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CORNELL
UNIVERSITY

Courses of Study

2000 – 2001

Cornell University Calendar

Fall Semester	2000-01	2001-02
Residence halls open	Friday, August 18	Friday, August 24
Freshman orientation begins	Friday, August 18	Friday, August 24
New-student orientation begins	Friday, August 18	Friday, August 24
Registration–course exchange	Tuesday–Wednesday, August 22–23	Tuesday–Wednesday, August 28–29
Instruction begins	Thursday, August 24	Thursday, August 30
Physical education classes begin	TBA	TBA
Fall break: instruction suspended	Saturday, October 7	Saturday, October 6
Instruction resumes	Wednesday, October 11	Wednesday, October 10
Pre-course enrollment for spring	TBA	TBA
Family Weekend	November 3–5	Friday–Sunday, November 2–4
Homecoming	Saturday, September 23	Saturday, October 13
Thanksgiving recess: instruction suspended, 1:10 p.m.	Wednesday, November 22	Wednesday, November 21
Instruction resumes	Monday, November 27	Monday, November 26
Instruction ends	Saturday, December 2	Saturday, December 8
Study period	Sunday–Wednesday, December 3–6	Sunday–Wednesday, December 9–12
Final examinations begin	Thursday, December 7	Thursday, December 13
Final examinations end	Friday, December 15	Friday, December 21
Residence halls close	Saturday, December 16	Saturday, December 22
Winter Session Period Begins	Tuesday, December 26	Wednesday, December 26
Three-week classes begin	Tuesday, January 2	Wednesday, January 2
Winter session period ends	Saturday, January 20	Saturday, January 19
Spring Semester		
Residence halls open	Tuesday, January 16	Monday, January 14
Registration–course exchange	Thursday–Friday, January 18–19	Thursday–Friday, January 17–18
Instruction begins	Monday, January 22	Monday, January 21
Physical education classes begin	TBA	TBA
Spring break: instruction suspended	Saturday, March 17	Saturday, March 16
Instruction resumes	Monday, March 26	Monday, March 25
Pre-course enrollment for fall	TBA	TBA
Instruction ends	Saturday, May 5	Saturday, May 4
Study period	Sunday–Wednesday, May 6–9	Sunday–Wednesday, May 5–8
Final examinations begin	Thursday, May 10	Thursday, May 9
Final examinations end	Friday, May 18	Friday, May 17
Residence halls close (students who are graduating may stay through Commencement Day)	Saturday, May 19	Saturday, May 18
Senior Week	Sunday–Saturday, May 20–26	Sunday–Saturday, May 19–25
Commencement	Sunday, May 27	Sunday, May 26
Summer Session		
Three-week session	Wednesday, May 30	Wednesday, May 29
Eight-week session	Monday, June 11	Monday, June 10
Six-week session	Monday, June 25	Monday, June 24

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.

This catalog was produced by Media and Technology Services at Cornell University.

CORNELL
UNIVERSITY

Courses of Study

2000 – 2001

Cornell University
(USPS 132-860)

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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 2000 and spring 2001.

CORNELL UNIVERSITY—GENERAL INFORMATION

INTRODUCTION

Courses of study (cuinfo.cornell.edu/Academic/Courses/), a catalogue of Cornell University's many academic programs and resources, contains information about colleges and departments, interdisciplinary programs, undergraduate and graduate course offerings, and procedures. Additionally, a student handbook, distributed to all incoming students, describes life at Cornell. *The Policy Notebook* (www.univco.cornell.edu/policy/library.html), also distributed to each new student, summarizes pertinent university policies, including the campus Code of Conduct and the Code of Academic Integrity. Students should consult with their college's advising office for specific information on their college's academic policies and procedures, degree programs, and requirements.

All these publications are also 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.

Not included in this publication is information concerning the Medical College and the Graduate School of Medical Sciences, located in New York City.

The following are offices and sources of information about admission to Cornell University.

Undergraduate Admissions Office, 410 Thurston Avenue, Ithaca, NY 14850–2488, 607–255–5241.

Graduate School, B2 Caldwell Hall, Ithaca, NY 14853–2602, 607–255–4884.

Law School, Myron Taylor Hall, Ithaca, NY 14853–4901, 607–255–5141.

Samuel Curtis Johnson Graduate School of Management, Office of Admissions, Sage Hall, Ithaca, NY 14853–4201, 607–255–4526.

College of Veterinary Medicine, Admissions Office, Cornell University, Schurman Hall, Ithaca, NY 14853–6401, 607–253–7000.

Medical College and Graduate School of Medical Sciences. Office of Admissions, 1300 York Avenue, New York, NY 10021, 212–746–1067.

CUINFO ON THE WEB

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, Cornell's electronic information source, and in the *Course and Time Roster* and the *Course and Room Roster*, published each semester by the Office of the University Registrar. You may access CUINFO through the web. The URL is: www.cornell.edu.

Students are also advised to consult individual college and department offices for up-to-date course information.

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

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.

ACCREDITATION

Cornell University is accredited by the Middle States Association of Colleges and Schools. A copy of the most recent reaffirmation of Cornell's accreditation can be found at www.ipr.cornell.edu/Accreditation/Status. Requests to review additional documentation supporting Cornell's accreditation should be addressed to Michael Matier, Director, Institutional Research and Planning, Cornell University, 440 Day Hall, Ithaca, NY 14853–2801, mwm5@cornell.edu.

Advanced Placement

CREDIT FOR ADVANCED PLACEMENT

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.

Sources of Advanced Placement Credit

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

a. Achieving the requisite score from the Advanced Placement Examinations (AP exams) from the College Entrance Examination Board (CEEB) in Princeton, NJ. The requisite scores, which vary by subject, are determined by the relevant departments at Cornell and are listed on page 7. Some departments at Cornell offer departmental exams (usually during orientation), for placement and advanced placement credit.

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.

c. See below for international credentials.

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, earn credit by taking an appropriate exam as described in paragraph *a* above.

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 in its subject, and recommends AP credit for those who meet the standards. For policies governing advanced placement in a specific college, see the academic information section for that college. Students need not accept advanced placement. They may repeat the course, thereby relinquishing the advanced placement credit.

Advanced placement examinations. Entering freshmen should have their scores from CEEB Advanced Placement Examinations sent to their college or school office (see below, "Forwarding of scores and transcripts").

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 departmental examinations are shown on page 7.

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 or school's professional and academic goals, students should consult their college or school office to determine how they may use such credit.

Written inquiries. Students can address questions to departments, schools, or college offices by adding Ithaca, New York 14853 to the addresses given in the following sections.

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
140 Roberts Hall

College of Architecture, Art, and Planning
B30 West Sibley Hall

College of Arts and Sciences
61 Goldwin Smith Hall

College of Engineering
158 Olin Hall

School of Hotel Administration
174B Statler Hall

College of Human Ecology
N145 Van Rensselaer Hall

School of Industrial and Labor Relations
101 Ives Hall

DETERMINATION OF CREDIT AND PLACEMENT

The table on page 7 provides information on how credit and placement are determined for most subjects. Supplementary information for subjects requiring additional explanation is provided below.

Biological Sciences

Any student who earns a score of 5 on the CEEB Advanced Placement Examination in biology may elect to receive eight credits and be exempted from all introductory biology courses.

Students not majoring in biological sciences who score a 4 or 5 may earn, respectively, six or eight advanced placement credits. This will satisfy the distribution requirement in biological sciences for students in the College of Human Ecology 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, credits may be applied toward distribution in science and quantitative reasoning as 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 BIO G 101–102, 101/103, 102/104, or 103–104 or 105 or 106 (Biological Sciences, Lectures and Laboratory). These students should consult information available in the BIO G 101–104 course office (1140 Comstock Hall) and in the Office of Undergraduate Biology (216 Stimson Hall) to determine which semester to complete the introductory biology requirement. For students in doubt, BIO G 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 in 131 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. Questions may also be directed to Dr. Stanley Marcus, associate director of undergraduate studies, in 138 Baker Laboratory. 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 or Dr. Stanley Marcus.

Classics

For advanced placement and credit in Latin and ancient and modern Greek, students should consult the Department of Classics, 120 Goldwin Smith Hall. Credit and placement are determined on the basis of a departmental examination. A student who is permitted to register in a 300-level course (or for Modern Greek, determined to be at an advanced level) will be given six advanced placement credits.

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 part of the distribution requirement in science and quantitative reasoning 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.

English

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

Students who receive scores of 700 or better on the CEEB SAT II examination in English composition, 700 or better on the CEEB SAT II examination in literature, or 4 or 5 on the CEEB Advanced Placement Examination in English 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.

Mathematics and Statistics

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

Summary of Credit and Placement

Subject	*Score*	*Advanced Placement Credit*	*Placement*
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 follow the guidelines 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 or 105 or 106. 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. No advanced placement credit for students who take 206, 207, or 211, but students may choose to accept 4 AP credits if they take 215. Department offers placement exam during fall orientation.
Computer science	4,5	4 credits	Placement out of C.S. 100.
Economics, micro	4,5	3 credits	Placement out of Economics 101.
Economics, macro	4,5	3 credits	Placement out of Economics 102.
English	5	3 credits	Placement out of one Freshman Writing Seminar
(*all except A&S*)	4	3 credits	
French language	4,5	3 credits	Department of Romance Studies 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	4,5	3 credits (and proficiency)	Department of German Studies determines placement. Students may earn additional credit by taking the CASE examination.†
Government and politics, U.S.	4,5	3 credits	Placement out of Government 111.
Government and politics, comparative	4,5	3 credits	Placement out of Government 131.
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 language	4,5	3 credits	Department of Romance Studies determines placement. Students may earn additional credit by taking the CASE examination.†
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 see following page for more details*)	4,5	8 credits	Placement out of all 1st- and 2nd-semester calculus courses (Math 106, 111–112, 121–122, 191–192, 193). Permission to take any 3rd-semester calculus course (Math 221, 223, 293, or 213).
	2 or 3	4 credits	Placement out of all 1st-semester calculus courses (Math 106, 111, 121, 191, 193). Permission to take any 2nd-semester calculus course (Math 112, 122, or 192).
Mathematics AB (*excluding engineering students see following page for more details*)	3,4,5	4 credits	Placement out of all 1st-semester calculus courses (Math 106, 111, 121, 191, 193). Permission to take any 2nd-semester calculus course (Math 112, 122, or 192).
	2	none	Students are strongly urged to take the mathematics placement examination.
Music	Department determines credit and placement based on departmental examination.		
Persian	Department of Near Eastern Studies determines credit and placement based on departmental examination.		
Physics B	5	8 credits	Placement out of Physics 101–102. Students with a score of 4 or 5 on Mathematics BC may choose placement out of Physics 112 or 207 (4 credits).
	4	8 credits	Placement out of Physics 101–102.
	3	4 credits	Placement out of Physics 101.
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/Magnetism	5	4 credits	Placement out of Physics 213.
Psychology	4,5	3 credits	Placement out of Psychology 101.
Sociology	Department determines credit and placement.		
Spanish language	4,5	3 credits	Department of Romance Studies determines placement. Students may earn additional credit by taking the CASE examination.†
Spanish literature	4,5	3 credits (and proficiency)	Department of Romance Studies determines placement.
Statistics (*excluding engineering students*)	4,5	3 credits	Placement out of Biometry 200, ILRST 210 or Mathematics 171.
Turkish	Department of Near Eastern Studies determines credit and placement based on departmental examination.		

†Cornell Advanced Standing Examination. Contact Callean Hile, 303 Morrill Hall, for French, Italian, and Spanish. Contact Marguerite Mizelle, 183 Goldwin Smith Hall, for German.

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.

Students who have been awarded Advanced Placement credit by their colleges for calculus or statistics may not also receive academic credit at Cornell for similar courses. In particular, students who have been awarded AP credit for 1 semester of calculus (4 academic credits) may not also receive academic credit for any first-semester calculus course (Math 106, 111, 121, 191, 193). Students who have been awarded AP credit for 2 semesters of calculus (8 academic credits) may not also receive academic credit for any first-semester calculus course (Math 106, 111, 121, 191, 193) or any second-semester calculus course (Math 112, 122, 192). Finally, students who have been awarded AP credit for statistics (3 academic credits) may not also receive academic credit for any of the introductory statistics courses Biometry 200, ILRST 210, or Math 171.

The following rules apply to students being admitted to all colleges except the College of Engineering.

Students with a grade of 4 or 5 on the BC examination may take the appropriate third-semester course (Mathematics 213, 221, 223 or 293), but students entering Mathematics 293 may have to make up some material on vectors and multivariable calculus. Students with a 2 or 3 on the BC examination or a 3, 4, or 5 on the AB examination may take the appropriate second-semester course (Mathematics 112, 122, or 192). However, students who receive the borderline passing scores of 2 on the BC examination or 3 on the AB examination are strongly advised to take 112 rather than the more demanding courses 122 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 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) 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.

For the policies of the College of Engineering regarding advanced placement and credit, please consult the college's section of this catalog.

