into an administrative focus for more than twenty international programs.

The Mario Einaudi Center for International Studies at Cornell is one of the largest and most diverse in the United States. Currently it

oversees five Title VI National Resource Centers (Africa, Latin American Studies, South Asia, Southeast Asia, and Western Societies), as well as sixteen topical programs and the university study-abroad program. Over 500 faculty voluntarily collaborate in the center's programs and well over 300 graduate students are involved directly in its international programs. Undergraduate concentrations in International Relations and Modern European Societies serve 285 students.

Cornell is committed to the application and expansion of its resources to study the global community in all its complexity. These resources include a faculty of preeminent scholars and teachers, excellent research facilities, ability to teach forty-five languages, and a library system with more than 2,500,000 volumes on topics related to international and comparative studies.

As the world changes, Cornell's international programs change to study those developments. In addition to area studies, these programs focus on topics as varied and vital as international marketing, agriculture, nutrition, population, law, planning, politics, rural development economics, and world peace. These areas and topics change as interest, demand, and potential warrant. As one program gains enough momentum and recognition to attract its own resources, the center applies its resources to another pilot activity that brings faculty and students together across customary professional and departmental boundaries.

In addition, the Einaudi Center was recently given responsibility by the university to redesign and expand foreign study options for Cornellians, which has resulted in our Cornell Abroad Program. The center also encourages international research and travel by students through its annual Travel Grant Program.

Although the center has both an endowment and an appropriation from the university to support interdisciplinary international studies, Cornell monies are only a fraction of the total funds involved in international studies at Cornell. Programs seek funding from foundations, the federal government, alumni, and international agencies, a process that the center assists with as necessary. When particular programs are in a low budget cycle, rather than allowing them to lapse, the center continues to support those that show promise to keep the voluntary faculty groups operating together until new outside funding can be acquired. The center is also responsible for the International Students and Scholars office.

For additional information on current programs, publications, and courses, contact

Director
Mario Einaudi Center for International Studies
Cornell University
170 Uris Hall
Ithaca, New York 14853-7601
USA 607/255-6370
FAX 607/254-5000

The Einaudi Center Area Programs and Topical Studies Programs

Center Administration

Davydd J. Greenwood, Director
John M. Kubiak, Executive Director
170 Uris Hall
(607) 255-6370

Area Studies Programs

East Asia Program

(Formerly China-Japan Program)
Thomas Lyons, Director
140 Uris Hall

Soviet and East European Studies Program

Michael Scammell, Director
236 Goldwin Smith Hall

Latin American Studies Program

Billie Jean Isbell, Director
David Block, Acting Director
190 Uris Hall

South Asia Program

Dan Gold, Director
170 Uris Hall

Southeast Asia Program

Randy Barker, Director
120 Uris Hall

Western Societies Program

William Lesser, Director
130 Uris Hall

Institute for African Development

David Lewis, Director
203 West Sibley Hall

Topical Studies Programs

NY State Center for International Marketing

Davydd J. Greenwood, Director
170 Uris Hall

International Agriculture

Norman Uphoff
350 Caldwell Hall

International Legal Studies

John Barcelo, Director
318 Myron Taylor Hall

International Political Economy

Philip McMichael, Director
437A Warren Hall

Population and Development Program

J. Mayone Stycos, Director
218A Warren Hall

International Studies in Planning

William Goldsmith, Director
200 West Sibley Hall

Peace Studies Program

Judith Reppy, Director
180 Uris Hall

Program in International Nutrition

Michael Latham, Director
127 Savage Hall

Program on Comparative Economic Development

Erik Thorbecke, Director
350 Caldwell Hall

Cornell International Institute for Food, Agriculture, and Development

Norman T. Uphoff, Chair
350 Caldwell Hall

International Development and Women

Lourdes Beneria, Director
33 Warren Hall

Cornell Food and Nutrition Policy Program

Per Pinstrup-Andersen, Director
305 Savage Hall

Current programs coordinated by the Einaudi Center include the following:

Master of Professional Studies in International Development

Norman Uphoff, Field Representative
350 Caldwell Hall

A program intended for midcareer practitioners is sponsored by the center and leads to a Master of Professional Studies in International Development. Interested individuals should apply through the Graduate School.

Program on International Relations

Peter Katzenstein
Walter S. Carpenter Professor of International Studies
160 Uris Hall

Undergraduates interested in an international relations concentration should see Professor Katzenstein.

CENTER FOR STATISTICS

482 Caldwell Hall (255-8066)

The Cornell Center for Statistics coordinates university-wide activities in statistics and probability at the graduate and research level. Students interested in graduate study in probability and statistics can apply to the Field of Statistics or to one of the other graduate fields of study that offer related course work.

Students in the Field of Statistics plan their graduate program with the assistance of their Special Committee. For detailed information on opportunities for graduate study in statistics and probability, students should contact the director of the Statistics Center, 272 Caldwell Hall.

Graduate students can design many different programs within the Field of Statistics. These can be broadly grouped as follows: biometry, biostatistics, economic and social statistics, operations research, probability theory, sampling theory, statistical computing, statistical design, statistical theory, and stochastic processes and their applications.

Below are listed selected courses in probability and statistics of interest to graduate students in the field.

Economics

- 519 Econometrics I
- 520 Econometrics II
- 619 Topics in Econometrics I
- 620 Topics in Econometrics II

Electrical Engineering

- 411 Random Signals
- 468 Communication Systems I
- 561 Error Control Codes
- 562 Fundamental Information Theory
- 563 Communication Networks
- 564 Decision Making and Estimation
- 567 Communication Systems II
- 577 Artificial Neural Networks
- 663 Advanced Topics in Information Theory
- 664 Foundations of Probability

Industrial and Labor Relations

- 310 Design of Sample Surveys
- 312 Applied Regression Methods
- 410 Techniques of Multivariate Analysis
- 411 Statistical Analysis of Qualitative Data
- 510-511 Introductory Statistics for the Social Sciences

- 610 Seminar in Modern Data Analysis
- 612 Statistical Classification Methods
- 711 Sensitivity Analysis in Linear Regression
- 712 Theory of Sampling
- 713 Empirical Processes with a Statistical Application
- 714 Modern Distribution Theory

Mathematics

- 471 Basic Probability
- 472 Statistics
- 571-572 Probability Theory
- 573 Multivariate Analysis
- 574 Mathematical Statistics
- 670 Topics in Statistics

