

CORNELL

2003 - 2004

COURSES

of Study

Cornell University Calendar

Fall Semester

Residence halls open
New undergraduate student registration
New-student orientation begins
New graduate student registration
Course add/drop begins*
Instruction begins
Physical education classes begin
Fall break: instruction suspended
Instruction resumes
Pre-course enrollment for spring
First-Year Family Weekend
Homecoming
Thanksgiving recess:
instruction suspended, 1:10 p.m.
Instruction resumes
Instruction ends
Study period
Final examinations begin
Final examinations end
Residence halls close

Winter Session Period Begins

Three-week classes begin
Winter session period ends

Spring Semester

Residence halls open
Course add/drop begins*
Instruction begins
Physical education classes begin
Spring break: instruction suspended
Instruction resumes
Pre-course enrollment for fall
Instruction ends
Study period
Final examinations begin
Final examinations end
Residence halls close (students who are graduating
may stay through Commencement Day)
Senior Week
Commencement

Summer Session

Three-week session classes begin
Eight-week session classes begin
Six-week session classes begin

2003-04

Friday, August 22
Friday, August 22
Friday, August 22
Monday, August 25
Wednesday, August 27
Thursday, August 28
TBA
Saturday, October 11
Wednesday, October 15
TBA
Friday-Sunday, October 31-November 2
Saturday, October 25

Wednesday, November 26
Monday, December 1
Saturday, December 6
Sunday-Wednesday, December 7-10
Thursday, December 11
Friday, December 19
Saturday, December 20

Friday, December 26
Monday, January 5
Wednesday, January 21

Monday, January 19
Thursday, January 22
Monday, January 26
TBA
Saturday, March 20
Monday, March 29
TBA
Saturday, May 8
Sunday-Wednesday, May 9-12
Thursday, May 13
Friday, May 21

Saturday, May 22
Sunday-Saturday, May 23-29
Sunday, May 30

Wednesday, June 2
Monday, June 14
Monday, June 28

2004-05

Friday, August 20
Friday, August 20
Friday, August 20
Monday, August 23
Wednesday, August 25
Thursday, August 26
TBA
Saturday, October 9
Wednesday, October 13
TBA
Friday-Sunday, TBA
Saturday, October 16

Wednesday, November 24
Monday, November 29
Saturday, December 4
Sunday-Wednesday, December 5-8
Thursday, December 9
Friday, December 17
Saturday, December 18

Monday, December 27
Monday, January 3
Friday, January 21

Monday, January 17
Thursday, January 20
Monday, January 24
TBA
Saturday, March 19
Monday, March 28
TBA
Saturday, May 7
Sunday-Wednesday, May 8-11
Thursday, May 12
Friday, May 20

Saturday, May 21
Sunday-Saturday, May 22-28
Sunday, May 29

Wednesday, June 1
Monday, June 13
Monday, June 27

*Implementation of online add/drop may affect these dates.

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

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

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

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

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

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CORNELL

Courses of Study

2003-2004

Cornell

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

Courses with names and descriptions enclosed in brackets—[]
—are not offered fall 2003 and spring 2004.

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 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, 445 E. 69th Street, New York, NY 10021, 212-746-1067/212-746-6565.

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 AND COURSE PREFIXES

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.

Course Prefixes and Their Meanings

AAS	Asian American Studies
AEM	Applied Economics and Management
A&EP	Applied and Engineering Physics
AIR S	Aerospace Studies
AIS	American Indian Studies
AM ST	American Studies
AN SC	Animal Sciences
ANTHR	Anthropology
ARCH	Architecture
ARKEO	Archaeology
ART	Art
ART H	History of Art
ASIAN	Asian Studies
AS&RC	Africana Studies and Research Center
BEE	Biological and Environmental Engineering
BENGL	Bengali
BIOAP	Animal Physiology
BIOBM	Biochemistry, Molecular and Cell Biology
BIOEE	Ecology and Evolutionary Biology
BIO G	Biology
BIOGD	Genetics and Development
BIOMI	Microbiology
BIONB	Neurobiology and Behavior
BIOPL	Plant Biology
BIOSM	Shoals Marine Laboratory
BME	Biomedical Engineering
B&SOC	Biology & Society
BTRY	Biometry and Statistics*
BURM	Burmese
CEE	Civil and Environmental Engineering
CHEM	Chemistry
CHEME	Chemical and Biomolecular Engineering
CHIN	Chinese
CHLIT	Literature in Chinese
CIS	Computing & Information Science
CLASS	Classics
COGST	Cognitive Studies
COM L	Comparative Literature
COMM	Communication
COM S	Computer Science
CRP	City and Regional Planning
CSS	Crop and Soil Sciences
CZECH	Czech
DANCE	Dance
DEA	Design and Environmental Analysis
DUTCH	Dutch
EAS	Earth and Atmospheric Sciences