Modern Languages

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. See "Placement Tests and Advanced Placement credit" under "Foreign Language Requirements" in the Arts and Sciences section of this catalog. 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 may be entered on a student's record as follows:

1) Students with a score of 4 or 5 on the language Advanced Placement Examination of the CEEB, earn three credits, and are eligible to take Cornell's Advanced Standing Examination (CASE). Outstanding performance on this examination can result in a maximum of six credits.
2) Students who achieve a minimum score of 65 on the Cornell language placement test given during orientation week are eligible to take Cornell's Advanced Standing Examination (CASE). Oustanding performance on this examination can result in a maximum of six credits.
3) 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.
4) 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. Students may not receive both advanced placement credit for competence in their native language and Cornell credit for English as a second language.

Information about times and places to take placement tests is available in the orientation booklet and from Academic and Career Counseling Services on the web at dml.cornell.edu/html/place/testschedule.html. For more information, see the College of Arts and Sciences section on language course placement, or contact Callean Hile, 303 Morrill Hall for French, Italian, and Spanish; Marguerite Mizelle, 183 Goldwin Smith Hall, for German; Jenka Fyfe, Morrill Hall, for Russian; Kim Robinson, 388 Rockefeller Hall, for Asian languages.

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. Inquiries may be directed to the Department of Music (telephone: 607–255–4097).

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 the director of undergraduate studies, 101 Clark Hall, or the department chair, 109 Clark Hall.

Physics B: Students earning a score of 4 or 5 may receive eight credits for noncalculus-based Physics 101 and 102. Those earning a score of 5 in physics B and a score of 4 or 5 in calculus BC may choose to accept four credits in calculus-based 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—Mechanics: Students earning a score of 4 or 5 may receive four credits for Physics 112 or 207, or placement into Physics 116, a first-semester honors course, with no AP credit.

Physics C—Electricity and Magnetism: Students earning a score of 5 may receive four credits for Physics 213.

A student planning a major in Physics or Applied and Engineering Physics and who is eligible for AP credit should consult with his/her adviser or the department representative.

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 the director of undergraduate studies, 101 Clark Hall, or from the Department of Physics, 109 Clark Hall.

ADVANCED PLACEMENT AND CREDIT FOR INTERNATIONAL CREDENTIALS

Following are the policies currently in effect for G.C.E. "A" Level Examinations and International Baccalaureate Higher Level Examinations. Students may submit results of the French *Baccalaureat* or German *Abitur* for possible credit depending on the stream or specialization followed. Accepted students holding any other secondary school credentials are urged to sit for the Advanced Placement Examinations of the College Entrance Examination Board or for the departmental examinations offered during orientation week.

General Certificate of Education (GCE) Advanced ("A") Level Examination passes are awarded advanced standing and credit. Students must present the original or a certified copy of their examination certificate in order to receive credit.

Following is a list of subjects and the marks for which credit will be awarded:

Subject	*Marks*	*Credit*
Biology	A or B	8 credits
Chemistry	A	8 credits (Chem 207 and 208)
	B	4 credits (Chem 207)
Economics	A	6 credits (Econ 101 and 102)
English Literature	A	6 credits
	B	3 credits
History	A, B, or C	4 credits
Mathematics	A or B	8 credits (Math 111 and 112)
	C	4 credits (Math 111)
Music		subject to departmental review

Philosophy	A or B	3 credits
Physics	A or B	4 credits for Physics 101, 112, or 207 4 additional credits for Physics 213 are granted for a combination of grades of A or B and a minimum of 8 Advanced Placement or Advanced Standing credits in Mathematics. Students planning to major in physics are encouraged to enroll in Physics 116.

International Baccalaureate (IB) Higher Level Examination passes are awarded advanced standing and credit on receipt of the original or a certified copy of the examination results.

Subject	*Marks*	*Credit*
Anthropology		subject to departmental review
Biology	7	8 credits
	6	6 credits
Chemistry	6 or 7	4 credits (Chem 207)
Computer Science	6 or 7	4 credits (CS 100))
Economics	6 or 7	6 credits
English Literature	7	6 credits and placement out of one freshman writing seminar
	6	3 credits
History	6 or 7	4 credits
Mathematics	6 or 7	8 credits (prospective math, science, and engineering majors must consult with math department to determine prerequisite for placement in third-semester math courses)
Music		subject to departmental review
Philosophy	7	3 credits
Physical Science	6 or 7	8 credits (4 credits, Chemistry 103; 4 credits, Physics 101)
Physics	6 or 7	4 credits (Phys 101, 112, or 207)

University Registration

University registration is the official recognition of a student's relationship with the university and is the basic authorization for a 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, policy states that New York State health requirements must be satisfied. Because these requirements are intended to safeguard the public health of students, 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;
- settle all financial accounts, including current semester tuition;
- satisfy New York State health requirements;
- have no holds from the college, the office of the Judicial Administrator, Gannett Clinic, or the Bursar.

Individuals must become registered students by the end of the third week of the semester.

Cornell University does not allow persons who are not registered with the university in a timely manner 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 posted in school and college offices. Students are 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.

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

COURSE ADD/DROP/CHANGE

Students may adjust their schedules during add/drop/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. Professional schools, Continuing Education and Summer Sessions, and the Department of Physical Education and Athletics have different course enrollment and add-drop policies. See the chart below for their course add/drop/change fees.

Late Course Enrollment and Late Add/Drop/Change Fees

Academic Unit	*Late Course Enrollment Fee*	*Late Course Add/Drop/Change Fee*
Continuing Education and Summer Sessions	†	†
Johnson Graduate School of Management	$100	$100
Law School	No fee	No fee
Physical education	$30	$20*
Veterinary medicine	$30*	$30*

*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. Students should inform their college of intent to return.

A student may withdraw from the university at the student's discretion. In addition, 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 a 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 2000-2001

Endowed Divisions

Undergraduate

Architecture, Art, and Planning	
Arts and Sciences	
Engineering	
Hotel Administration	$24,760

Graduate

Graduate School (with major chair in an endowed division)	24,760

Professional

Law School	
First year	27,300
Continuing	26,800
Management	
First year	27,600
Continuing	26,900

Statutory Divisions

Undergraduate

Agriculture and Life Sciences	
Human Ecology	
Industrial and Labor Relations	
New York resident*	$10,830
Nonresident*	20,900

Graduate

Graduate School (with major chair in agriculture, human ecology, or industrial and labor relations)	12,700
Graduate School—Veterinary Medicine	13,000

Professional

Veterinary Medicine	
New York resident*	15,400
Nonresident*	21,100

Summer Session (1999)

Per credit	$600 (estimated)

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 nonrefundable $65 application fee when submitting an application for admission. The graduate application fee is $65. Application to the Johnson Graduate School of Management costs $90 (domestic), $120 (international).

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. Previously matriculated 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.

First-time matriculants 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 and third weeks, 20 percent; fourth week, 30 percent; fifth and sixth weeks, 40 percent; seventh week, 50 percent; eighth and ninth weeks, 60 percent; tenth 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.

Proration Schedule for Withdrawals and Leaves of Absence

Fall 2000 and Spring 2001

Previously Matriculated Students

Percentage	Fall 2000	Spring 2001
No charge	8/22–8/27	1/18–1/23
10% charge	8/28	1/24
20% charge	8/29–9/4	1/25–1/31
30% charge	9/5–9/11	2/1–2/7
40% charge	9/12–9/18	2/8–2/14
60% charge	9/19–9/25	2/15–2/21
80% charge	9/26–10/2	2/22–2/28
100% charge	10/3	3/1

First-Time Matriculated Students

No charge	8/22–8/27	1/18–1/23
10% charge	8/28	1/24
20% charge	8/29–9/11	1/25–2/7
30% charge	9/12–9/18	2/8–2/14
40% charge	9/19–10/2	2/15–2/28
50% charge	10/3–10/9	3/1–3/7
60% charge	10/10–10/23	3/8–3/21
100% charge	10/24	3/22

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 registration 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. University policy precludes the use of any current financial aid for payment of past-due charges.

The Office of the Bursar acts as a clearinghouse 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; fax: 607–255–6442). E-mail UCO-Bursar@cornell.edu

STUDENT HEALTH INSURANCE

Because of the high cost of medical care, it is Cornell University policy that every full-time registered student (including students registered *in absentia* and nondegree students) must have health insurance coverage. You have two options:

1. enroll in the Student Health Insurance Plan (SHIP); or
2. waive the SHIP if you have *comparable* health insurance that meets Cornell's requirements.

The Student Health Insurance Plan is developed especially for Cornell students and provides extensive coverage at a reasonable cost for most on- or off-campus medical care. Complete and current details of the SHIP, its cost, and an enrollment/waiver form will be mailed to each student with the July bursar bill.

To ensure that you are covered by an active and adequate health insurance plan, each year *you will be enrolled automatically* in the SHIP *unless* you submit a waiver form that affirms you have comparable insurance in place, from the day you become a registered student, and agree to maintain that coverage while a student at Cornell. If you have adequate health insurance coverage and plan to waive the Student Health Insurance Plan, *you must submit the waiver form each year* by the deadline to avoid a charge.

Fall entrants: you will receive an enrollment/waiver form for the SHIP with your July bursar bill that you must return by 8/25/00.

Spring entrants: you will receive the form after you arrive at Cornell; deadline is 2/23/01.

Late registrants: the form is due no later than 30 days after the initial bill for the insurance charge.

The Student Health Insurance Plan provides coverage 24 hours a day, 365 days a year, anywhere in the world. Students graduating mid-year may be eligible to purchase a five-month plan. Students enrolled in the SHIP may enroll their eligible dependents for an additional cost (fall deadline: September 29). Graduate and professional students who prefer to pay monthly must enroll in the installment payment plan no later than September 29. Because of policy restrictions, the plan is nonrefundable (except for dependents who no longer meet eligibility requirements and students who withdraw from Cornell within the first 30 days of the academic year).

For more information, contact the:

Student Insurance Office

Gannett Health Center
Ho Plaza
Ithaca, NY 14853–3101, USA
Telephone: 607–255–6363
E-mail: SICU@cornell.edu
Web: www.gannett.cornell.edu_studentinsurance

Class Attendance, Meeting Times, 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.

Absences because of religious beliefs. In accordance with Section 224-a of the New York State Education Law, each student who is absent from school because of his or her religious beliefs must be given an equivalent opportunity to register for classes or make up examinations, study, or work requirements that he or she may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the university for making available to such student such equivalent opportunity.

Class Meeting Times

Monday/Wednesday

	Start Times	End Times
50 MIN	08:00 AM	08:50 AM
75 MIN	08:40 AM	09:55 AM
50 MIN	09:05 AM	09:55 AM
50 MIN	10:10 AM	11:00 AM
50 MIN	11:15 AM	12:05 PM
50 MIN	12:20 PM	01:10 PM
50 MIN	01:25 PM	02:15 PM
50 MIN	02:30 PM	03:20 PM
75 MIN	02:55 PM	04:10 PM
50 MIN	03:35 PM	04:25 PM
50 MIN	07:30 PM	08:20 PM
50 MIN	08:35 PM	09:25 PM

Tuesday/Thursday

50 MIN	08:00 AM	08:50 AM
75 MIN	08:40 AM	09:55 AM
50 MIN	09:05 AM	09:55 AM
50 MIN	10:10 AM	11:00 AM
75 MIN	10:10 AM	11:25 AM
50 MIN	11:15 AM	12:05 PM
75 MIN	11:40 AM	12:55 PM
50 MIN	12:20 PM	01:10 PM
50 MIN	01:25 PM	02:15 PM
75 MIN	01:25 PM	02:40 PM
50 MIN	02:30 PM	03:20 PM
75 MIN	02:55 PM	04:10 PM
50 MIN	03:35 PM	04:25 PM

NO EVENING CLASSES

Friday

50 MIN	08:00 AM	08:50 AM
50 MIN	09:05 AM	09:55 AM
50 MIN	10:10 AM	11:00 AM
50 MIN	11:15 AM	12:05 PM
50 MIN	12:20 PM	01:10 PM
50 MIN	01:25 PM	02:15 PM
50 MIN	02:30 PM	03:20 PM
50 MIN	03:35 PM	04:25 PM

NO EVENING CLASSES

Laboratories and similar exercises

1 HR 55 MIN	08:00 AM	09:55 AM
	10:10 AM	12:05 PM
	12:20 PM	02:15 PM
	02:30 PM	04:25 PM
	07:30 PM	09:25 PM
2 HR 25 MIN	07:30 AM	09:55 AM
	10:10 AM	12:35 PM
	02:00 PM	04:25 PM
	07:30 PM	09:55 PM
3 HR	08:00 AM	11:00 AM
	10:10 AM	01:10 PM
	01:25 PM	04:25 PM
	07:30 PM	10:30 PM

No classes or laboratory exercises are to be held between the hours of 4:25 P.M. and 7:30 P.M. Monday through Thursday, after 4:25 P.M. on Friday, after 12:20 P.M. on Saturday, and all day Sunday.

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 rosters for each term.

Evening academic activities commencing at 7:30 P.M. on Mondays and Wednesdays, other than regularly scheduled courses and prelims previously approved by the office of the university faculty, are not permitted. Violation of these rules interferes with other university activities (athletic, musical, theatrical, employment, etc.).