Operations Research

- 561 Queuing Theory and Its Application
- 562 Inventory Theory
- 563 Applied Time Series Analysis
- 565 Statistics for Manufacturing
- 570 Introduction to Statistical Theory with Engineering Applications
- 577 Quality Control
- 580 Design and Analysis of Simulated Systems
- 630-631 Mathematical Programming I and II
- 650 Applied Stochastic Processes
- 651 Probability
- 662 Advanced Stochastic Processes
- 663 Time-Series Analysis
- 665 Advanced Queuing Theory
- 670 Applied Statistics
- 671 Intermediate Applied Statistics
- 674 Design of Experiments
- 676 Statistical Analysis of Life Data
- 678 Asymptotic Methods in Statistics
- 680 Simulation
- 769 Selected Topics in Applied Probability

Statistics and Biometry

- 408 Theory of Probability
- 409 Theory of Statistics
- 417 Matrix Algebra
- 451 Mathematical Modeling of Populations
- 601-604 Statistical Methods I, II, III, and IV
- 606 Sampling Biological Populations
- 662 Mathematical Ecology
- 697 Special Problems in Statistics and Biometry
- 717 Linear Models
- 795 Statistical Consulting

COGNITIVE STUDIES

225 Uris Hall (255-6431)

Cognitive studies is a new and rapidly growing field of study that focuses on the nature and representation of knowledge. It approaches the study of perception, action, language, and thinking from several perspectives—theoretical, experimental, and computational—with the aim of gaining a better understanding of human cognition and the nature of intelligent systems. The comparison between human and artificial intelligence is an important theme, as is the nature of mental representations and their acquisition and use. Cognitive studies has drawn primarily from the disciplines of computer science, linguistics, philosophy, and psychology. In the College of Arts and Sciences the field of cognitive studies is primarily represented by faculty in these departments, as well as in mathematics. It is also represented by faculty in the Department of Human Development and Family Studies (College of Human Ecology), in the Section of Neurobiology and Behavior (Division of Biological Sciences), in the Department of Education (College of Agriculture and Life Sciences), and in the Johnson Graduate School of Management.

Undergraduate Programs

An undergraduate concentration in cognitive studies in the College of Arts and Sciences provides a framework for the design of structured, individualized programs of study in this growing interdisciplinary field. Such programs of study are intended to serve as complements to intensive course work in a single discipline as represented in an individual department. For further information on the undergraduate program, see "Cognitive Studies Concentration" in the College of Arts and Sciences section.

Graduate Programs

At the graduate level Cornell offers a graduate field minor in cognitive studies. Cornell's unique program of graduate training, which seeks to tailor an optimal program of study and research for each student, fosters highly interdisciplinary committees. It is the norm for students interested in cognitive studies to have faculty members from such departments as Philosophy, Computer Science, Modern Languages and Linguistics, and Psychology on common committees. For further information on the graduate Field of Cognitive Studies, contact Barbara Lust, graduate faculty representative, NG28 Van Rensselaer Hall (telephone: 607/255-0829).

Courses

Courses from across the university that are relevant to the Cognitive Studies program are listed in this catalog under Arts and Sciences in the section "Special Programs and Interdisciplinary Studies."

CORNELL ABROAD

474 Uris Hall (255-6224)

Cornell Abroad offers undergraduates a wide variety of academic programs that are intellectually challenging, academically and socially diverse, and culturally enriching. Study abroad is an integral part of students'

formal education complementing and enhancing their study in Ithaca. Qualified students may study abroad by attending a program sponsored directly by Cornell or another American institution, or by enrolling in a foreign university. *In all cases students must enroll through Cornell Abroad.*

LOCATIONS ABROAD

Cornell undergraduates regularly study in approximately 40 different countries and enroll in more than 200 programs and universities throughout the world. In addition to a challenging course of study at a foreign university, the programs offer the experience of immersion in the life and culture of the host country.

Cornell has programs or affiliations with the following universities or programs:

ASIA

- China: Peking and Nanjing Universities, Chinese Language and Study Programs, University of International Business and Economics: Chinese Business and Society Program (CIEE); Xiamen University, PRC (Cornell Abroad)
- Japan: Kyoto Center for Japanese Studies (Stanford University Consortium); Inter-University Center for Japanese Language Studies
- Korea: Yonsei University, Seoul
- Sri Lanka: ISLE Program: Intercollegiate Sri Lanka Education
- Indonesia: Institut Keguruan Dan Ilmu Pendidikan (IKIP) in Malang (CIEE)

AUSTRALIA: Curtin University of Technology, Perth; Griffith University, Brisbane; University of Sydney; University of Adelaide; University of New South Wales, Macquarie University, Sydney; University of New England, Armidale; The University of Wollongong; University of Western Australia, Perth

EUROPE

- Hungary: Budapest Center for European Studies
- Russia: Cornell-Colgate Semester in Moscow; Leningrad State University (CIEE); School of Slavonic and East European Studies (SSEES) programs in various locations
- Belgium: Université Catholique de Louvain (Le Département des Sciences Politiques et Sociales)
- Denmark: International Study Program in Copenhagen (DIS)
- France: Cornell-Duke EDUCO program: Université de Paris 7, Paris 1, Institut d'Études Politiques de Paris (Sciences Po); University of Paris: Critical Studies Program (CIEE)
- Germany: Cornell at the University of Hamburg; Technische Universität Darmstadt
- Ireland: University of Limerick; Trinity College, Dublin, Ireland
- Italy: Bologna Cooperative Studies Program (Consortium); Cornell College of Art and Architecture Program in Rome; Intercollegiate Center for Classical Studies in Rome
- Spain: Cornell-Michigan in Seville program (with three weeks in Madrid)
- Sweden: Agricultural College of Sweden, Uppsala; The Swedish Program at the University of Stockholm

Switzerland: Cornell at the Université de Genève and affiliated institutes

United Kingdom: University of Birmingham; University of Bristol; Cambridge University; University of Edinburgh; University of Manchester; Oxford University; University of Reading; University of Sussex; University of Warwick

University of London: King's College, University College, Imperial College of Science and Technology, London School of Economics and Political Science, Queen Mary Westfield College, School of Oriental and African Studies, School of Slavonic and East European Studies

LATIN AMERICA AND THE CARIBBEAN

Honduras: Escuela Agrícola Panamericana (Zamorano)

Mexico: Instituto Tecnológico y de Estudios Superiores de Monterrey; Universidad de las Américas-Puebla (UDLA); Universidad Iberoamericana

Jamaica, Barbados, and Trinidad: University of the West Indies

MIDDLE EAST

Egypt: American University in Cairo

Israel: Bar Ilan University, Ben Gurion University, Development Study Center, Rehovot, Haifa University, Hebrew University of Jerusalem, Technion (Israel Institute of Technology), Tel Aviv University

Other Locations Abroad

Cornell students are not limited to the locations listed above. In recent years, they have also studied in Argentina, Austria, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, Greece, India, Kenya, Nepal, New Zealand, Nigeria, the Philippines, Poland and Puerto Rico.