ECE	Electrical and Computer Engineering	NEPAL	Nepali
ECON	Economics	NES	Near Eastern Studies
EDUC	Education	NMI	Graduate School of Management, Research and Advanced Studies
ENGL	English	NRE	Graduate School of Management, Doctoral Seminars
ENGLF	English for Academic Purposes	NS	Nutritional Sciences
ENGRC	Engineering Common Courses	NTRES	Natural Resources
ENGRD	Engineering Distribution Courses	OR&IE	Operations Research and Industrial Engineering
ENTOM	Entomology	PALI	Pali
FGSS	Feminist, Gender, and Sexuality Studies	PAM	Policy Analysis and Management
FILM	Film Studies	PHIL	Philosophy
FOOD	Food Science	PHYS	Physics
FR DR	Freehand Drawing and Scientific Illustration	PL BR	Plant Breeding
FRLIT	Literature in French	PL PA	Plant Pathology
FRROM	French	POLSH	Polish
GERST	German Studies	PORT	Portuguese
H ADM	Hotel Administration	PSYCH	Psychology
HD	Human Development	QUECH	Quecha
HE	Human Ecology	RELST	Religious Studies
HINDI	Hindi	ROM S	Romance Studies
HIST	History	R SOC	Rural Sociology
HORT	Horticulture	RUSSA	Russian
HUNGR	Hungarian	RUSSL	Literature in Russian
ILRCB	Collective Bargaining, Labor Law, and Labor History	SANSK	Sanskrit
ILRHR	Human Resources Studies	SEBCR	Serbo-Croatian
ILRLE	Labor Economics	S HUM	Society for the Humanities
ILROB	Organizational Behavior	SINHA	Sinhala
ILRST	Social Statistics	SNLIT	Literature in Sanskrit
INDO	Indonesian	SOC	Sociology
INTAG	International Agriculture	SPANR	Spanish
ITALA	Italian	SPANL	Literature in Spanish
ITALL	Literature in Italian	S&TS	Science & Technology Studies
JAPAN	Japanese	TAG	Tagalog
JAVA	Javanese	T&AM	Theoretical and Applied Mechanics
JPLIT	Literature in Japanese	THAI	Thai
JWST	Jewish Studies	THETR	Theatre Arts
KHMER	Khmer (Cambodian)	TOX	Toxicology
KOREA	Korean	TXA	Textiles and Apparel
KRLIT	Korean Literature	UKRAN	Ukrainian
LA	Landscape Architecture	URDU	Urdu
LASP	Latin American Studies Program	VETCS	Clinical Sciences
LAW	Law	VETMI	Microbiology and Immunology
LING	Linguistics	VETMM	Molecular Medicine
LSP	Latino Studies Program	VETPMD	Population Medicine and Diagnostic Sciences
M&AE	Mechanical and Aerospace Engineering	VIET	Vietnamese
MATH	Mathematics	VISST	Visual Studies
MIL S	Military Science	VTBMS	Biomedical Sciences
MS&E	Materials Science and Engineering	VTLIT	Literature in Vietnamese
MUSIC	Music	VTMED	Veterinary Medicine
NAV S	Naval Science		
NBA	Business Administration		
NCC	Graduate School of Management Common Course		

*Courses in these departments may also be offered in the Department of Statistical Science and listed as STBTRY, STRENGR, STMATH, or STSOC in the General Information section of the catalog.

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 dpb.cornell.edu/irp/accreditation.htm. 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

Definition and Purpose of Advanced Placement Credit

Advanced placement credit is college credit that students earn before they matriculate as freshmen and that counts toward the degree and degree requirements as specified by the individual college at Cornell. 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 course of study.

Sources of Advanced Placement Credit

Advanced placement credit may be earned from the following:

- 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 pages 7-9.
- Acceptable performance on a Cornell department exam (offered only in some subjects, usually during orientation).
- A regular course taught at an accredited college to college students and approved by the relevant department at Cornell. Some departments accept credit from virtually all accredited colleges; some do not.
- International credentials from "A" level or IB Examinations (see charts below).

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 examination as described in paragraph *a* or *b* above.

The appropriate department of instruction within the university sets the standards of achievement that must be met for advanced placement in its subject, recommends AP credit for those who meet the standards, and determines which Cornell courses the credit places students out of. The final decision for awarding advanced placement credit at Cornell and applying it to degree requirements rests with each individual college (consult the relevant college sections of *Courses of Study*). Students need not accept advanced placement, although forfeiting the advantage of moving quickly into advanced courses affects one's overall education. If they take the Cornell course they have placed out of, they relinquish the advanced placement credit.

Advanced placement examinations.

Entering first-year students should have their scores from CEEB Advanced Placement Examinations sent to their college or school registrar's office (see list below).