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 each semester. 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 university 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 24-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 is composed of 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*	*Points*		*Quality Credits*		*Product*
Chemistry 103	B+	3.3	x	3	=	9.9
English 151	C–	1.7	x	3	=	5.1
DEA 145	B	3.0	x	4	=	12.0
CEH 100	B	3.0	x	3	=	9.0
DEA 111	C	2.0	x	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 materials 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 hours 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 is irrevocable after first three 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 by petition only.

Human Ecology. (a) Not part of student's major. (b) May be used in the 19 hours required outside the major in Human Ecology courses. (c) Not part of 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) 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. (f) Total of 12 credits in S-U

courses (not counting PE) may be counted towards degree requirements during a 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.

Internal Transfer. (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 four 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 an 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 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, B7 Day Hall.

University Requirements for Graduation

The *university* has only two requirements for graduation that must be fulfilled: the swim test and physical education courses. A student's *college* determines 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 registrar's office.

PHYSICAL EDUCATION

Classes

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 20 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

The University Faculty Committee on Physical Education has established a basic swimming and water safety competency requirement for all entering freshman undergraduate students. Normally, the test is given for women in the Helen Newman pool and for men in the Teagle pool as part of their orientation process. The test consists of a feet-first entry into the deep end of the pool and a continuous 75-yard swim using front, back, and optional strokes. Any student who cannot pass the swim test is required to include the course Basic Swimming and Water Safety in his or her program of physical education before electives can be chosen. Students will receive a grade of incomplete in Physical Education until they have passed the swim test or fulfilled the requirement by satisfactory attendance in two terms of Basic Swimming and Water Safety. Students unable to meet the swim requirement because of medical, psychological, or religious reasons must petition the University Faculty Committee on Physical Education for a waiver of the requirement. When a waiver is granted by the Faculty Committee on Physical Education, an alternate requirement is imposed. The alternate requirement substitutes a course in either Advanced First Aid (Emergency Response) or Wellness and Fitness for the original 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.

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. Students may rescind their no release request at any time in writing to the office of the university registrar.

**"Cornell University Policy on Access to and Release of Student Education Records" is available on the web at URL: WWW.UNIVCO.CORNELL.EDU/policy/ASI.html.

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
- Courses 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* on the web at www.univco.cornell.edu/policy/asi.html.

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 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, 120 Day Hall (255–2945). The guidelines are also available at the web address www.osp.cornell.edu

USE OF ANIMALS FOR COURSES

Vertebrate animals serve 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 printed below and is available from departments in which the courses are offered.

Guidelines for Faculty and Students with Respect to the Use of Animals in Instruction

Background: On December 8, 1987, the Cornell University Institutional Animal Care and Use Committee approved a series of guidelines recommended to them by the University Animal Welfare Committee. These guidelines were prepared by a subcommittee of faculty members, after they had the opportunity to evaluate the use of animals in undergraduate teaching (and student concerns for the same) from a representative sample of instructors.

Guidelines

1. For demonstrating certain principles and procedures the use of animals in teaching is recognized as an invaluable, often essential, pedagogical device.
2. For courses in which vertebrate animals are to be used in dissection, surgery, or in other experimental procedures, the course description that appears in the Announcement "Courses of Study" should alert students to this fact.
3. A detailed description of the intended use of vertebrate animals should be available to students upon request to the instructor of each course.
4. Faculty members are encouraged to explain their reasons and need for using vertebrate animals and should indicate to students the availability of the procedures described in item 8 below.
5. Students are encouraged to discuss their concerns about the instructional use of vertebrate animals with the instructor in the course.
6. When consistent with pedagogical objectives, faculty members are encouraged to consider adopting alternative methods and procedures that do not involve the use of live animals.
7. When students object on ethical or other valid grounds, to participating in an exercise using vertebrate animals, instructors are encouraged to provide alternative means when consistent with pedagogical objectives, for learning the same material.
8. 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 (253–3520).

Interdisciplinary Centers, Programs, and Studies

ANDREW D. WHITE PROFESSORS-AT-LARGE

726 University Avenue (255–0832)

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 2001

Pingree, David, historian of science

Term Ending in 2002

Chartier, Roger, cultural historian
Ernst, Richard R., physical chemist
Goodall, Jane, primatologist
Tobias, Phillip V., paleoanthropologist

Term Ending in 2003

Morrison, Toni, novelist
Rabinovich, Itamar, historian of the Middle East, diplomat

Term Ending in 2004

Bal, Mieke, cultural analyst
Cleese, John, writer and actor
MacDonald, David W., mamalogist and behavioral ecologist
Silajdzic, Haris, political leader, historian of the Middle East

Term Ending in 2005

Jemison, Mae, astronaut
McDonough, William, architect
O'Brien, Stephen J., geneticist
Schechner, Richard, director of performance studies

Term Ending in 2006

Andy Goldsworthy, sculptor
Oliver Sacks, physician and writer

CENTER FOR APPLIED MATHEMATICS

657 Frank H. T. Rhodes 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, 657 Frank H. T. Rhodes 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.

Selected Applied Mathematics Courses

Basic Graduate Courses in Mathematics and Applied Mathematics

Math 413–414 Introduction to Analysis
Math 433–434 Introduction to Algebra
Math 436 Applications of Abstract Algebra
Math 611–612 Real and Complex Analysis
Math 615–616 Mathematical Methods in Physics
Math 621 Measure Theory and Lebesgue Integration
Math 622 Applied Functional Analysis
Math 631–632, 634 Algebra
Math 651 Introductory Algebraic Topology
Math 661 Geometric Topology
T&AM 612–613 Methods of Applied Mathematics
T&AM 614–615 Topics in Applied Mathematics

Analysis (and Differential Equations)

Math 427 Introduction to Ordinary Differential Equations
Math 428 Introduction to Partial Differential Equations
Math 617 Dynamical Systems
Math 618 Smooth Ergodic Theory
Math 619–620 Partial Differential Equations
Math 652–653 Differentiable Manifolds
Math 662 Riemannian Geometry
Math 711–712 Seminar in Analysis
Math 713 Functional Analysis
Math 715 Fourier Analysis
Math 722 Topics in Complex Analysis
Math 728 Seminar in Partial Differential Equations

Logic and Theory of Computing

CS 618 Principles of Distributed Computing
CS 671 Introduction to Automated Reasoning
CS 677 Reasoning about Knowledge
CS 682 Theory of Computing
CS 715 Seminar in Programming Refinement Logics
Math 486 Applied Logic I
Math 681 Logic
Math 781–782 Seminar in Logic
Math 783 Model Theory
Math 784 Recursion Theory
Math 785 Automata Theory
Math 787 Set Theory
Math 788 Topics in Applied Logic

Numerical Mathematics and Operations Research

CS 522 Software for Scientific Computing
CS 621 Matrix Computations
CS 622 Numerical Optimization and Nonlinear Algebraic Equations
CS 624 Numerical Methods for Differential Equations
CS 664 Machine Vision
CS 681 Analysis of Algorithms
CS 722 Topics in Numerical Analysis
CS 729 Seminar in Numerical Analysis
EE 423 Computer Methods in Digital Signal Processing
Math 425 Numerical Solution of Differential Equations
Math 728 Seminar in Partial Differential Equations
OR&IE 625 Scheduling Theory
OR&IE 630 Mathematical Programming
OR&IE 632 Nonlinear Programming
OR&IE 635 Interior-Point Methods for Mathematical Programming

Discrete Mathematics and Geometry

Math 441–442 Introduction to Combinatorics
Math 455 Applicable Geometry
OR&IE 633 Graph Theory and Network Flows
OR&IE 636 Integer Programming
OR&IE 639 Polyhedral Convexity

Information Communication and Control Theory

EE 411 Random Signals in Communications and Signal Processing
EE 425 Digital Signal Processing
EE 467–468 Communication Systems I and II
EE 471/MAE 478 Feedback Control Systems
EE 521 Theory of Linear Systems
EE 522 Theory of Nonlinear Systems
EE 525 Adaptive Filtering in Communication Systems
EE 526 Signal Representation and Modeling
EE 561 Error Control Codes
EE 562 Fundamental Information Theory
EE 563 Communication Networks
EE 565 Statistical Signal Processing
EE 567 Digital Communication
EE 577 Artificial Neural Networks
MAE 677 Robust and Optimal Control

Mathematical Biology

BTRY 451 Mathematical Modeling of Populations
BTRY 662 Mathematical Ecology (also STBTRY 662)
Stat & Biom 651 Mathematical Population Studies and Modeling
Stat 697 & Biom 760 Special Topics in Theoretical and Computational Biology

Mathematical Economics

Econ 619 Econometrics I
Econ 620 Econometrics II
Econ 710 Stochastic Economics: Concepts and Techniques
Econ 717–718 Mathematical Economics
Econ 719–720 Advanced Topics in Econometrics

Mechanics and Dynamics

Chem E 731 Advanced Fluid Mechanics and Heat Transfer
Chem E 732 Diffusion and Mass Transfer
Chem E 751 Mathematical Methods of Chemical Engineering Analysis
Chem E 753 Applied Analysis of Nonlinear Systems: Studies in Stability and Bifurcation
M&AE 601 Foundations of Fluid Dynamics and Aerodynamics
M&AE 602 Fluid Dynamics at High Reynolds Numbers
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 578 Nonlinear Dynamics and Chaos
T&AM 666 Finite Element Analysis
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 678 Complex Systems
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 565 Statistical Signal Processing
EE 566 Wireless Networks
EE 664 Foundations of Inference and Decision Making
Math 671–672 Probability Theory
Math 674 Introduction to Mathematical Statistics
Math 777–778 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 670 Statistical Principles
OR&IE 671 Intermediate Applied Statistics
STBTRY 408 Theory of Probability
STBTRY 409 Theory of Statistics

Robotics and Vision

CS 664 Machine Vision
EE 547 Computer Vision
EE 548 Digital Image Processing

Theoretical/Mathematical Physics/Chemistry

CHEM 792 Molecular Collision Theory
CHEM 793 Quantum Mechanics I
CHEM 794 Quantum Mechanics II
CHEM 796 Statistical Mechanics
CHEM 798 Special Topics in Physical Chemistry
EE 407 Quantum Mechanics and Solid State Physics
PHYS 553–554 (Astro 509–510) General Relativity
PHYS 561 Classical Electrodynamics
PHYS 562 (CHEM 796) Statistical Mechanics
PHYS 562 Statistical Physics
PHYS 572 Quantum Mechanics I
PHYS 574 Quantum Mechanics II
PHYS 651–652 Relativistic Quantum Field Theory

CORNELL CENTER FOR THE ENVIRONMENT

Rice Hall (255–7535)

The Cornell Center for the Environment (CfE) coordinates interdisciplinary research, teaching, and outreach programs on environmental issues. CfE's overarching goal is to continuously advance an intellectual community for the environment at Cornell University,

with the objective of promoting a sustainable future. To meet this goal CfE:

- initiates environmental courses and curricula at both the graduate and undergraduate levels;
- facilitates interdisciplinary environmental research;
- coordinates outreach programs that assist federal, state, and local government, international agencies, private organizations, businesses, and individuals in analyzing and solving environmental problems;
- organizes environmental events, lectures, festivals, and seminars; and
- serves as a clearinghouse for environmental information.

The CfE web page (www.cfe.cornell.edu) is the principal source of environmental information for the Cornell students, faculty, and staff. Check it frequently for the latest updates on funding, seminars, courses, lectures, events, research opportunities, and new educational programs.

EDUCATION

Undergraduates and graduates can study the environment through programs in Cornell departments, centers, and institutes. Cornell has a strong tradition in environmental studies, with over 200 faculty across campus from the natural, biological, and social sciences working on various environmental issues.

Undergraduate Education

For undergraduate students, a listing of environmental course offerings is posted on the CfE web page (www.cfe.cornell.edu) along with a listing of majors for students interested in the environment. Students are also encouraged to review the *Courses of Study* section on "Cornell's Undergraduate Environmental Programs."

Graduate Study

Graduate level environmental concentrations are found in many of Cornell's "Major Fields of Study," from Agricultural and Biological Engineering to Zoology. Similarly, there are opportunities for further study through several graduate minors. The Center for the Environment administers several graduate programs, including the Master of Professional Studies—Environmental Management Concentration, the Environmental Toxicology Graduate Field, and the Conservation and Sustainable Development minor.

Master of Professional Studies—Environmental Management Program (MPS-EM). Resolving complex environmental problems requires more than technological solutions and technical expertise. Environmental professionals also need broad-based administrative, analytical, and managerial skills to make cost effective decisions, perform impact analyses, effectively engage stakeholders, and work in a fluctuating legal, political, and regulatory arena. The MPS-EM Concentration is organized with these demands in mind. The program prepares graduates to work as multidisciplinary team members in the environmental management professions.