Externally Sponsored Programs or Enrollment in a Foreign University

Undergraduates also apply through Cornell Abroad to a wide variety of study abroad programs sponsored by other American colleges and to nonaffiliated foreign universities. Cornell Abroad forwards all applications to the programs or universities for the students. *Those attending programs or universities approved by their Cornell college remain registered at Cornell, receive credit for approved coursework, and continue to be eligible for financial aid.*

Who Studies Abroad

Cornell undergraduate students from all Cornell colleges and all majors are eligible to study abroad. Approximately 500 undergraduates study abroad each year. Since most Cornell colleges or schools require that students complete at least sixty hours of their undergraduate credit on the Cornell campus, students who transfer to Cornell as juniors generally cannot count study abroad credit toward their Cornell degree.

When Students Study Abroad

Cornell students may study abroad their sophomore, junior, or senior year. After weighing a number of considerations, many students find that their junior year is the most satisfactory time to study abroad. To ensure

preparation for the program which best meets a student's needs, it is important to begin planning for study abroad early in the freshman year.

Transfer of Credits and Grades

Only students applying through Cornell Abroad will receive credit for their work abroad. Cornell Abroad has catalogs, program materials, course syllabi, and program evaluations to help students plan their studies abroad. As part of the application process, students must obtain approval of their academic plans from their college study abroad adviser listed at the end of this article.

While policies and procedures vary from one Cornell college or school to the next, all Cornell colleges and schools regularly accept credits for study abroad, normally 30 credits per year or 12–20 per semester when students have taken a full load according to the standards of the foreign institution. After their return, their college will review their work and make the final decision concerning transfer of credit. *The Cornell transcript will indicate the courses taken, the credits earned, and the foreign grades received. Cornell does not translate the grades earned abroad into American grades, and does not average them into the Cornell grade point average.*

Foreign Language Requirements

Many programs abroad require two years or the equivalent of college-level language study. Students should make firm plans for foreign language study early in their freshman year if they would like to study in a country in which English is not the primary language.

For students who do not have proficiency in a foreign language, there are still options outside of English-speaking countries. For example, Cornell Abroad sends students to programs taught in English in Belgium, Denmark, Egypt, France, Hong Kong, Indonesia, Israel, Italy, Japan, Korea, Netherlands, People's Republic of China, and Sweden. Many students in these programs do not start studying the country's language until they are abroad, but it is desirable to start studying the language at least a year before going abroad, if possible.

Length of Stay

Cornell students study abroad for one semester or the academic year. When possible, it is often desirable to study for the entire year. It takes time to adjust successfully to a different educational system, language, and culture. The full year provides a more complete immersion in the foreign country's academic life and culture. Students who are studying in foreign languages especially find it to be beneficial to study for a year. Many students at Cornell, however, find it necessary to limit their study abroad to one semester. Cornell Abroad has information on a number of strong semester programs.

Housing Arrangements

Students generally have the option of living with a selected family, in a university dormitory room, or in an apartment. Cornell Abroad will advise students of the arrangements that are available and most appropriate to their individual needs.

Admission and Application Procedure

All students who wish to receive Cornell credit for study abroad must fill out the Cornell Abroad application materials available in 474 Uris Hall. All application materials should be submitted to Cornell Abroad or, in the case of Human Ecology and Industrial and Labor Relations students, the college study abroad office. Cornell Abroad will forward all completed applications to the appropriate institutions.

Application Deadlines

Deadlines for Cornell affiliated programs

October 15, 1992 for spring term 1993 study abroad except in the case of British universities.

November 1, 1992 for 1993–94 at Oxford or Cambridge.

January 31, 1993 for the 1993–94 Kyoto Center for Japanese Studies program.

February 15, 1993 for studying in 1993–94 at most universities and in the spring semester 1994 at British universities, though British universities sometimes will consider applications for the spring semester as late as October 15 of the previous year.

Deadlines for external programs and direct enrollment

The application deadlines for external programs and direct enrollment in foreign universities vary by program. Students should submit complete application materials to Cornell Abroad three weeks before the program or university deadline.

Costs

When studying abroad, candidates for a Cornell degree pay the tuition of the foreign university or the specific program. Tuitions vary considerably by program. In addition, they continue to pay the regular Cornell University fee (*not* tuition), which is \$1,685 per semester in 1992–93. Students studying in the United Kingdom and Israel pay an additional semester fee of \$250 or \$150, respectively, for the Cornell Centers there unless they are attending a program sponsored by another American university. Detailed information on costs is available at the Cornell Abroad office.

Financial Aid

All student going abroad, whether through a Cornell program or a program sponsored by another institution, are eligible for financial aid as consistent with general university policy.

Security Abroad and Related Issues

The decision to study in a particular region of the world must be made by each student and his or her family in light of their own interpretation of the events and their willingness to live with a certain degree of ambiguity. It is sad but true that nowhere in the world, including many of our own cities, can one expect a completely safe environment. Cornell Abroad cannot predict future events nor give guarantees about the course of events in any region of the world.

Cornell Abroad stays in regular contact with its representatives abroad and receives information regarding rapidly changing political situations through the State Department and

its other contacts. As long as the State Department does not restrict travel to a particular place, Cornell Abroad does not recommend limitations on travel or student plans for study abroad. Cornell Abroad will try to notify its students immediately that they should defer their travel abroad, should such Department of State travel restrictions be issued. Nothing is as important as the security and well-being of our students.

Responsibility for a decision to withdraw from a program or return home early rests with the individual and his or her family. There can be no guarantee of credit for students who withdraw from programs before the completion of scheduled instruction and examinations. Students attending programs sponsored by colleges and universities other than Cornell are advised to inquire about those institutions' policies regarding the completion of academic work and the potential financial implications of a premature departure. In the event of a disruption requiring a premature departure, refunds of tuition and fees, and the appropriate number of credits to be awarded, will be reviewed by Cornell and its affiliated institutions on a case-by-case basis. Most institutions sponsoring study abroad programs strive to facilitate the students' completion of their academic programs even under unusual circumstances and have tuition refund policies that contain a pro-rated formula used in the event of such a disruption.

Sources of Information and Advice Concerning Study Abroad

Cornell Abroad (for students from all colleges): Urbain J. DeWinter, Director and Adjunct Associate Professor of Romance Studies; Cynthia J. Koepf, Associate Director; Elizabeth R. Okihiro, Administrative Aide; and Kathy Lynch, Accounts Coordinator, 474 Uris Hall.

In addition to individual advising, Cornell Abroad offers catalogs, program materials, course syllabi, program evaluations, books, videotapes, and a series of information meetings that are advertised in the *Cornell Daily Sun*.