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 appears in the orientation booklet mailed in late summer to entering students. The departments that award advanced placement and credit on the basis of departmental examinations are shown on pages 7-11. Students need to register for those examinations in the relevant department.

Transfer of credit. Entering first-year students who have completed college courses for which they want to receive credit toward their Cornell degree should send transcripts and course syllabi to their college or school office (see the list below).

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.

College of Agriculture and Life Sciences
140 Roberts Hall

College of Architecture, Art, and Planning
B1 West Sibley Hall

College of Arts and Sciences
172 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

CREDIT AND PLACEMENT

The tables below summarize how credit and placement are determined for most subjects. Supplementary information for some subjects follows immediately.

CEEB's AP Exams

<i>Subject</i>	<i>Score</i>	<i>Advanced Placement Credit</i>	<i>Placement</i>
Arabic			Department of Near Eastern Studies determines credit and placement based on departmental examination.
Biology			see www.bio.Cornell.edu/advising/ap.cfm for credit and placement information.
Chemistry	5	4 credits	Department determines placement on basis of student/adviser meeting prior to registration and/or an exam given during fall orientation. No advanced placement credit for students who take 206, 207, or 211; students who take 215 will also receive 4 AP credits.
Computer science AB	4,5	4 credits	Placement out of COM S. 100. Department also offers placement exam during fall orientation.
Computer science A	5	4 credits	Placement out of COM S 100. Department also offers placement exam during fall orientation.
Economics, micro	4,5	3 credits	Placement out of ECON 101.
Economics, macro	4,5	3 credits	Placement out of ECON 102.
English literature and composition			varies by college
English language and composition			varies by college
Environmental science	4,5	3 credits	Placement out of EAS 101 or 111 and NTRES 201.
French language	4,5	3 credits	Department of Romance Studies determines placement. Students should take the CASE† because they will obtain appropriate placement.
French literature	4,5	3 credits	Department of Romance Studies determines placement. Students should take the CASE† because they will obtain appropriate placement.
German	4,5	3 credits	Department of German Studies determines placement. Students should take the CASE† because they will obtain appropriate placement.
Government and politics, U.S.	4,5	3 credits	Placement out of GOVT 111.
Government and politics, comparative	4,5	3 credits	Placement out of GOVT 131.
Greek, Ancient and Modern			Department of Classics determines credit and placement based on departmental examination.
Hebrew			Department of Near Eastern Studies determines credit and placement based on departmental examination.
American history	4,5	4 credits	Placement out of HIST 101 and 102.

CEEB's AP Exams (continued)

<i>Subject</i>	<i>Score</i>	<i>Advanced Placement Credit</i>	<i>Placement</i>
European history	4,5	4 credits	Placement out of HIST 152.
Italian language	4,5	3 credits	Department of Romance Studies determines placement. Students should take the CASE† because they will obtain appropriate placement.
Italian literature	4,5	3 credits	Department of Romance Studies determines placement. Students should take the CASE† because they will obtain appropriate placement.
Latin	Department of Classics determines credit and placement based on departmental examination.		
Mathematics BC <i>(excluding engineering or BEE students; see following page for further information)</i>	4,5	8 credits	Placement out of MATH 106, 111-112 and 121-122, and permission to take MATH 221, 223, or 213. Students wishing to take engineering calculus may place out of MATH 190 and 191 (4 credits) and into MATH 192. Placement out of MATH 192 and into MATH 293 is available to students who can demonstrate a mastery of introductory multivariable calculus.
	3	4 credits	Placement out of all 1st-semester calculus courses (MATH 106, 111, 121, 190, 191). Permission to take any 2nd-semester calculus course (MATH 112, 122, or 192).
Mathematics AB or AB subscore of BC exam <i>(excluding engineering or BEE students; see following page for further information)</i>	3,4,5	4 credits	Placement out of all 1st-semester calculus courses (MATH 106, 111, 121, 190, 191). Permission to take any 2nd-semester calculus course (MATH 112, 122, or 192).
Music	Department of Music determines credit and placement based on departmental examination.		
Physics B	5	8 credits	Placement out of PHYS 101-102. Students who also have a score of 4 or 5 on Mathematics BC may choose to accept 4 AP credits for 207 or 112 and then take 208 or 213.
	4	8 credits	Placement out of PHYS 101-102.
	3	4 credits	Placement out of PHYS 101.
Physics C-Mechanics	4,5	4 credits	Placement out of PHYS 112 or 207, or placement into PHYS 116 with no AP credit. For more information, contact department representative.
Physics C-Electricity/Magnetism	5	4 credits	Placement out of PHYS 213.
Psychology	4,5	3 credits	Placement out of PSYCH 101.
Spanish language	4,5	3 credits	Department of Romance Studies determines placement. Students should take the CASE† because they will obtain appropriate placement.
Spanish literature	4,5	3 credits	Department of Romance Studies determines placement. Students should take the CASE† because they will obtain appropriate placement.
Statistics (excluding engineering students)	4,5	3 credits	Placement out of BTRY 100, ILRST 210, PAM 210, or MATH 171.