Students take common core courses including: Science and Technology of Environmental Management (ABEN 425); Managing Local Environmental Systems: Social Perspectives and Research Bases (Rural Sociology 560); Legal Aspects of Environmental Management (CRP 551 or NTRES 408); and Environmental and Resource Economics (ARME 651). An interdisciplinary problem-solving project and 15–18 additional credit hours round out the program. For more information, contact CfE's education coordinator (607–255–7535 or cucfe@cornell.edu).

Environmental Toxicology. CfE is the administrative home of the Environmental Toxicology Graduate Field. The field offers a multidisciplinary science program leading to an M.S. or Ph.D. degree. The three major areas of concentration in the program are cellular and molecular toxicology; food and nutritional toxicology; and ecotoxicology and environmental chemistry. The graduate program prepares students for professional opportunities in academia, industry, private research institutes, and governmental agencies.

Conservation and Sustainable Development Minor (CSD). The minor was formed in response to the challenges facing society to provide for the health, safety, and welfare of people while maintaining the ecological integrity of natural ecosystems and the long-term sustainability of food, forage, and fiber production systems. Solutions to today's conservation and sustainable development problems will continue to elude a single disciplinary approach. These challenges must be met by a new kind of specialist that has holistic perspectives and is capable of working on interdisciplinary research and development teams. Hence, the Conservation and Sustainable Development Minor is oriented to graduate students desiring interdisciplinary approaches to real world problems.

Requirements for the minor include: (1) the CSD core course, Critical Issues in Conservation and Sustainable Development (NTRES 618); (2) at least two electives in subject areas outside the student's primary academic focus; and (3) an interdisciplinary problem-solving research or development project. Elective courses are chosen in consultation with the student's graduate committee that includes one representative from the CSD minor.

BEYOND THE CLASSROOM

Students interested in the environment will find many organizations, resources, and activities beyond the classroom setting, both on campus and in the regional area. CfE sponsors guest lectures and co-hosts conferences with groups from across the campus. In addition, CfE organizes the annual Cornell Environmental Film Festival and the Jill and Ken Iscol Distinguished Environmental Lectures.

RESEARCH AND OUTREACH

CfE is home for several environmental institutes offering students opportunities for study, project work, research, and outreach. These programs are focused on a variety of issues from watershed management to sustainable economic development to environmental risks. CfE programs include:

- Water Resources Institute (WRI)
- Institute for Comparative and Environmental Toxicology (ICET)
- Waste Management Institute (WMI)
- Institute for Resource Information Systems (Cornell IRIS)
- Program for Environment and Community (PEC)
- Program on Breast Cancer and Environmental Risk Factors in New York State (BCERF)
- Work and Environment Initiative (WEI)
- Environmental Inquiry (EI)
- Environmental Risk Analysis Program (ERAP)
- CfE Watersheds Program.

Several other programs affiliated with the Center include:

- Superfund Basic Research and Education Program (SBREP)
- Ocean Resources and Ecosystems Program (OREP)
- Cornell Institute for Research in Chemical Ecology (CIRCE)
- Program in Biogeochemistry and Environmental Change (PBEC)
- Environmental Outreach Council.

For additional information about the environment at Cornell contact:

Center for the Environment
Cornell University
Rice Hall
Ithaca, NY 14853–5601
Tel: 607/255–7535
Fax: 607/255–0238
Email: cucfe@cornell.edu
Web: www.cfe.cornell.edu
Listserv: Environment-L@cornell.edu

THE MARIO EINAUDI CENTER FOR INTERNATIONAL STUDIES

170 Uris Hall (255–6370)

The Mario Einaudi Center for International Studies, established in 1961 to encourage and support comparative and interdisciplinary research on international subjects, is one of the largest and most diverse centers of its kind in the United States. Currently, it includes four U.S. Department of Education Title VI National Resource Centers and 18 other area, development, topical, and educational programs. More than 500 faculty members voluntarily collaborate in the center's programs with well over 300 graduate students involved directly in its international programs. Undergraduate students may choose concentrations in International Relations, Latin American Studies, Modern European Studies, South Asian Studies, or Southeast Asian Studies. (See also Africana Studies and Research Center, Asian Studies, and International Agriculture for related majors and concentrations.)

As the world changes, Cornell's international programs are poised to anticipate and respond to those developments. While some programs offer study of geographic regions, others focus on such topics as international agriculture, nutrition, population, law, planning, politics, rural development economics, and world peace. As programs gain momentum and recognition to attract their own resources, the center applies its resources to new pilot

activities that bring faculty and students together across traditional disciplines and departmental boundaries.

Each year the center brings an eminent world leader to campus as the Henry E. and Nancy Horton Bartels World Affairs Fellow to deliver a public lecture, meet with classes, and interact informally with faculty and students. Together with the Peace Studies Program, the center hosts a Current Events Roundtable each June that attracts a large number of Cornell alumni to join faculty in discussion of key world events.

Besides the educational and research opportunities the center makes available on the Ithaca campus, it also provides foreign study options for undergraduate students through the Cornell Abroad Program and encourages graduate students' overseas field research by hosting an annual competition for travel grants and administering the Fulbright fellowship program. The center also is the administrative home of the International Students and Scholars Office, the principal campus resource serving Cornell's large international community.

Cornell is committed to the study of the global community in all its complexity—through a faculty of preeminent scholars and teachers, outstanding research facilities, instruction in more than 40 languages, and a library system with 2,500,000 volumes related to international and comparative studies.

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

The Mario Einaudi Center for International Studies
Cornell University
170 Uris Hall
Ithaca, NY 14853-7601
USA
Phone: 607–255–6370
FAX: 607–254–5000
www.einaudi.cornell.edu

The Einaudi Center Programs
Center Administration:
Ron Herring, director
David Lelyveld, executive director
170 Uris Hall

East Asia Program (formerly China-Japan Program):
Vivienne B. Shue, director
140 Uris Hall

Latin American Studies Program:
Debra Castillo, director
190 Uris Hall

South Asia Program:
Christopher Minkowski, director
170 Uris Hall

Southeast Asia Program:
Thak Chaloemtiarana, director
180 Uris Hall

Institute for African Development:
David Lewis, director
170 Uris Hall

Institute for European Studies:
Jonas Pontusson, director
120 Uris Hall

International Agriculture:
Norman Uphoff, director
B31 Warren Hall

Berger International Legal Studies:
John Barcelò, director
309 Myron Taylor Hall

International Political Economy:
Jonathan Kirshner, director
B2 McGraw Hall

Gender and Global Change:
Lourdes Beneria, director
391 Uris Hall

International Studies in Planning:
Barbara Lynch, director
106 West Sibley Hall

Population and Development Program:
Douglas Gurak, director
200 West Sibley Hall

Comparative Societal Analysis:
Mary Brinton, director
348 Uris Hall

Participatory Action Research:
David Pelletier, director
378 Martha Van Rensselaer Hall

Peace Studies Program:
Barry Strauss, director
Matthew Evangelista, acting director
130 Uris Hall

Program in International Nutrition:
Jean Pierre Habicht, director
218 Savage Hall

Program on Comparative Economic Development:
Erik Thorbecke, director
458 Uris Hall

Cornell International Institute for Food, Agriculture, and Development:
Norman Uphoff, director
B31 Warren Hall

Cornell Food and Nutrition Policy Program
David Sahn, director
308 Savage Hall

Program on International Relations:
Matthew Evangelista, director
160 Uris Hall

Cornell Abroad:
Richard Gaulton, director
474 Uris Hall

International Students and Scholars:
Brendan O'Brien, director
B50 Caldwell Hall

COGNITIVE STUDIES

282 Uris Hall (255–6431) (cogst@cornell.edu)

Cognitive Studies focuses on the nature and representation of knowledge. It approaches the study of perception, action, language, and thinking from several perspectives—theory, experiment, and computation—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 draws primarily from the disciplines of computer science, linguistics, neuroscience, philosophy, and psychology. The field of cognitive studies is primarily represented by faculty in the following departments: Communication, Computer Science, Design and Environmental Analysis, Economics, Education, Human Development, Linguistics, Mathematics, Neurobiology and Behavior, Philosophy, Psychology, and Sociology, as well as 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. Contact Linda LeVan (255–6431 or cogst@cornell.edu).

Graduate Programs

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 individual, fosters interdisciplinary committees. It is the norm for students interested in cognitive studies to combine faculty members from such fields as Philosophy, Computer Science, Linguistics, Psychology, or Neurobiology and Behavior on common committees. For further information on the graduate Field of Cognitive Studies, contact Joe Halpern and Ron Hoy, directors of graduate studies, (255–9562 or 254–4318, halpern@cs.cornell.edu or rrh3@cornell.edu), or Linda LeVan, executive staff assistant, 282 Uris Hall, Office of Cognitive Studies (255–6431, cogst@cornell.edu).

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 607/255–6224, fax 607/255–8700, e-mail: CUAbroad@cornell.edu
web homepage: www.einaudi.cornell.edu/cuabroad

Study abroad is an integral part of a Cornell education. We live in an increasingly global society in which knowledge, resources, and authority transcend national and regional boundaries. To help students develop the knowledge, skills, and attitudes necessary for global citizenship in the twenty-first century, Cornell Abroad offers a wide range of international study opportunities that reflect the fundamental educational goals and objectives of the university. Study abroad is a continuous experience with study on campus, enabling students to make regular progress toward the degree.

Qualified students study abroad through programs administered by Cornell and other American institutions, and by enrolling directly in foreign universities. Among the many study abroad programs available, students select programs with thoughtful planning and apply with the approval of their colleges and faculty advisers. In all cases, students must apply through Cornell Abroad, whose staff services the planning and application process.

LOCATIONS ABROAD

Cornell students majoring in a broad array of fields in all seven undergraduate colleges regularly study in more than 40 countries. The

following list includes programs chosen frequently by students with college approval; those locations preceded by an asterisk (*) are programs run directly by Cornell.

AFRICA

Botswana, Cameroon, Kenya, Madagascar, Tanzania, Uganda: School for International Training;

Ghana: University of Ghana (through the Council of International Educational Exchange, CIEE);

Kenya: Wildlife Management (School for Field Studies);

South Africa: Universities of Cape Town and Natal

ASIA

China: Chinese University of Hong Kong; Inter-University Program for Chinese Language Studies at Tsinghua University; Peking, and Nanjing Universities (CIEE); International Chinese Language Program at National Taiwan University; IES Beijing

India: School for International Training;

Indonesia: Institut Keguruan Dan Ilmu Pendidikan (IKIP) in Malang (CIEE);

Japan: *Kyoto Center for Japanese Studies; various university programs;

Korea: Yonsei University;

Nepal: *Cornell-Nepal Study Program (Samyukta Adhyayan Karikam Nepal) at Tribhuvan University;

Thailand: Khon Kaen University (CIEE);

Vietnam: University of Hanoi (CIEE);

AUSTRALIA AND NEW ZEALAND

Australian National University, Canberra; University of Sydney; University of Melbourne; University of New South Wales, Sydney; University of New England, Armidale; University of Queensland, Brisbane; University of Western Australia, Perth; School for International Training; Sydney Internship (Boston University); Otago and Lincoln Universities in New Zealand;

EUROPE

Denmark: *Denmark's International Study Program (DiS);

France: *EDUCO (Cornell, Duke, and Emony in Paris) at Université de Paris VII, Paris I, Institut d'Études Politiques de Paris ("Sciences Po"); Critical Studies Program at the University of Paris (CIEE); Paris Intership (Boston University); IES Dijon Business Program

Germany: Berlin Consortium for German Studies at the Free University of Berlin; Wayne State University in Munich and Freiburg;

Greece: College Year in Athens;

Ireland: Trinity College Dublin and University Colleges of Dublin, Galway, and Cork;

Italy: Cornell College of Art, Architecture, and Planning Program in Rome; Bologna Cooperative Studies Program; Intercollegiate Center for Classical Studies in Rome; Syracuse University program in Florence;

Netherlands: Leiden University; University of Maastricht, Center for European Studies;

Russia: St. Petersburg University (CIEE); Moscow International University and other universities (American Council of Teachers of Russian);

Spain: *Cornell-Michigan-Penn program at the University of Seville; various language and culture programs;

Sweden: *Swedish Child Care and Family Policy Internship at the University of Göteborg; The Swedish Program at the University of Stockholm;

United Kingdom: *Direct enrollment at: University of Bristol; Cambridge University; University of East Anglia; University of Edinburgh; University of Glasgow; University of Manchester; University of Nottingham; Oxford University; University of Reading; University of St. Andrews; University of Sussex; University of Warwick; University of London: King's College, University College (including the School of Slavonic and East European Studies), Imperial College of Science and Technology, and the London School of Economics and Political Science, School of Oriental and African Studies.

Students studying at these 17 British universities enjoy admissions, advising, and counseling services, as well as an array of cultural activities, provided by the Cornell-Brown-Penn UK Centre. Externally sponsored programs in the UK include the British American Drama Academy, the Beaver College, Boston, and Rochester University interships, and the Marymount College Program at the London College of Fashion.