College study abroad advisers:

Agriculture and Life Sciences: Donald Burgett, 140 Roberts Hall

Architecture, Art, and Planning: Phyllis Thibodeau, 129 Sibley, and Professor Roberto Bertoia, Foundry;

Arts and Sciences: Professor Beatrice Rosenberg, 55 Goldwin Smith Hall;

Engineering: Associate Dean Richard Lance, 322 Thurston Hall;

Hotel Administration: Professor William H. Kaven, 545F Statler Hall;

Human Ecology: Dwight Giles, 170B Martha Van Rensselaer Hall;

Industrial and Labor Relations: Laura Lewis, 101 Ives Hall.

CORNELL-IN-WASHINGTON PROGRAM

131A Sage Hall (255-4090)

The Cornell-in-Washington Program offers students from all colleges within the university an opportunity to earn full academic credit for a semester in Washington, D.C. Students take courses from Cornell faculty, conduct individual research or design projects, and work as externs. The program is administered by the director with the assistance of a university-wide faculty steering committee, which reports to the Vice President for Academic Programs and Campus Affairs.

The program is housed at the Cornell Center, 2148 O Street, NW, Washington, DC 20037. The academic and administrative space is located on the first floor; twenty-seven residential units for students and faculty are on the upper floors.

The Cornell-in-Washington public policy program is open to qualified juniors, seniors, and graduate students from all colleges, schools, and divisions of the university. Students enroll in Government 500 (cross-listed for statutory credit), which involves a major research project carried out in conjunction with an externship. Students may work as externs with congressional committee offices, executive-branch agencies, interest groups, research institutions and other organizations involved in the political process and public policy, among others. Students also select one or two other seminars from such fields as government, history, economics, architectural history, natural resources, and social policy. All seminars are taught by Cornell faculty and carry appropriate credit toward fulfillment of major, distribution, and other academic requirements.

Tuition

Students are registered as full-time students, earn Cornell credit, pay full tuition, and remain eligible for financial aid.

Housing

Apartments may be rented at the Cornell Center during the academic year and during the summer. All are fully furnished (except for dishes, cookware, towels and bedding) and reasonably priced by both Washington and Cornell standards. Two students are assigned to each efficiency and three to each one-bedroom apartment. Because of the limited number of spaces and the need for accurate planning, a non-refundable deposit of \$150 is required to reserve a space. Students are discouraged from bringing automobiles. The public transportation system, consisting of both bus and subway service, is extensive and convenient to the Center and street parking is not available.

Applications

Application forms are available from the Cornell-in-Washington office at 131A Sage Hall. Applications should be submitted the semester prior to participation and are acted on as soon as complete. Therefore, it is to the student's advantage to apply early.

Information

Regular information meetings are held on campus in early October and March. These meetings are advertised in the *Cornell Daily Sun* and on campus bulletin boards. Additional information concerning externships, courses, housing and other features of the program may be obtained at either the Cornell-in-Washington office at 131A Sage Hall (607) 255-4090, or in Washington at the Cornell Center, 2148 O Street, NW, Washington, DC 20037, (202) 466-2184.

CORNELL INSTITUTE FOR PUBLIC AFFAIRS

131A Sage Hall (255-4090)

Cornell's Institute for Public Affairs (CIPA) is now offering a five-year dual-degree program for Cornell students. Those enrolling in this program would remain in Ithaca a fifth year after the BA or BS and earn an MPA (Master of Public Administration) degree. A semester in the Cornell-in-Washington Program is recommended.

Cornell's MPA program seeks to provide students with:

- a thorough understanding of the political processes through which issues, problems, and policies are formulated and implemented;
- an understanding of the economic bases for government action, including both micro and macro economic techniques and problems;
- competence in the quantitative methods needed to analyze and evaluate programs and policies;
- familiarity with public budgets and finance;
- a thorough knowledge of the behavior and management of complex public and private organizations;
- sensitivity to the moral and ethical dimensions of policy questions;
- an understanding of the historical context and development of governmental programs.

Students interested in pursuing a career in public affairs in the government, the not-for-profit sector, or government-related activities in the private sector, may qualify to complete an MPA at Cornell with only one additional year of study. Additional information is available at the CIPA office, 131A Sage Hall, 255-4090.

CORNELL PLANTATIONS

One Plantations Road (255-3020)

A museum of living plants and natural history resources, Cornell Plantations encompasses the arboretum, botanical garden, and natural areas of Cornell University totaling nearly 3,000 acres that include the woodlands and gorges bordering the central campus. Plantations lands provide outdoor laboratories for academic programs and research in disciplines ranging from geology to landscape architecture. All accessioned plant specimens are labeled. The F. R. Newman Arboretum specializes in trees and shrubs native to New York State. The botanical garden features

herbs, flowers for cutting and drying, garden perennials, heritage and modern vegetables, international crops and weeds, rock garden plants, peonies, flowering groundcovers, rhododendrons and companion plants, and plants native to the Cayuga Lake Basin. Gardens on campus exhibit rhododendrons and azaleas, unusual plants for horticultural study, and poisonous plants. Orchids are displayed in the Daisy Farrand Solarium at A. D. White House. Nearly 2,700 acres of land in and around Tompkins County are set aside as nature preserves providing quality examples of native vegetation and protection for rare species and communities for class and research use. Faculty are asked to notify the Program Coordinator (255-9638) before scheduling class visits or beginning research. The Education Program offers non-credit courses, lecture series, symposia, special events, and interpretive tours. Students are encouraged to volunteer as photographers, authors, guides, and workers. Publications include the quarterly *Cornell Plantations*, newsletters, a semiannual insert in the *Cornell Chronicle*, and *Garden Pages* which provide interpretive materials for the collections. Research on locally endangered plant species is being conducted to provide management guidelines for conservation. In addition, a life science curriculum for elementary schools, LEAP, has been produced based on conceptual-development teaching methods. Maps, publications, and information are available at the garden gift shop in the Lewis Headquarters Building, Cornell Plantations, One Plantations Road, Ithaca, NY 14850-2799 (255-3020).

PROGRAM ON ETHICS AND PUBLIC LIFE

632 Clark Hall (255-3810)

The critical issues of public life are inescapably ethical issues. In the economy, we face questions of equity and justice and questions about the relation between prosperity, the environment, and the quality of individual lives. In constitutional law, we confront dilemmas about civil rights, freedom of speech, privacy, and abortion. In politics and government, we wrestle with questions about campaigning, character, and compromise. And in international affairs, we encounter the complexities of war and peace, human rights, multilateral aid, and climate change.