LATIN AMERICA, CENTRAL AMERICA, AND THE CARIBBEAN

Argentina and Chile: various university-based study abroad programs, such as COPA, through Butler University and the University of Illinois;

Belize, Brazil, Chile, Ecudor: School for International Training;

Costa Rica: Organization for Tropical Studies (OTS) Undergraduate Semester Abroad in tropical biology; School for Field Study; Universidad National (Heredía);

Ecuador and Jamaica: Partnership for Service Learning;

Honduras: Escuela Agrícola Panamericana (Zamorano);

Mexico: Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM); Universidad de las Americas-Puebla (UDLA); Universidad Iberoamericana; School for Field Studies in Baja California;

MIDDLE EAST AND NORTH AFRICA

Egypt: American University in Cairo;

Israel: Ben-Gurion University; Haifa University; Hebrew University of Jerusalem; Tel Aviv University;

Morocco: School for International Training

Other Locations

Cornell students are by no means limited to the locations listed above. In recent years, they have also studied in Austria, Czech Republic, Dominican Republic, Finland, the Philippines, Poland, Portugal, Switzerland, Turkey, Venezuela, and elsewhere.

Who Studies Abroad

Students from all seven undergraduate colleges and from all major fields study abroad; they are generally expected to have a cumulative grade point average of 3.0 or above. More than 500 undergraduates studied abroad last year. Because the colleges usually require that students complete at least 60 hours of undergraduate credit on the Ithaca campus, students who transfer to Cornell as juniors are usually unable to count study abroad credit toward their Cornell degree.

When Students Study Abroad and for How Long

Students may study abroad their sophomore, junior, or senior year. Junior year is the traditional choice, but second semester sophomore year or first semester senior year is increasingly popular. To ensure preparation, it is important to begin planning for study abroad in the freshman year. Although semester-long programs are usually available, academic year programs are highly recommended.

Application Process

Applications for all study abroad programs—Cornell programs, as well as those administered externally by other institutions—are available at Cornell Abroad, 474 Uris Hall, where students are encouraged to consult the library of study abroad materials, talk with staff, and attend information meetings. The Cornell Abroad web site is a good place to browse through program offerings and to explore links to universities and programs worldwide. Students meet with the study abroad advisers in their colleges to choose programs that fit the needs of their degree programs. Each applicant completes a written statement of academic purpose outlining goals for study abroad and the program of study that will be followed. Applications are signed by both the faculty adviser and the college study abroad adviser. Arts and Sciences, Human Ecology, and Industrial and Labor Relations students submit applications to their college for forwarding to Cornell Abroad; Agriculture and Life Sciences, Architecture, Art, and Planning, Engineering and Hotel Administration students submit applications directly to Cornell Abroad. Cornell Abroad reviews all applications and forwards them to programs and universities as necessary. *All students who wish to receive academic credit for study abroad must apply through Cornell Abroad and their undergraduate college.*

The application *deadline* for study abroad in the fall 2001 semester and the 2001–2002 academic year is February 15, 2001, for all programs *except* Oxford and Cambridge, for

which the deadline to study at those universities for the full year in 2001–2002 is November 1. Many universities and programs admit on a rolling basis before and after these dates. Students planning to study abroad in the spring semester should initiate the application process during the preceding spring. Early application may improve your chances of admission. In all cases, it is a good idea to check with Cornell Abroad.

Registration, Credit Transfer, and Grades

Students who apply through Cornell Abroad to programs approved by their colleges, as outlined above, remain registered at Cornell during study abroad. They are eligible for financial aid and receive full academic credit for pre-approved courses of study completed with satisfactory grades. Students enroll for a full load of courses abroad, according to the standards of the institution or program overseas, and normally receive 30 credits per year, or 12 to 20 credits per semester. The colleges review coursework taken abroad and make the final decisions concerning credit transfer and distribution. When study abroad credit has been transferred, the *transcript* will indicate the names of the courses taken, the grades received, and the total credits earned for each semester. *The foreign grades are not translated into the Cornell/American grading system, nor are they averaged into the Cornell grade point average.*

Foreign Language Requirements

Study abroad programs in non-English–speaking countries that offer direct enrollment in universities generally require at least two years, or the equivalent, of college-level language study. Students should make firm plans for any requisite language courses early in their freshman year. English-language study abroad programs are increasingly available in non-English–speaking countries—for example, Belgium, Denmark, Egypt, France, Hong Kong, Indonesia, Italy, Japan, Korea, Netherlands, People's Republic of China, and Sweden. Cornell students who participate in programs in a non-English–speaking country with English-language course work are required to take at least one language course as part of their program of study and are strongly encouraged to take more. Students are advised to consult with their college study abroad advisers about relevant language preparation, and students in the College of Arts and Sciences should note that they are required to have studied the host country language, if taught at Cornell, prior to study abroad.

Housing Arrangements

Study abroad programs generally provide housing in the homes of local residents, in university halls of residence, or in rental apartments. Cornell Abroad will advise students of the arrangements that are available and most appropriate to their individual needs.

Costs

Students studying abroad on Cornell programs in Berlin, Copenhagen, Gotëberg, Nepal, Paris, Seville, and the United Kingdom in 2000–2001 pay a uniform study abroad tuition of $15,300 per semester, which covers, tuition, housing, orientation, some field trips, and excursions. Meals and airfare may also be included. The study abroad tuition for the Kyoto Center for Japanese studies is $18,025, covering the same expenses.

Students studying abroad on all other programs in 2000–2001 pay the tuitions and other costs charged by their programs, and a Cornell international program tuition of $3,550 per semester. The international program tuition covers the direct and indirect costs of study abroad to the university, including financial aid for all study abroad students.

Financial Aid

Students who are accepted for study abroad during the academic year or semester, having applied through Cornell Abroad, are eligible for financial aid, consistent with general university policy; this applies to all programs, whether run directly by Cornell or not. Students who have transferred into Cornell with 60 or more credit hours are not likely to receive aid for study abroad assuming they would thereby need more than eight semesters to earn the undergraduate degree. Some programs abroad offer need-based and merit-based scholarships.

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 current events. The director, associate director, and staff stay in regular contact with representatives abroad and receive information regarding rapidly changing political situations through the U.S. Department of State Office of Citizens Emergency Services and other agencies. As long as the State Department does not restrict travel by U.S. citizens, Cornell Abroad does not recommend limitations on student plans for study abroad. Cornell Abroad will do everything possible to notify students immediately that they should defer plans when official travel restrictions are issued. Nothing is as important as student security and well-being.

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 sponsored by colleges and universities other than Cornell; they 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 disrupted semester, refunds of tuition and fees, and the appropriate number of credits to be awarded will be reviewed by Cornell and affiliated institutions on a case-by-case basis. Most institutions sponsoring study abroad programs strive to facilitate student completion of academic programs even under unusual circumstances and have tuition refund policies based on prorated formulas.

Sources of Information and Advice Concerning Study Abroad

Cornell Abroad (474 Uris Hall): Richard Gaulton Ph.D., director; Beatrice B. Szekely Ph.D., associate director; Libby Okihiro, student services coordinator; Kathy Lynch, financial services coordinator. The Cornell Abroad library contains an extensive collection of university catalogs and study abroad program brochures, files of course syllabi and evaluations, books, videotapes, and some information on travel, summer study, and work abroad. Comprehensive information is provided on the Cornell Abroad web site which incorporates linkages to universities, programs, and resources worldwide. In the early weeks of every semester, faculty, students, and staff discuss programs in a series of information meetings announced in the Cornell Daily Sun and on the Cornell Abroad web homepage (www.einaudi.cornell.edu/cuabroad).

College Study Abroad Advisers

Agriculture and Life Sciences: Bonnie Shelley, 140 Roberts Hall; *Architecture, Art, and Planning:* Donna Kuhar, 129 Sibley; *Arts and Sciences:* TBA, 55 Goldwin Smith Hall; *Engineering:* Dan Maloney Hahn, 167 Olin Hall; *Hotel Administration:* Cheryl Farrell, 174B Statler Hall; *Human Ecology:* Paul Fisher, 172 Martha Van Rensselaer; *Industrial and Labor Relations:* Laura Lewis, 101 Ives Hall.

CORNELL-IN-WASHINGTON PROGRAM

311 Caldwell Hall (255–4090)

Cornell-in-Washington is a program that offers students from all colleges in the university an opportunity to earn full academic credit for a semester of study in Washington, D.C. The aim of the program is to give students a chance to take advantage of the rich resources of the national capital. Washington, as the center of much of the nation's political energy, is an ideal place to study American public policy and the institutions and processes through which it is formulated and implemented. At the same time, Washington's rich collection of libraries, museums, theaters, and art galleries, offers an opportunity to explore American history, literature, art, and the full range of the American humanistic tradition. The Cornell-in-Washington Program offers two study options: (1) studies in public policy; and (2) studies in the American experience. Students take courses from Cornell faculty, conduct individual research projects, and work as externs in the Washington community.

The program is housed at the Cornell Center, 2148 O Street, NW, Washington, D.C. 20037. The academic and adminstrative space is located on the first floor and 27 residential units for approximately 60 students and faculty are on the upper floors.

The Cornell-in-Washington program is open to qualified juniors and seniors from all colleges, schools, and divisions of the university. Students enroll in one core course, which involves a major research project often carried out in conjunction with an externship. Students also select one or two other seminars from such fields as government, history, economics, history of art, and social policy. All seminars are taught by Cornell faculty and carry appropriate credit toward fulfillment of major, distribution, and other academic requirements. In addition, students work as externs with congressional committee offices, executive-branch agencies, interest groups, arts and research institutions, and other organizations involved in public policy and American culture.

Tuition

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

Housing

Apartments are rented at the Cornell Center during the academic year. 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 311 Caldwell Hall. Applications should be submitted the semester prior to participation.

Information

The Cornell-in-Washington website is located at ciw.cornell.edu. 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 311 Caldwell 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

473 Hollister Hall (255–8018)

The Cornell Institute for Public Affairs (CIPA) is a university-wide institute that offers a two-year graduate professional program leading to a Master of Public Administration. Our mission is to develop professionals who can be effective, ethical, and creative leaders in government and in the private sector's interface with government.

CIPA emphasizes the interactions between public and private interests for the benefit of all sectors of society. At CIPA, we utilize Cornell's cutting-edge strengths as a major research university to understand rapidly evolving public interests, technological opportunities, ecological constraints, individual aspirations, and political possibilities. Examples of Cornell's extraordinary breadth of policy-related specialties include science and technology; health, education, and social services administration; agricultural, food, and nutrition policy; international development; environmental studies; peace studies; labor relations; city and regional planning; and ethics in public life. These areas of expertise provide a diverse base for the CIPA Fellows (our students) to pursue the study of public affairs. Thus, CIPA Fellows take courses and work with faculty from all of Cornell's Colleges as well as the Cornell Law School, with whom a joint M.P.A. /J.D. degree is offered, and the Johnson Graduate School of Management.

The CIPA program has been developed to offer both a sound foundation in the principles, tools and techniques for a career and leadership in public policy either in the public or private sector. CIPA also offers the flexibility to accommodate and encourage the specialized policy-related interests of our students.

The two-year curriculum is structured into three parts: five interdisciplinary core courses taken by all CIPA Fellows; "competency" area requirements to develop the wide variety of skills and professional perspectives necessary for the practice of public policy; and sectoral specialization through additional courses and the completion of a thesis in the area of the fellow's policy focus.

The Core Courses

These courses have been developed specially for CIPA Fellows to provide a common, hands-on experience in employing the latest analytical techniques to guide the formulation of programs, their supporting institutions, and their effective administration. They will also provide strategies for implementing change in complex heterogeneous societies.

CIPA I: Quantitative Techniques for Policy Analysis and Program Management (CRP 621)

Provides students with the basic management tools essential for the contemporary career in public affairs. It includes hands-on practice with formal management techniques, including investment analysis and linear and dynamic programming.

CIPA II: Public Political Economy (ECON 539) Uses techniques of economic analysis to understand the need for various public programs, to estimate the value of new programs and policies, to forge desirable institutional structures for service delivery, and to anticipate and evaluate outcomes.

CIPA III: Administration, Politics, and Public Affairs (GOVT 621) Explores the processes and institutional context of public affairs and analyzes the political and administrative structure and dynamics of policy development and implementation.

CIPA IV: Social Policy (526) Integrates a variety of analytic methods, especially statistics and simulation models, to explore the structure of public programs and to assess their direct and indirect consequences.

CIPA V: Models and Quantitative Methods (CRP 528) Demonstrates the use and limits of models and quantitative techniques in forming and administering policy.

The Area Requirements.

In addition to the five core courses, fellows must also complete satisfactorily a series of foundation subject or "competency" area requirements that are essential to the training of public policy professionals. These competency areas are: administration, politics, and policy; economics; math and statistics; finance; regulation; and ethics and public law.

The Sectoral Specialty

At least three courses taken by individual fellows will be in their sectoral specialty or "concentrations." These are widely divergent and depend on the unique interests and background of the individual student.

The CIPA Thesis

Each fellow must complete a thesis, which applies the conceptual tools, theories, and analytical techniques to a problem in the fellow's area of sectoral expertise. As the culmination of each M.P.A. course of study, this thesis must be both critical and creative, reflecting the fellow's ability to identify, analyze, and generate supportable solutions to important public policy questions.

Additional Requirements

All M.P.A. candidates must spend four semesters in residence to complete the degree.

The Faculty

In addition to our five core faculty members (Richard E. Schuler, director, economics and civil and environmental engineering; Steven Caldwell, sociology; Arch Dotson, government; David Lewis, city and regional planning; and Peter Stein, physics) who offer the five core courses and advise the fellows in the development of their programs of study, over 100 faculty members at Cornell participate in the graduate field of public affairs and policy. All field faculty members are available to supervise the theses of individual Fellows whose policy interests coincide with faculty expertise.

Special Programs

The combined four-year M.P.A./J.D. and M.P.A./M.B.A. degree programs are available for interested applicants. For selected Cornell undergraduates who are accepted by the end of their junior year, a combined five-year bachelor's/M.P.A. program can be arranged.

Student Organization

The Cornell Public Affairs Society, governed by the fellows, conducts a weekly colloquium with guest speakers, a bi-weekly television program, "Point-Of-View", aired on the local public access channel, and publishes, edits, and sponsors student authors for its annual public policy journal, "The Current," as well as arranging regular social events.

Application. Applicants are required to submit GRE general test scores. CIPA has a policy of rolling admissions. Students requesting aid, however, must submit applications by February 15 for consideration. For an application or more information, contact Cornell Institute for Public Affairs, 472 Hollister Hall (phone: 607 255–8018; fax: 607 255–5240; e-mail: cipa@cornell.edu; web site: www.cipa.cornell.edu).

Financial Support. As a professional program, the financial aid resources of CIPA are extremely limited. Students of unusual merit and documented need will be considered for support, but CIPA is unable to provide any one student full support. Therefore, applicants are encouraged to explore and take advantage of all available sources of external funding.

For an application or more information, contact Cornell Institute for Public Affairs, 472 Hollister Hall (phone: 607–255–8018; fax: 607–255–5240; e-mail: cipa@cornell.edu).

CORNELL PLANTATIONS

One Plantations Road (255–3020)
Internet homepage:
www.plantations.cornell.edu
e-mail: plantations@cornell.edu

A place of exceptional diversity and learning opportunities, Cornell Plantations comprises the university's botanical garden, arboretum, and natural areas. Its 3,000+ acres include the woodlands and gorges on and around campus, as well as specialized gardens and a 150-acre arboretum that features a field flower meadow and trees and shrubs hardy in central New York State. Cornell Plantations provides unique outdoor laboratories and plant collections for Cornell's academic programs and research in disciplines such as ecology and systematics, floriculture, ornamental horticulture, and bioengineering. While many of Cornell Plantations' resources are on or near campus, several thousand acres in and around Tompkins County preserve quality examples of native vegetation and rare plants and animals. The lands include bogs, fens, glens, swamps, wet and dry forests, vernal ponds, and meadows. Arrangements to use these areas for classes and research can be made by calling Cornell Plantations.

Cornell Plantations also offers relaxation, rejuvenation, and inspiration. The vast open spaces provide room to breathe; while the intimate gardens provide respite from the busy campus. Visitors always discover surprises and learn something new in the gardens, which feature herbs, flowers, vegetables, international crops, rock garden plants, peonies, poisonous plants, ground covers, rhododendrons, wildflowers, and a winter garden.

Students are encouraged to volunteer as photographers, authors, tour guides, computer assistants and gardeners.* Maps, information, publications, and class brochures (for noncredit classes and workshops) are available in the Garden Gift Shop in the Lewis Headquarters Building at the botanical garden. Noncredit courses in horticulture, landscape design, botanical arts, and natural history are offered throughout the year. A one-credit seminar series (HORT 480) is offered each fall; a three-credit Public Garden Management course, (HORT 485) is offered every other spring semester. *A number of student internships are also offered each summer.

PROGRAM ON ETHICS AND PUBLIC LIFE

119 Stimson Hall (255–8515)

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 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 to enrich existing departments with courses that are intellectually and practically fruitful at the same time. It offers a concentration in Law and Society (see separate listing under "Special Programs and Interdisciplinary Studies").

EPL Core Courses

PHIL 194/GOVT 294 Global Thinking @
PHIL 246 Ethics and the World Environment
PHIL 247 Ethics and Public Life
PHIL 342 Law, Society, and Morality
PHIL 343 Political Obligation and Civil Disobedience
GOVT 469/Phil 369 Limiting War: The Morality of Modern State Violence
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 491/691 Normative Elements of International Relations

Related Courses

AN SC 414 Ethics and Animal Science
B&SOC 206/S&TS 206 Ethics and the Environment
CEH 356 Economics of Welfare Policy
CRP 549 Ethics and Practical Judgment in Planning Practice
ENGR 360/S&TS 360 Engineering Ethics
GOVT 474/PHIL 446 Topics in Social and Political Philosophy
HSS 658 Ethics, Public Policy, and American Society
ILRHR 366 Women at Work
ILRCB 401 My Brother's Keeper
ILRCB 482 Ethics at Work
ILRCB 488 Liberty and Justice For All
ILRCB 604 Theories of Equality and Their Application in the Workplace
LAW 655 International Human Rights
LAW 667 Law and Ethics of Lawyering
LAW 718 Ethnic Conflict and International Law
NBA 578 Business Ethics
NTRES 407 Religion, Ethics, and the Environment
NTRES 411 Seminar in Environmental Ethics
PHIL 145 Contemporary Moral Issues
PHIL 241 Ethics
PHIL 245 Ethics and Health Care
PHIL 246 Ethics and the Environment
PHIL 341 Ethical Theory
PHIL 344 History of Ethics: Ancient and Medieval #
PHIL 345 History of Ethics: Modern #
PHIL 346 Modern Political Philosophy

Henry Shue, director, 119 Stimson Hall, 255–8515; Henry Shue, Wyn and William Y. Hutchinson Professor of Ethics and Public Life; Kathryn Abrams, Professor of Law.

PROGRAM IN REAL ESTATE

114 West Sibley Hall (255–7110)

The two-year Master of Professional Studies (M.P.S.) degree in Real Estate is an interdisciplinary degree program that combines courses from nearly every college at Cornell University. The degree is designed for aspiring real estate professionals who are in the initial or early stages of their careers. Two entities provide support for the degree program. The *Program in Real Estate* exists at Cornell University to serve as the integrating organizational unit for financial management and administration of academic real estate activities on and off campus. The *Field of Real Estate* is a committee of faculty members from several different colleges that is directly involved in the design and administration of the real estate curriculum.

The professional study of real estate is concerned with the finance, exchange, development, management, marketing, and many other aspects of the real estate business. Real estate professionals also bring an understanding of the long-range social, political, ethical, and environmental implications of decisions about real estate. The 62 credit hours of course work needed to earn the degree provide a comprehensive and lasting foundation for professional careers in real estate.

Students take core courses in principles of real estate, real estate development process, advanced real estate, managerial finance, residential development, real estate law, construction planning and operations, and real estate marketing and management, along with elective courses in their chosen areas of concentration. Many concentration options are possible and may be structured from the hundreds of related courses taught at Cornell University (e.g., an international real estate concentration).

Admissions

Admissions procedures for the M.P.S. (Real Estate) program are supervised by the Graduate School and Real Estate Field. Applicants to the program must have completed a bachelor's degree with a good academic record. They must achieve Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) scores that are at the level required in other Cornell graduate professional degree programs; and at least two letters of recommendation from undergraduate college faculty members (and if appropriate, from employers) familiar with the student's academic and professional work must be submitted. There is no work experience requirement for admission (although work experience is preferred). Foreign students, for whom English is a second language, will need to achieve acceptable TOEFL scores.

For more information, contact C. Bradley Olson, director of the Program in Real Estate (607–255–7110) or Professor Matthew Drennan, director of graduate studies (607–255–7436) or e-mail real_estate@cornell.edu.

SCIENCE OF EARTH SYSTEMS: AN INTERCOLLEGE MAJOR

During the past several decades, with the increasing concern about air and water pollution, nuclear waste disposal, the ozone hole, and global climate change, the scientific community has gained considerable insight into how the biosphere, hydrosphere, atmosphere, and lithosphere systems interact. It has become evident that we cannot understand and solve environmental problems by studying these individual systems in isolation. The interconnectedness of these systems is a fundamental attribute of the Earth system, and understanding their various interactions is crucial for understanding our environment.

The Science of Earth Systems (SES) major emphasizes the rigorous and objective study of the Earth system as one of the outstanding intellectual challenges of modern science and as the necessary foundation for the future management of our home planet. In this program, Cornell's strengths across a broad range of earth and environmental sciences have been coalesced to provide students with the tools to engage in what will be the primary challenge of the twenty-first century.

Graduates of Cornell's SES program are well prepared for several career and advanced study options:

- Graduate work leading to the M.S. and/or Ph.D. in any of the earth science subdisciplines (e.g., atmospheric science, geology/geophysics, bio-geochemistry, hydrology, oceanography).
- Employment in environmentally-oriented careers in both the private and public sector at the B.S. or B.A. level.
- Advanced degree in environmental law or policy. These fields value students with an understanding of the science behind legal and policy decisions.
- Advanced degree in teaching, for example, earth science at the middle or high school level.
- Medical school. The emphasis on basic sciences in the SES curriculum makes the SES major a suitable springboard for a career in medicine.

The SES major is available for students in the College of Agriculture and Life Sciences and the College of Arts and Sciences. In the College of Engineering, the SES curriculum may be completed by choosing the SES option in the Department of Earth and Atmospheric Sciences. The SES major has its home in the Department of Earth and Atmospheric Sciences, but relies on the collaboration of several departments across the university.

The SES Curriculum

The SES curriculum provides strong preparation in mathematics, physics, chemistry, and biology during the freshman and sophomore years. In the junior and senior years, students take a set of common SES core courses and an additional set of advanced disciplinary or interdisciplinary courses that build on the basic sequences.

The requirements for the major are as follows:

(1) Basic Math and Sciences

a. MATH 111 and 112, or MATH 191 and 192, or MATH 190 and 192

b. PHYSICS 207 and 208, or PHYSICS 112 and 213, if PHYSICS 214 will also be taken (see below)

c. CHEM 207 and 208

d. BIOLOGY 101/103 and 102/104 (or 105–106) or BIOLOGY 109 and 110

e. THREE ADDITIONAL 3–4 credit courses in basic science and math, generally 100- and 200-level classes. At least one of the following must be included in the selection:

EAS 201 Physics and Chemistry of the Earth

BIOES 261 Ecology and the Environment

Other examples are MATH 293 and MATH 294, biochemistry, organic chemistry, PHYS 214, and introductory statistics. With the exception of an introductory statistics course, the additional basic courses should require at least one of the classes listed in a–d above as a prerequisite.

(2) Science of Earth Systems Core Courses

EAS 302 Evolution of the Earth System

EAS 331/ASTRO 331 Climate Dynamics

EAS 321/NATRES 321 Introduction to Biogeochemistry

(3) Concentration Courses

Four intermediate to advanced-level courses (300-level and up) that build on the core courses and have prerequisites in the "Basic Math and Sciences" courses listed in (1). These classes build depth and provide the student with a specific expertise in some facet of earth system science. Possible areas of concentration include Climate Dynamics, Biogeochemistry, Ecological Systems, Environmental Geology, Ocean Sciences, Environmental Biophysics, Hydrological Systems, and Soil Science

For more information contact Professor Kerry H. Cook, Department of Earth and Atmospheric Science, khc6@cornell.edu and visit the web site: www.geo.cornell.edu/ses/

DEPARTMENT OF STATISTICAL SCIENCE

301 Malott Hall (255–8066)

B. W. Turnbull (chair); M. T. Wells (director of graduate studies); J. A. Bunge (director of professional programs); N. Altman, T. Berger, G. Casella, C. Castillo-Chavez, M. Contreras, T. DiCiccio, R. Durrett, E. Dynkin, T. Fine, A. Hadi, Y. Hong, J. T. G. Hwang, H. Kesten, N. Kiefer, M. Nussbaum, S. Resnick, D. Ruppert, G. Samorodnitsky, E. Slate, V. Veeravalli, P. Velleman, T. Vogelsang.

The university-wide Department of Statistical Science at Cornell coordinates activities in statistics and probability at the undergraduate, graduate, and research levels.

Students interested in graduate study in statistics and probability can apply to the Graduate 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, students should contact the Director of Graduate Studies, 301 Malott Hall.

The department also offers an undergraduate program through the Biometrics Unit in the College of Agriculture and Life Sciences and an Engineering Statistics minor in the College of Engineering. Undergraduate majors and certificate programs are currently under development for other colleges. For information, contact the Undergraduate Coordinator, (301 Malott Hall, 255–8066). Statistics courses offered by the departments listed below will fill distribution requirements in many of the colleges.

A free consulting service is offered through the Biometrics Unit in the College of Agriculture and Life Sciences. Statistical computing consulting is available through the Office of Statistical Consulting, B21 Savage Hall, 255–1926.