The university-wide Program on Ethics and Public Life (EPL) is Cornell's initiative in the systematic study of the ethical dimension of specific public issues. EPL grew out of a conviction that these questions need something more than abstract philosophical discussion. In addition to the general study of values and principles that goes on in theoretical ethics, universities need to foster ways of thinking about the complex, uncertain, and urgent problems of the real world, ways of thinking that are realistic without sacrificing anything of their ethical character.

EPL does not intend to create either an undergraduate major or a graduate field in Ethics and Public Life. On the contrary, we seek to enhance and facilitate the discussion of ethical issues by students whose central educational interests lie elsewhere, but whose work and lives will nevertheless confront

them with dilemmas and responsibilities for which a university education should prepare them. EPL aims, not to create yet another specialized department, but to enrich existing departments with courses that are intellectually serious and practically fruitful at the same time.

EPL Core Courses

- PHIL 247 Ethics and Public Life
- PHIL 342 Law, Society, and Morality
- PHIL 343 Political Obligation and Civil Disobedience
- GOVT 412 Voting and Political Participation
- GOVT 466/Womns 466/Law 648 Feminism and Gender Discrimination
- GOVT 468/Phil 368 Global Climate and Global Justice
- GOVT 469/Phil 369 Limiting War: The Morality of Modern State Violence

Related Courses

- CEH 356 Economics of Welfare Policy
- CLASS 118 Modern Moral Problems: Some Ancient Answers
- CRP 642 Critical Theory and the Foundations of Planning Analysis
- ENGR 360/S&TS 360 Engineering Ethics
- ILR 482 Ethics at Work
- ILR 488 Liberty and Justice for All
- LAW 668 Lawyers and Clients
- LAW 744 Lawyers and the Legal Profession
- Henry Shue, director, 632 Clark Hall, 255-3810; Henry Shue, Wyn and William Y. Hutchinson Professor of Ethics and Public Life; Kathryn Abrams, Associate Professor of Ethics and Public Life and of Law.

HISPANIC AMERICAN STUDIES PROGRAM

211 Sage Hall (255-3197)

The Hispanic American Studies Program is an interdisciplinary academic program that focuses on the contributions, concerns, and welfare of those persons of Hispanic origin who reside in the United States. It includes support for historical, linguistic, literary, social, economic, and political studies of this diverse group of Americans. To this end the program objectives are (1) to expand the available course curriculum by providing both undergraduate and graduate courses pertaining to Hispanic American subject matters; (2) to enlarge the size of the Hispanic American faculty at Cornell through permanent appointments and visiting appointments; and (3) to enhance the Hispanic American academic environment on campus through support of such activities as lectures, conferences, seminars, exhibits, and research activities.

1992-93 Course Offerings

Because courses relating to Hispanic American Studies are not indexed by that title, courses of particular relevance are listed below. Please refer to the appropriate department for details.

ENGR 355: Understanding Cultural Differences in the Engineering Work Environment

HSS 280/ASR 280: Racism in American Society

HSS 370: Social Welfare as a Social Institution

ILR 469: Immigration and the American Labor Force

ILR 628: Cross-Cultural Studies in Organizational Behavior

SOC 265: Hispanic Americans

SPAND 204: Intermediate Composition and Conversation

SPAND 366/LING 366: Spanish in the United States

SPANL 311-312: Advanced Composition and Conversation

SPANL 332: The Modern Drama in Spanish America

SPANL 346: Hispanic Caribbean Culture and Literature

SPANL 390: Fiction of Modern Hispanic Women

SPANL 396: Modern US-Hispanic Prose Fiction

SPANL 397: Colombian Literature

SPANL 492: Latin American Women Writers

SPANL 105 FWS: Paradise Lost: Biculturalism in America

SPANL 106 FWS: Searching for Self in Hispanic fiction

SPANL 107 FWS: The Literature of U.S. Hispanic/Ethnic Women Writers

LING 113 FWS: Two Worlds—Dos Mundos

SPANL 119 FWS: Letters from el Barrio: A Sense of Place in Hispanic American Fiction

SPANL 125 FWS: The City in Hispanic Novels

SPANL 126 FWS: The Complex Fate: Self-Identity and Conflict in the United States Hispanic Literature

SPANL 210: Introduction to Hispanic American Studies

PROGRAM IN COMPARATIVE AND ENVIRONMENTAL TOXICOLOGY

16 Fernow Hall (255-8008 or 255-2163)

The Cornell Program in Comparative and Environmental Toxicology is coordinated and facilitated by the Institute for Comparative and Environmental Toxicology (ICET). ICET serves as a focal point for all research, teaching, and cooperative extension activities in the broad interdisciplinary area of environmental toxicology at Cornell and encourages the development of collaborative programs between faculty members in many university departments.

Graduate Studies

The major in the graduate Field of Environmental Toxicology promotes training leading to the M.S. or Ph.D. degrees and provides both breadth and depth in environmental toxicology and related disciplines. The

program offers a combination of research and didactic training that is designed to prepare students for solving the problems of modern toxicology. Specialization tracks include cellular and biochemical toxicology; nutritional toxicology; ecotoxicology and environmental chemistry; and risk assessment, management, and public policy. Research of the faculty associated with the program is focused on the interactions of drugs, pesticides, and other potentially hazardous environmental agents with a wide variety of living organisms (including humans) and with the ecosystems with which these organisms are associated.

Courses

Courses in environmental toxicology are cosponsored by the university academic departments and are open to all graduate students and to those undergraduates who have permission of the instructor. The titles and numbers of these courses are listed below, and details of course content are provided elsewhere in the catalog under the listings of the cosponsoring department. Further information concerning the program and the development of new courses may be obtained through the graduate faculty representative, 16 Fernow Hall (telephone: 255-8008).

Note: Bracketed courses are not offered 1992-93

- Tox 370 Pesticides and the Environment (Entomology 370)
- Tox 419 Animal Cytogenetics (Animal Science 419)
- Tox 437 Oncogenic Cancer Viruses (Biological Sciences 437)
- Tox 528 Pharmacology (Veterinary Medicine 528)
- Tox 607 Ecotoxicology (Natural Resources 607)
- Tox 610 Introductory Chemical and Environmental Toxicology (Food Science 610)
- Tox 611 Molecular Toxicology (Nutritional Sciences 611)
- Tox 621 Clinical Veterinary Toxicology (Veterinary Medicine 621)
- Tox 640 Principles of Toxicological Pathology (Veterinary Medicine 640)
- Tox 651 Nutrition and the Chemical Environment (Nutritional Sciences 651)
- Tox 658 Risk Management of Toxic Chemicals (Biological Sciences 659 and Biology and Society 459)
- Tox 660 Safety Evaluation in Public Health (VetPR 660)
- Tox 690 Insect Toxicology and Insecticidal Chemistry (Entomology 690)
- Tox 698 Current Topics in Environmental Toxicology (Nutritional Sciences 700, NatRes 698, Ag & Bio Eng 698)
- Tox 702 Seminar in Toxicology
- Tox 751 Professional Responsibilities of Toxicologists (Biological Sciences 751)
- Tox 899 Master's Thesis and Research
- Tox 999 Doctoral Thesis and Research

VISUAL STUDIES

B-63 McGraw Hall (255-6770)

Visual Studies as a distinct area of intellectual activity comprehends the analysis of visual forms, especially symbolic visual forms, from a range of historical, scientific, sociological, and aesthetic points of view. Images can be analyzed within a variety of contexts and by means of a variety of methods, and their study is therefore ideally conceived of in transdisciplinary terms. And since the creation of images has an important bearing on their analysis, visual studies concerns itself with practice as well as theory.