The department is organized into four units; Biometrics, Engineering Statistics, Mathematical Statistics and Probability, and Social Statistics. The areas covered include agricultural statistics, biostatistics, economic and social statistics, epidemiology, manufacturing statistics, quality control and reliability, probability theory, sampling theory, statistical computing, statistical design, statistical theory, and stochastic processes and their applications.

Course designations

The following course identifiers are used to designate the courses offered by the separate units: Biometrics Unit (CALS), STBTRY; Engineering Statistics Unit (ENGR), STENGR; Mathematical Statistics Unit (ARTS), STMATH; Social Statistics Unit (ILR), STSOC. To enroll in one of the courses, see the listing for the appropriate college.

Descriptions of undergraduate and graduate courses are listed below.

Department of Statistical Science

ST 501–502 Applied Statistical Analysis

This is the two-semester core course for students in the Master of Professional Studies (M.P.S.) degree program in applied statistics in the Department of Statistical Science. Enrollment is limited to students enrolled in the M.P.S. program. The course consists of a series of modules on various topics in applied statistics. Some modules will include guest lectures from practitioners. Parallel with the course, students complete a year-long, in-depth data analysis project.

ST 501: Applied Statistical Analysis. Letter only. Topics include, but are not limited to: statistical computing systems, statistical software packages, data management, statistical graphics, and simulation methods and algorithms.

ST 502: Applied Statistical Analysis. Letter only. Topics include, but are not limited to: sample surveys and questionnaire design, data sources, experimental design, and data mining.

Biometrics Unit

STBTRY 100 Statistics and the World We Live In (enroll in BTRY 100)

STBTRY 261 Statistical Methods I (enroll in BTRY 261)

STBTRY 302 Statistical Methods II (enroll in BTRY 302)
STBTRY 400 Biometry Seminar (enroll in BTRY 400)
STBTRY 408 Theory of Probability (enroll in BTRY 408)
STBTRY 409 Theory of Statistics (enroll in BTRY 409)
STBTRY 494 Undergraduate Special Topics in Biometry and Statistics (enroll in BTRY 494)
STBTRY 495 Statistical Consulting (enroll in BTRY 495)
STBTRY 497 Undergraduate Individual Study in Biometry and Statistics (enroll in BTRY 497)
STBTRY 498 Undergraduate Supervised Teaching (enroll in BTRY 498)
STBTRY 499 Undergraduate Research (enroll in BTRY 499)
STBTRY 600 Statistics Seminar (enroll in BTRY 600)
STBTRY 601 Statistical Methods I (enroll in BTRY 601)
STBTRY 602 Statistical Methods II (enroll in BTRY 602)
STBTRY 603 Statistical Methods III (enroll in BTRY 603)
[STBTRY 604 Statistical Methods IV: Applied Design (enroll in BTRY 604)]
[STBTRY 639 Epidemiology Seminar (enroll in BTRY 639)]
[STBTRY 662 Mathematical Ecology (enroll in BTRY 662)]
STBTRY 672 Topics in Environmental Statistics (BTRY 672)
[STBTRY 682 Statistical Methods for Molecular Biology (enroll in BTRY 682)]
STBTRY 694 Graduate Special Topics in Biometry and Statistics (enroll in BTRY 694)
STBTRY 697 Individual Graduate Study in Biometry and Statistics (enroll in BTRY 697)
[STBTRY 717 Linear and Generalized Linear Models (enroll in BTRY 717)]
STBTRY 795 Statistical Consulting (enroll in BTRY 795)
STBTRY 798 Graduate Supervised Teaching (enroll in BTRY 798)

Engineering Statistics Unit

STENGR 270 Basic Engineering Probability and Statistics (enroll in ENGRD 270 or OR&IE 270)
STENGR 310 Introduction to Probability and Random Signals (enroll in ELE E 310)
STENGR 360 Engineering Probability and Statistics II (enroll in OR&IE 360)
STENGR 361 Introductory Engineering Stochastic Processes I (enroll in OR&IE 361)
STENGR 411 Random Signals in Communications and Signal Processing (enroll in ELE E 411)
STENGR 467 Telecommunication Systems I (enroll in ELE E 467)
STENGR 473 Empirical Research Methods in Financial Engineering (enroll in OR&IE 473)
STENGR 474 Statistical Data Mining (enroll in OR&IE 474)
STENGR 476 Applied Linear Statistical Models (enroll in OR&IE 476)
STENGR 512 Fundamental Information Theory (enroll in ELE E 562)
STENGR 517 Artificial Neural Networks (enroll in ELE E 577)
STENGR 523 Introductory Engineering Stochastic Processes I (enroll in OR&IE 523)
STENGR 560 Engineering Probability and Statistics II (enroll in OR&IE 560)
STENGR 561 Queuing Theory and Its Applications (enroll in OR&IE 561)
STENGR 577 Quality Control (enroll in OR&IE 577)
STENGR 581 Simulation Modeling (enroll in OR&IE 581)
STENGR 582 Simulation Analysis (enroll in OR&IE 582)
STENGR 650 Applied Stochastic Processes (enroll in OR&IE 650)
STENGR 651 Probability (enroll in OR&IE 651)
STENGR 670 Statistical Principles (enroll in OR&IE 670)
STENGR 671 Intermediate Applied Statistics (enroll in OR&IE 671)
STENGR 768 Selected Topics in Applied Probability (enroll in OR&IE 768)
STENGR 769 Selected Topics in Applied Probability (enroll in OR&IE 769)

Mathematical Statistics and Probability Unit

STMATH 171 Statistical Theory and Application in the Real World (enroll in MATH 171)
STMATH 411 Introduction to Analysis (enroll in MATH 411)
STMATH 471 Basic Probability (enroll in MATH 471)
STMATH 472 Statistics (enroll in MATH 472)
STMATH 474 Basic Stochastic Processes (enroll in MATH 474)
STMATH 621 Measure Theory and Lebesgue Integration (enroll in MATH 621)
STMATH 671-672 Probability Theory (enroll in MATH 671-672)
STMATH 674 Introduction to Mathematical Statistics (enroll in MATH 674)
STMATH 771-772 Seminar in Probability and Statistics (enroll in MATH 771–772)
STMATH 777-778 Stochastic Processes (enroll in MATH 777–778)

Social Statistics Unit

STSOC 210 Statistical Reasoning I (enroll in ILRST 210)
STSOC 211 Statistical Reasoning II (enroll in ILRST 211)
STSOC 310 Statistical Sampling (enroll in ILRST 310)
STSOC 311 Practical Matrix Algebra (enroll in ILRST 311)
STSOC 312 Applied Regression Methods (enroll in ILRST 312)
[STSOC 313 Design and Analysis of Experiments (enroll in ILR 313)]
[STSOC 314 Graphical Methods for Data Analysis (enroll in ILRST 314)]
STSOC 315 Statistical Analysis of Legal Data (enroll in ILRST 315)
STSOC 410 Techniques of Multivariate Analysis (enroll in ILRST 410)
[STSOC 411 Statistical Analysis of Qualitative Data (enroll in ILRST 411)]
STSOC 499 Directed Studies (undergraduate) (enroll in ILRST 499)
STSOC 510 Statistical Methods for the Social Sciences I (enroll in ILRST 510)
STSOC 511 Statistical Methods for the Social Sciences II (enroll in ILRST 511)
STSOC 610 Seminar in Modern Data Analysis (enroll in ILRST 610)
[STSOC 611 Statistical Consulting (enroll in ILRST 611)]
STSOC 612 Statistical Classification Methods (enroll in ILRST 612)
[STSOC 613 Bayesian and Conditional Inference (enroll in ILRST 613)]
[STSOC 614 Structural Equations with Latent Variables (enroll in ILRST 614)]
[STSOC 615 Expert Systems and Probabilistic Network Models (enroll in ILRST 615)]
STSOC 630 Econometrics II (enroll in ECON 620)
STSOC 639 Econometrics I (enroll in ECON 619)
[STSOC 711 Robust Regression Diagnostics (enroll in ILRST 711)]
STSOC 712 Theory of Sampling (enroll in ILRST 712)
[STSOC 713 Counting Processes with Statistical Applications (enroll in ILRST 713)]
[STSOC 714 Topics in Modern Statistical Distribution Theory (enroll in ILRST 714)]
[STSOC 715 Likelihood Inference (enroll in ILRST 715)]
[STSOC 716 Statistical Consulting (enroll in ILRST 716)]
STSOC 717 The Analysis of Discrete Data (enroll in ILRST 717)
STSOC 730 Advanced Topics in Econometrics II (enroll in ECON 720)
[STSOC 731 Time Series Econometrics (enroll in ECON 721)]
STSOC 739 Advanced Topics in Economics I (enroll in ECON 719)
STSOC 799 Directed Studies (Graduate) (enroll in ILRST 799)

Related Courses in Other Departments

ARME 410 Business Statistics
ARME 411 Introduction to Econometrics
ARME 417 Decision Models for Small and Large Business
ARME 710 Econometrics I
ARME 713 Quantitative Methods I
BTRY 90 Introduction to Biomathematics
BTRY 101 Introduction to Biometry I
BTRY 102 Introduction to Biometry II
BTRY 421 Matrix Computations
BTRY 498 Undergraduate Supervised Teaching
CEE 594 Engineering Management Methods II: Managing Uncertain Systems
CEE 621 Water-Resources Systems II: Stochastic Hydrology
CHEM 794 Quantum Mechanics
CHEM 796 Statistical Mechanics
COM S 522 Computational Tools and Methods for Finance
COM S 624 Numerical Solution of Differential Equations
COM S 626 Computational Molecular Biology
CRP 321 Introduction to Quantitative Methods for the Analysis of Public Policy
CRP 632 Methods of Regional Sciences and Planning I
ECON 321 Applied Econometrics
GOVT 602 Field Seminar in Political Methodology
GOVT 605 Comparative Methods
H ADM 371 Hospitality Quantitative Analysis
HD 401 Empirical Research
NS 637 Epidemiology of Nutrition
NS 639 Epidemiology Seminar
NS 641 Applied Regression
PAM 205 Research Methods
PAM 230 Introduction to Policy Analysis
PAM 423 Risk Management and Policy
PAM 613 Program Evaluation and Research Design
PAM 617 Qualitative Methods for Program Evaluation
PHYS 316 Modern Physics I

PHYS 562 Statistical Physics
PHYS 574 Quantum Mechanics II
PSYCH 472 Multiple Regression
PSYCH 473 General Linear Model
R SOC 619 Research Design II
SOC 502 Basic Problems in Sociology II
SOC 506 Research Methods in Sociology II
T&AM 310 Advanced Engineering Analysis I
T&AM 311 Advanced Engineering Analysis II
VETPMD 665 Study Design

PROGRAM IN COMPARATIVE AND ENVIRONMENTAL TOXICOLOGY

213 Rice Hall (255–8008)

The Cornell Program in Comparative and Environmental Toxicology is a broadly based inter-college program 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 graduate Field of Environmental Toxicology provides training leading to the M.S. or Ph.D. degrees. There is both breadth and depth in many facets of 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. Concentrations include cellular and molecular toxicology; nutritional and food toxicology; ecotoxicology and environmental chemistry; and a minor concentration of risk assessment, management, and public policy. Research by the faculty associated with the program focuses on the interactions of drugs, pesticides, and other potentially hazardous environmental agents with a wide variety of living organisms (including humans) as well as the ecosystems with which these organisms are associated.

Courses

Courses in environmental toxicology are cosponsored by the university's academic departments and are open to all graduate students and to undergraduates who have permission of the instructor. The titles and numbers of these courses are listed below. Details of course content are provided 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 director of graduate studies, 213 Rice Hall, telephone: 255–8008, e-mail: envtox@cornell.edu.; www.cfe.cornell.edu/icet/.

Tox 320 Principles of Toxicology (Vet. Micro 320, Biological Sciences 320)
Tox 370 Pesticides and the Environment (Entomology 370)
Tox 437 Oncogenic Cancer Viruses (Biological Sciences 437)
Tox 490 Insect Toxicology and Insecticidal Chemistry (Entomology 690)
Tox 607 Ecotoxicology (Natural Resources 607)
Tox 610 Introductory Chemical and Environmental Toxicology (Natural Resources 610)
Tox 611 Molecular Toxicology
Tox 625 Nutritional Toxicology (Animal Science 625)
Tox 680 Hazardous Waste Toxicology
Tox 698 Current Topics in Environmental Toxicology (Nutritional Sciences 700, NatRes 698, Ag & Bio Eng 698)
Tox 702 Seminar in Toxicology
Tox 750 Cancer Cell Biology (Biological Sciences 750, Vet. Pathology 750)
Tox 751 Professional Responsibilities of Toxicologists (Biological Sciences 751)
Tox 899 Master's Thesis and Research
Tox 999 Doctoral Thesis and Research

CORNELL'S UNDERGRADUATE ENVIRONMENTAL PROGRAMS

Exciting opportunities are available at Cornell University for students interested in environmental study and research. Environmental curricula and courses are found in many parts of the university including the biological, physical, and social sciences; engineering; the humanities; and the design professions. Each of the majors and concentrations/specializations listed below provide opportunities for environmental study. Information can be found in each department's *Courses of Study* section, on departmental web pages, or by contacting each department directly. The following information is also available on the Center for the Environment's web page (www.cfe.cornell.edu/cfe/education).

College of Agriculture and Life Sciences

- **Agricultural and Biological Engineering** offers environmental study opportunities through a combination of engineering sciences, biology, and applications courses. In the ABEN major, there are several concentrations including, among others, environmental systems engineering and environmental systems technology.
- Students in the **Department of Agriculture, Resource, and Managerial Economics** can select a specialization in environmental and resource economics, which teaches the application of economic concepts to environmental and resource use problems.
- **Atmospheric sciences** is a major offered through the Department of Earth and Atmospheric Sciences. In this program, students study weather and climate, forecasting, and analysis of atmospheric behavior.
- **Biometry and Statistics** majors learn to use quantitative methods to solve problems in the biological, physical, and social sciences.
- **Communication** offers a curriculum for communication in the life sciences that deals with the effect of communication on environmental, health, science, and agricultural issues and with public perceptions of risk.
- **Crop and Soil Sciences** provides instruction in four specializations: agronomy, crop science, science of earth systems (see multi-college opportunities below), and soil science. The department also has strong programs in the environmental information sciences including geographic information systems and remote sensing.
- **Entomology** provides students with a basic background in biological and environmental sciences, with a special emphasis on the study of insects.
- **Environmental Science** is a new major being approved for the College of Agriculture and Life Sciences. For more information about this new major, contact the Center for the Environment (cucfe@cornell.edu or 607–255–7535).
- **Landscape Architecture** focuses on the art of landscape design as an expression of cultural values combined with the natural processes of the ambient environment. The program promotes interaction among the areas of horticulture, architecture, and city and regional planning.
- **Natural Resources** has four concentrations that focus on systems that yield renewable natural resources such as wildlife, forests, fish, and water.
- **Plant Sciences** students can specialize in plant biology, plant genetics and breeding, plant pathology, plant protection, or horticultural sciences including floriculture and ornamental horticulture, and fruit and vegetable science.
- **Rural Sociology** is a major that includes interrelated foci: (1) development sociology; (2) population, environment, and society; and (3) applied social data analysis.
- **General Studies** provides opportunities for motivated students—with their faculty adviser—to plan a sequence of courses suited to their individual interests, abilities, and objectives in an area not encompassed by existing programs.

Office of Undergraduate Study in Biological Sciences

- **Biology** majors are enrolled in either the College of Agriculture and Life Sciences or the College of Arts and Sciences. Students can concentrate in a number of areas including biochemistry, ecology and evolutionary biology, marine biology and oceanography, general biology, microbiology, plant biology, plant biotechnology, and systematics and biotic diversity. Students can also enroll in the interdisciplinary biology and society major (see "Multi-College Majors" below).

College of Architecture, Art, and Planning

- **Urban and Regional Studies** is offered by the Department of City and Regional Planning and is focused on the problems of human communities and regions.

College of Arts and Sciences

- **Chemistry and Chemical Biology** offers a full range of courses in physical, organic, inorganic, analytical, theoretical, bioorganic, and biophysical chemistry.
- **Geological Sciences** is an interdisciplinary major that prepares students for advanced study in geology, geophysics, geochemistry, geobiology, and for careers in mineral and petroleum exploration or environmental geology.
- **Science and Technology Studies** is a major that focuses on the important roles of science and technology in society.

Students select a concentration that draws together a group of related courses. Current concentrations include science, technology, and public policy; technology, culture, and society; environment, science, and society; and history and philosophy of science. Science and Technology Studies also offers the biology and society major (see "Multi-College Majors" below).

College of Engineering

- **Civil and Environmental Engineering** offers an accredited undergraduate program in civil engineering and permits students to pursue one of two options leading to a Bachelor of Science degree, one of which is environmental engineering. This option emphasizes study of environmental engineering, water resource systems, and fluid mechanics and hydrology.

College of Human Ecology

- **Design and Environmental Analysis** is concerned with planning, designing, and managing interior environments to satisfy human needs. The department offers concentrations in interior design, facility planning and management, and human factors and ergonomics.

Multi-College Majors

- **Science of Earth Systems** is designed to educate students across the breadth of the earth sciences without sacrificing the depth of understanding that is needed to face the environmental challenges of the twenty-first century. Students can focus on environmental science, climate dynamics, oceanography, hydrological science, geophysics, and environmental biophysics. The Science of Earth Systems major is open to students in the Colleges of Agriculture and Life Sciences, Engineering, and Arts and Sciences.
- **Biology and Society** is offered as a major by both the College of Arts and Sciences and the College of Human Ecology. Additionally, students in the College of Agriculture and Life Sciences can develop an approved sequence of courses under the college's general studies option. Students in the biology and society major combine training in biology with exposure to perspectives from the social sciences and humanities on the social, political, and ethical aspects of modern biology.

Extramural Opportunities

At Cornell environmental experiences are not limited to classroom work or studies in a major field. There are many other ways to learn about the environment including formal experiences like the Undergraduate Research Programs or environmental courses such as the annual Seminar on Sustainable Development. Another course, Environmental Stewardship in the Cornell Community, was organized by undergraduate students to address new strategies for improving the university's overall environmental performance.

Students can also study abroad in over 40 countries or gain valuable public policy experience by spending a semester in the Cornell-in-Washington program. To enhance their learning experience, students can connect with a variety of campus resources including Cornell Plantations, Laboratory of Ornithology, Agricultural Experiment Station, Center for the Environment, Ecology House, or the Center for Religion, Ethics, and Social Policy.

Opportunities to associate with like-minded student colleagues can be found in many student-run organizations with environmental themes including the Cornell Greens, Cornell Students for Composting, Dillmun Hill Organic Farm, United Progressives, Entomaniax, Cornell Hookbill Association, Wildlife Society, and the International Association of Camel Breeders. Students also publish *Ursus*, a magazine forum for environmental issues at Cornell.

Environmental lectures, seminars, and conferences are a Cornell specialty. At Cornell a student might hear a lecture by one of the university's notable A. D. White Professors-at-Large, which include among others Jane Goodall, international expert on African primates, and William McDonough, a *Time Magazine* "Hero for the Planet." Also, in April each year, the Jill and Ken Iscol Distinguished Environmental Lecture features a prominent scientist or policymaker.

The surrounding Ithaca community offers Cornellians a range of environmental activities—from outdoor recreation to an organic farmers market to local activism—which most college towns cannot match. Local organizations like EcoVillage at Ithaca, Finger Lakes Land Trust, Cayuga Lake Watershed Network, and the various Finger Lakes State Parks are terrific local resources for the environmentally inclined. The area's unique natural beauty is a haven for outdoor enthusiasts and casual observers of nature.

For more information on Cornell's environmental programs contact

Center for the Environment
Attn: Education Coordinator
200 Rice Hall
Ithaca, NY 14853
Tel: 607–255–7535
Fax: 607–255–0238
E-mail: cucfe@cornell.edu
www.cfe.cornell.edu.

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, policy analysis and management (College of Human Ecology), industrial and labor relations, and sociology.

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. Graduates of this program typically choose careers in investment banking or finance or with firms offering opportunities in sales, marketing, and consulting. Areas of specialization include business management and marketing, food industry management, agribusiness management, and farm business management and finance.

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.

Policy analysis and management. 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 employed.

Sociology. The program provides disciplined understanding of society and social issues. The insights and analytical skills you will acquire are applicable to corporate, government, and
nonprofit settings, and the department's focus on social organization and institutions will prepare you well for graduate or professional programs in business schools. (Also see the description of the Society and Economy Concentration in the Department of Sociology section of Arts and Sciences.)

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

ARME 221 Financial Accounting
ARME 323 Managerial Accounting
H Adm 120 Survey of 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

ARME 412 Introduction to Mathematical Programming
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

ARME 230 International Trade and Finance (also ECON 230)
ARME 415 Price Analysis (also ECON 415)
ARME 431 Food and Agricultural Policies
ARME 450 Resource Economics (also ECON 450)
ARME 451 Environmental Economics and Policy (also ECON 409)
ARME 464 Economics of Agricultural Development (also ECON 464)
CEE 321 Microeconomic Analysis
PAM 200 Intermediate Microeconomics
PAM 370 Wealth and Income (cross-listed with CEH 233)
PAM 450 Economics of Health Behavior
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

ARME 325 Personal Enterprise and Small Business Management
ARME 425 Small Business Management Workshop
PAM 424 Families in Business
JGSM NBA 300 Entrepreneurship and Enterprise

Finance

ARME 324 Financial Management
ARME 404 Advanced Agricultural Finance Seminar
ARME 405 Farm Finance
PAM 204 Applied Public Finance
PAM 326 Personal Financial Management (cross-listed with CEH 315)
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 226 Financial Management
H Adm 322 Investment Management
H Adm 326 Corporate Finance
OR&IE 451 Economic Analysis of Engineering Systems

International Business

ARME 100 Economics for Business in a Global Economy
ARME 430 International Trade Policy
ARME 449 Global Marketing Strategy
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

ARME 250 Environmental Economics
ARME 320 Business Law I
ARME 321 Business Law II
ARME 422 Estate Planning
Comm 428 Communication Law
Comm 429 Legal Issues in Business and Electronic Communication
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
PAM 341 Consumer Law & Protection

Management

ARME 220 Introduction to Business Management
ARME 302 Farm Business Management
ARME 328 Innovation and Dynamic Management (also H ADM 418)
[ARME 402 Seminar in Farm Business Planning and Managerial Problem Solving]
ARME 426 Cooperative Management and Strategies
ARME 427 Advanced Agribusiness 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

ARME 240 Marketing
ARME 340 Futures and Options Trading
ARME 342 Marketing Management
ARME 344 Consumer Behavior
ARME 346 Dairy Markets and Policy
ARME 347 Strategic Marketing for Horticultural Firms
ARME 448 Food Merchandising
PAM 223 Consumers in the Marketplace I
PAM 323 Consumers in the Marketplace II
H Adm 243 Principles of Marketing

Personnel and Human Resource Management

ARME 326 Human Resource Management in Small Businesses
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 Managment (I&LR 200 Collective Bargaining)

Quantitative Decisions and Decision Science

ARME 210 Introductory Statistics
ARME 410 Business Statistics
ARME 411 Introduction to Econometrics
ARME 416 Demographic Analysis in Business and Government (also RSOC 331)
ARME 417 Decision Models for Small and Large Businesses
CEE 304 Uncertainty Analysis in Engineering
CEE 323 Engineering Economics and Management
Econ 320 Introduction to Econometrics
Econ 520 Econometrics II
PAM 340 Economics of Consumer Policy (is cross-listed with CEH 330)
PAM 374 Urban Economics and Policy
ENG 270 Basic Engineering Probability and Statistics

Real Estate

[ARME 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

Sociology

SOC 110 Introduction to Economy and Society
SOC 215 Organizations: An Introduction
SOC 222 Social Policy and Organization in Health, Education, and Welfare
SOC 245 Inequality in Industrial Societies
SOC 275 Women at Work
SOC 301 Evaluating Statistical Evidence
SOC 303 Design and Measurement
SOC 340 Health, Behavior, and Health Policy
SOC 345 Gender Inequality
SOC 351 Research Seminar on Organizations
SOC 354 Law and Social Order
SOC 366 Transitions from State Socialism
SOC 370 Different Walks of Life: Sociology of Careers
SOC 426 Social Policy

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 and human development lead 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 sometimes 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 mathematics and at least one advanced biological science course, such as biochemistry, 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.

Exceptionally qualified students in the Colleges of Agriculture and Life Sciences, Arts and Sciences, and Human Ecology may apply for acceptance to the Medical College through a double registration procedure arranged between Cornell University and Cornell's Weill Medical College in New York City. This procedure allows registered students to save one year in pursuit of the bachelor's and M.D. degrees. This is not a traditional "seven year program"; separate application to the Medical College is required. Further information about this procedure is available from the Health Careers Program office at Cornell Career Services, 103 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 does not go to

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, *Admissions Information,* obtained by writing to the Office of DVM Admissions, College of Veterinary Medicine, Cornell University, S2–009 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, 103 Barnes Hall, Ithaca, New York 14853–1601.

[1] Adopted by the Faculty Council of Representatives, May 24, 1976, Records, pp. 4525–27C, Appendix A; March 11, 1981, Records pp. 5298–5303C; May 12, 1982, Records, pp. 5505–06C; April 10, 1985, Records pp. 5991–6002C and May 15, 1985, Records, pp. 6073–84.

[2] "Arbitrary and Capricious" describes actions which have no sound basis in law, facto, or reason are grounded solely in bad faith or personal desires. A determination is arbitrary and capricious only if it is one no reasonable mind could reach.

[3] "Clear and convincing" as a standard of proof refers to a quantum of evidence beyond a mere preponderance but below that characterized as "beyond a reasonable doubt" and such that it will produce in the mind of the trier of fact a firm belief as to the facts sought to be established.

[4] See the definition at section II.B.4.c.