In addition to the courses listed below, which represent only a sampling of formal curricular offerings pertinent to visual studies, interested students should be aware of the programs and facilities available in the Herbert F. Johnson Museum of Art and the ETV Center of the College of Human Ecology, as well as the frequent showings by Cornell Cinema and Pentangle II.

Courses

- Some of these courses may not be taught in 1992-93. For information about availability consult the appropriate departmental listings.
- Art and Visual Thinking (Textiles and Apparel 125)
- Blacks in Communication Media (Africana Studies 303)
- Cinema and Society (German Studies 175)
- Cinema to Literature (Italian 399)
- Color, Form, Space (Art 110)
- Computer Art (Art 171)
- Computer Graphics (Architecture 374 and Computer Science 417)
- Computer Vision (Electrical Engineering 547)
- Design I and II (Design and Environmental Analysis 101-102)
- Digital Image Analysis (Environmental Engineering 616)
- Documenting the Depression: Film, Literature, and Memory (History 476)
- Ethnographic Film (Anthropology 205)
- Fiction and Film in France (French 499)
- Film and Performance (Theatre Arts 311)
- Forms of Hollywood Comedy (English 263)
- Fundamentals of 16-mm Filmmaking (Theatre Arts 377)
- Graphic Design (Design and Environmental Analysis 349)
- History and Theory of Commercial Narrative Film (Theatre Arts 375)
- The History of the Book (English 450)
- Image Analysis I (Landforms) and II (Physical Environments) (Civil and Environmental Engineering 613-614)
- Impact of Communication Technologies (Communication 626)
- Introduction to Film Analysis: Meaning and Value (Theatre Arts 274)
- Introduction to Mass Media (Communication 120)
- Introductory Photo I (Art 161 and Architecture 251)
- The Japanese Film (Asian Studies 313)
- Literature to Cinema (Italian 390)
- Machine Vision (Computer Science 664)
- The Medieval Illuminated Book (History of Art 337)
- Modern Experimental Optics (Physics 330)
- Myth onto Film (Anthropology 653 and Theatre Arts 653)
- New German Cinema (German Studies 676)
- Perception (Psychology 205)

- Photo Communication (Communication 234)
- Psychology of Television (Human Development and Family Studies 364)
- Psychology of Visual Communication (Psychology 347)
- Public Aesthetics: Art, Video, and Spectacle in the Age of Technology (English 453)
- Russian Film of the 1920s and French Film of the 1960s (Theatre Arts 378)
- Seminar in Museum Issues (History of Art 407)
- Seminar on Ethnographic Film (Anthropology and Theatre Arts 450)
- Spanish Film (Spanish 399)
- Video Communication (Communication 348)
- Visual Communication (Communication 230)
- Visual Ideology (German 660 and Theatre Arts 660)
- Visual Perception (Psychology 305)
- The Visual System (Neurobiology and Behavior 326)
- Writing about Film (Theatre Arts 108 and English 108)

Business and Preprofessional Study

UNDERGRADUATE BUSINESS STUDY

Undergraduate preparation for business is found in many schools and colleges at Cornell. Students most frequently take courses in more than one area, as well as in related fields, to construct a program to suit their interests and career objectives. Each of the following areas provides a different focus for application and use of business study and training, and students should consider carefully the implications of each program when making a choice. (Graduate study is available in the Johnson Graduate School of Management as well as in graduate fields following each of the undergraduate options.)

The areas most often pursued include applied economics and business management (College of Agriculture and Life Sciences), economics (College of Arts and Sciences), engineering, hotel administration, consumer economics and housing (College of Human Ecology), and industrial and labor relations.

Applied economics and business management. This program is designed to prepare students for a career in business or in public service. Emphasis is placed on the application of economic theory and management principles. Students are required to satisfy the distribution requirements of the College of Agriculture and Life Sciences, which include courses in the social sciences and humanities. Areas of specialization include agribusiness management, business management and marketing, farm business management and finance, and food industry management.

Economics. This program provides a broad view of that social science concerned with the description and analysis of the production, distribution, and consumption of goods and services, the understanding of monetary systems, and the comprehension of economic theories and models. It is viewed more often as preprofessional than as training for immediate practice in business or economics.

Engineering. This area provides much of the management personnel of modern industry. Engineers frequently climb the ladders of technological management that lead to more

general management responsibilities; more than half of the management-level personnel of major corporations such as General Electric, Xerox, IBM, and Du Pont have engineering degrees. In addition to becoming managers by being effective technical supervisors, many students enter engineering explicitly anticipating graduate business education, judging that an engineering background is particularly appropriate for management in a technology-oriented society.

Hotel administration. The undergraduate program in hotel administration prepares individuals to be mid- to upper-level managers and entrepreneurs for the hospitality industry (lodging, food service, and travel) and allied fields. Instruction is provided in the areas of administration and general management, human-resources management, accounting and financial management, food and beverage management, law, properties management, communication, science and technology, economics, and marketing.

Consumer economics and housing. Study in the department develops an understanding of the market economy from both buyers' and sellers' perspectives. The focus is on the economic behavior and welfare of consumers in the private, public, and mixed sectors of the economy. An understanding of economics, sociology, and government policy provides the basis for an analysis of consumers' rights and responsibilities.

Industrial and labor relations focuses on the interactions among human beings, organizations, and institutions. It encompasses not only the relationships between employer and employee but the political, economic, social, and psychological factors that affect those relationships. It includes the study of the hiring, training, and motivating of individual workers; negotiation and conflict resolution; and the economic and technological changes that affect the jobs that people perform. Finally, it embraces the many regulations and regulatory agencies created by our society to protect and help both employer and employee.

Related Areas

Courses in areas directly related to these business programs are found in many of the university departments. For example, quantitative methods may be studied in the departments of Mathematics and Computer Science, and courses in public administration are found in the departments of Government, and City and Regional Planning. There are additional programs that allow students with an interest in business to focus on a particular geographic area. Examples are the Latin American Studies Program, the South Asia Program, and the Africana Studies and Research Center. Such interdisciplinary programs as the Program on Science, Technology, and Society and the various programs in international agriculture provide additional opportunities for study of interest to business students.

Combined Degree Programs

Because Cornell has the Samuel Curtis Johnson Graduate School of Management, special opportunities exist for highly qualified undergraduates to combine their undergraduate programs with graduate study in that school. Students in the double-registrant program generally receive a bachelor's degree

after four years of study and a Master of Business Administration (M.B.A.) degree after the fifth year of study, rather than the usual sixth year. Students in all Cornell undergraduate colleges and schools are eligible to explore this option. There is also a program with the College of Engineering that allows qualified students to earn a B.S., M.B.A., and Master of Engineering degree in six years. Admission to these combined degree programs is limited to particularly promising applicants. Careful planning is required for successful integration of the work in the two schools.

SELECTED BUSINESS AND MANAGEMENT COURSES

Accounting

- Ag Ec 221 Financial Accounting
- Ag Ec 323 Managerial Accounting
- H Adm 120 Survey of Financial Management
- H Adm 226 Financial Management
- JGSM NBA 500 Intermediate Accounting
- JGSM NBA 501 Advanced Accounting
- JGSM NBA 505 Auditing
- OR&IE 350 Cost Accounting Analysis and Control

Communications

- Comm 201 Oral Communication
- Comm 204 Effective Listening
- Comm 272 Principles of Public Relations and Advertising
- Comm 301 Business and Professional Speaking
- Comm 372 Advanced Advertising
- H Adm 165 Managerial Communication: Writing Principles and Procedures
- H Adm 364 Advanced Business Writing

Computing

- Ag Ec 412 Introduction to Mathematical Programming
- Ag Ec 413 Information Systems and Decision Analysis
- ABEN 204 Introduction to Computer Uses
- COMS 100 Introduction to Computer Programming
- COMS 101 The Computer Age
- COMS 102 Introduction to Microcomputer Applications
- Educ 247 Instructional Applications of the Microcomputer
- H Adm 174 Microcomputing
- H Adm 374 End-User Business Computing Tools
- H Adm 375 Hotel Computing Applications

Economics

- Ag Ec 332 Economics of the Public Sector
- Ag Ec 450 Resource Economics
- CEE 321 Microeconomic Analysis
- CEH 355 Wealth and Income
- Econ 101 Introductory Microeconomics
- Econ 102 Introductory Macroeconomics
- Econ 314 Intermediate Microeconomic Theory
- Econ 317 Intermediate Mathematical Economics I
- Econ 318 Intermediate Mathematical Economics II
- Econ 351 Industrial Organization
- ILRIC 240 Economics of Wages and Employment
- ILRIC 340 Economic Security

Entrepreneurship

- Ag Ec 325 Personal Enterprise and Small Business Management
- Ag Ec 425 Small Business Counseling
- JGSM NBA 300 Entrepreneurship and Enterprise

Finance

- Ag Ec 324 Financial Management
- Ag Ec 404 Advanced Agricultural Finance Seminar
- Ag Ec 405 Farm Finance
- Ag Ec 407 Financial Management in Farming
- CEH 315 Personal Financial Management
- Econ 331 Money and Credit
- Econ 333 Theory and Practice of Asset Markets
- Econ 336 Public Finance: Resource Allocation
- H Adm 125 Finance
- H Adm 322 Investment Management
- H Adm 326 Corporate Finance
- OR&IE 451 Economic Analysis of Engineering Systems

International Business

- Ag Ec 100 Introduction to Global Economic Issues
- Ag Ec 444 Export Marketing
- Econ 102 Introductory Macroeconomics
- Econ 313 Intermediate Macroeconomics Theory
- Econ 325 Economic History of Latin America
- Econ 366 The Economy of the Soviet Union
- Econ 369 Selected Topics in Socialist Economies: China
- Econ 661 International Trade Theory and Policy
- Econ 362 International Monetary Theory and Policy

Law, Regulation, and Ethics

- Ag Ec 252 Natural Resource and Environmental Economics
- Ag Ec 320 Business Law I
- Ag Ec 321 Business Law II
- Ag Ec 322 Taxation in Business and Personal Decision Making
- Ag Ec 420 Advanced Business Law
- Ag Ec 422 Estate Planning
- Comm 428 Communication Law
- Econ 302 The Impact and Control of Technological Change
- Econ 304 Economics and the Law
- Econ 308 Economic Analysis of Government (also Civil and Environmental Engineering 322)
- Econ 354 Economics of Regulation
- Econ 552 Public Regulation of Business
- Educ 477 Law and Educational Policy
- Govt 389 International Law
- H Adm 422 Taxation and Management Decisions
- I&LR 201 Labor Relations Law and Legislation
- ILRIC 330 Comparative Industrial Relations Systems: Western Europe
- ILRIC 331 Comparative Industrial Relations Systems: Non-Western Countries

Management

- Ag Ec 220 Introduction to Business Management
- Ag Ec 302 Farm Business Management
- Ag Ec 402 Advanced Farm Business Management
- Ag Ec 424 Business Policy

- Ag Ec 426 Cooperative Management and Strategies
 Ag Ec 443 Food Industry Management
 Econ 326 History of American Business Enterprise
 H Adm 103 Principles of Management

Manufacturing

- Econ 302 The Impact and Control of Technological Change
 OR&IE 410 Industrial Systems Analysis
 OR&IE 421 Production Planning and Control

Marketing

- Ag Ec 240 Marketing
 Ag Ec 342 Marketing Management
 Ag Ec 346 Dairy Markets and Policy
 Ag Ec 347 Marketing Fruits, Vegetables, and Ornamental Products
 Ag Ec 448 Food Merchandising
 Ag Ec 449 Applications in Strategic Marketing
 CEH 233 Marketing and the Consumer
 H Adm 243 Principles of Marketing

Personnel and Human Resource Management

- Econ 381 Economics of Participation and Workers' Management
 Econ 382 The Practice and Implementation of Self-Management
 H Adm 211 The Management of Human Resources
 H Adm 212 Human Relations Skills
 H Adm 414 Organizational Behavior and Small-Group Processes
 ILROB 120 Introduction to Macro Organizational Behavior and Analysis
 ILROB 121 Introduction to Micro Organizational Behavior and Analysis
 ILRPR 260 Personnel Management
 ILRPR 360 Human Resource Economics and Public Policy
 ILROB 370 The Study of Work Motivation
 ILROB 373 Organizational Behavior Simulations
 ILROB 374 Technology and the Worker
 ILROB 420 Group Processes
 ILROB 425 Sociology of Industrial Conflict
 ILRPR 461 Human Resource Management (I&LR 200 Collective Bargaining)

Quantitative Decisions and Decision Science

- Ag Ec 310 Introductory Statistics
 Ag Ec 408 Seminar in Farm Business Decision Making
 Ag Ec 410 Business Statistics
 Ag Ec 413 Information Systems and Business Analysis
 CEE 304 Uncertainty Analysis in Engineering
 CEE 323 Engineering Economics and Management
 Econ 320 Introduction to Econometrics
 Econ 520 Econometrics II
 CEH 330 Economics of Consumer Policy
 ENG 270 Basic Engineering Probability and Statistics

Real Estate

- Ag Ec 406 Farm and Rural Real Estate Appraisal
 CRP 664 Economics and Financing of Neighborhood Conservation and Preservation
 H Adm 323 Hospitality Real Estate Finance
 H Adm 350 Real Estate Management

Transportation

- CEE 361 Introduction to Transportation Engineering
 CEE 660 Transportation Planning and Policy

PRELAW STUDY

Law schools do not prescribe any particular prelaw program, nor do they require any specific undergraduate courses as do medical schools. Law touches nearly every phase of human activity, and there is practically no subject that cannot be considered of value to the lawyer. Therefore, no undergraduate course of study is totally inappropriate. Students contemplating legal careers should be guided by certain principles, however, when selecting college courses.

1. Interest encourages scholarship, and students will derive the greatest benefit from those studies that stimulate their interest.
2. Of first importance to the lawyer is the ability to express thoughts clearly and cogently in both speech and writing. Freshman writing seminars, required of nearly all Cornell freshmen, are designed to develop these skills. English literature and composition, and communication courses, also serve this purpose. Logic and mathematics develop exactness of thought. Also of value are economics, history, government, and sociology, because of their close relation to law and their influence on its development and ethics, and philosophy, because of the influence of philosophic reasoning on legal reasoning and jurisprudence. Psychology leads to an understanding of human nature and mental behavior. Some knowledge of the principles of accounting and of the sciences such as chemistry, physics, biology, and engineering is recommended and will prove of practical value to the lawyer in general practice in the modern world.
3. Cultural subjects, though they may have no direct bearing on law or a legal career, will expand students' interests; help cultivate a wider appreciation of literature, art, and music; and make better-educated and well-rounded persons.
4. Certain subjects are especially useful in specialized legal careers. For some, a broad scientific background—for example, in agriculture, chemistry, physics, or engineering—when coupled with training in law, may furnish qualifications necessary for specialized work with the government, for counseling certain types of businesses, or for a career as a patent lawyer. A business background may be helpful for those planning to specialize in corporate or tax practice. Students who anticipate practice involving labor law and legislation might consider undergraduate study in the School of Industrial and Labor Relations. Whatever course of study is chosen, the important goals are to acquire perspective, social awareness, and a critical cast of mind; to develop the ability to think logically and analytically; and to express thoughts clearly and forcefully. These are the crucial tools for a sound legal education and a successful career.

The presence of the Cornell Law School on campus provides the opportunity for a limited number of highly qualified undergraduates registered in the College of Arts and Sciences at the university to be admitted to the Law School. At the time of entry they must have completed 105 of the 120 credits required for the Bachelor of

Arts degree, including 92 credits of course work in the College of Arts and Sciences.

It may be possible for exceptionally well-qualified students in other Cornell undergraduate colleges to arrange to enter the Law School after three years. The College of Human Ecology offers a program in which students spend their fourth year at the Law School. In addition, members of the Cornell Law School faculty often offer undergraduate courses such as Nature, Functions, and Limits of Law, which are open to all undergraduates.

PREMEDICAL STUDY

Medical and dental schools, while not requiring or recommending any particular major course of study, do require that a particular selection of undergraduate courses be completed. These courses usually include general chemistry and organic chemistry, biology, physics, and a year of English composition (or a freshman writing seminar). In addition, many medical schools require or recommend at least one advanced biological science course, such as genetics, embryology, histology, or physiology.

There is no major program that is the best for those considering medical or dental school, and students are therefore encouraged to pursue their own intellectual interests. Students are more likely to succeed at, and benefit from, subjects that interest and stimulate them, and there is no evidence that medical colleges give special consideration to any particular undergraduate training beyond completion of the required courses. In the past, successful Cornell applicants to medical and dental schools have come from the Colleges of Arts and Sciences, Agriculture and Life Sciences, Human Ecology, and Engineering. The appropriate choice depends to a great extent on the student's other interests.

Qualified students in the Colleges of Agriculture and Life Sciences, Arts and Sciences, and Human Ecology may apply for acceptance into a double registration program arranged between Cornell University and Cornell University Medical College in New York City. This program allows registered students to save one year in pursuit of the bachelor's and M.D. degrees. Further information about this program is available from the Health Careers Program office at the Career Center, Cornell University, 203 Barnes Hall, Ithaca, New York, 14853-1601.

PREVETERINARY STUDY

There is no specific preveterinary program at Cornell, and students interested in veterinary medicine as a career should select a major area for study that fits their interests while at the same time meeting the entrance requirements for veterinary college as listed below. Most preveterinary students at Cornell are enrolled in the College of Agriculture and Life Sciences, which offers several applied science majors, including animal science, that can lead to related careers if the student is not accepted into veterinary college. Some enter other divisions of the university, especially the College of Arts and Sciences, because of secondary interests or the desire for a broad liberal arts curriculum.

The college-level prerequisite courses for admission to the College of Veterinary Medicine at Cornell are English composition, biology or zoology, physics, inorganic chemistry, organic chemistry, biochemistry, and microbiology. All science courses must include a laboratory. These requirements, necessary for admission to the College of Veterinary Medicine at Cornell, may vary at other veterinary colleges.

For information on additional preparation, including work experience and necessary examinations, students should consult the brochure, *Admission to the College of Veterinary Medicine at Cornell*, obtained by writing to the Office of Student Services, College of Veterinary Medicine, Cornell University, C-106 Schurman Hall, Ithaca, New York 14853-6401. Information on the Guaranteed Admissions Program is available from the same address.

Qualified students in the College of Agriculture and Life Sciences may apply for acceptance in a double-registration program arranged between Cornell University and the College of Veterinary Medicine at Cornell. This program allows registered students to save one year in pursuit of the bachelor's and D.V.M. degrees. Further information about this program is available from the Health Careers Program office at the Career Center, Cornell University, 203 Barnes Hall, Ithaca, New York 14853-1601.