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

International Credentials

The policies currently in effect for General Certificate of Education (GCE) "A" Level Examinations and International Baccalaureate Higher Level Examinations are summarized in the table below. 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.

The table lists subjects and the marks for which credit will be awarded.

SUPPLEMENTARY INFORMATION

Chemistry and Chemical Biology

The Department of Chemistry and Chemical Biology offers two eight-credit sequences that

satisfy prerequisites for further work in the department: Chemistry 207–208 and Chemistry 215–216. Chemistry 215–216 is the sequence intended for students with a solid background in chemistry and strong math skills.

Freshmen may qualify for advanced placement and advanced standing credits in chemistry by satisfactory performance on the CEEB Advanced Placement Examination or an international examination, 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 the Chemistry and Chemical Biology Instructional Office, 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

the director of undergraduate studies, in 760A S.T. Olin Laboratory. Students receiving advanced placement who are interested in a major in chemistry or a related science should consider taking CHEM 215–216 and should consult the CHEM 215 instructor or department staff.

Computer Science

Students who receive a score of 4 or 5 on the AB version of the CEEB Advanced Placement Examination in computer science, a score of 5 on the A exam, or a score of 6 or 7 on the IB exam will receive four advanced placement credits and may take COM S 211. These credits may be used to satisfy the requirement in computer programming for students in the College of Engineering.

Freshmen may also earn four credits by suitable performance on a departmental examination to be given during Orientation Week. To take the departmental examination, students must sign up beforehand in the Undergraduate Office, 303 Upson Hall.

Subject	Marks	Credit
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.		
Anthropology		subject to departmental review
Biology	7	8 credits (Intro BIO)
	6	6 credits (BIO 109–110)
Chemical & Physical Systems	6 or 7	8 credits (PHYS 101 and 102)
Chemistry	6 or 7	4 credits (CHEM 207)
Computer Science	6 or 7	4 credits (COM S 100)
Economics	6 or 7	6 credits (ECON 101 and 102)
English Literature	7	3 credits and placement out of one first-year writing seminar
	6	3 credits (excluding Arts and Sciences students)
Mathematics	6 or 7	4 credits and placement out of MATH 106, 111, and 191. Students may obtain more credit by taking the Mathematics Department placement exam
Music		by departmental examination
Philosophy	7	3 credits
Physical Science	6 or 7	8 credits (4 credits, CHEM 206; 4 credits, PHYS 101)
Physics	6 or 7	4 credits (PHYS 101, 112, or 207)
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.		
Biology	A or B	8 credits (Intro BIO)
Chemistry	A	8 credits (CHEM 207 and 208)
	B	4 credits (CHEM 207)
Economics	A	6 credits (ECON 101 and 102)
English	A	3 credits and placement out of one first-year writing seminar
Literature	B	3 credits (excluding Arts and Sciences students)
Mathematics	A, B, or C	4 credits and placement out of MATH 106, 111, and 191. Students may obtain more credit by taking the Mathematics Department placement exam.
Music		by departmental examination
Philosophy	A or B	3 credits
Physics	A or B	4 credits for PHYS 101, 112, or 207.
		4 additional credits for PHYS 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 PHYS 116. If students take 116; they do not receive 4 credits for 112. If students take 217, they do not receive credit for 213.

English

Separate from AP credit for a high score on the CEEB AP test, 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 either CEEB Advanced Placement Examination in English are eligible to enroll, space permitting, in the following English first-year writing seminars: 270, 271, 272.

Mathematics and Statistics

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

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

Students who have been awarded advanced placement credit for calculus or statistics may not also receive academic credit for similar courses taken at Cornell. In particular, students who have been awarded AP credit for one semester of calculus (four academic credits) may not also receive academic credit for any first-semester calculus course (MATH 106, 111, 121, 190, 191). Students who have been awarded AP credit for two semesters of calculus (eight academic credits) may not also receive academic credit for any first-semester calculus course (MATH 106, 111, 121, 190, 191) nor for any second-semester calculus course (MATH 112, 122, 192). Arts and Sciences students receive a maximum of eight credits for AP Math AB and BC combined. Finally, students who have been awarded AP credit for statistics (three academic credits) may not also receive academic credit for any of the introductory statistics courses, BTRY 100, ILRST 210, or MATH 171.

The following rules apply to students in all colleges and programs except the College of Engineering and the Biological and Environmental Engineering (BEE) program in the College of Agriculture and Life Sciences. Rules applicable to students in these engineering programs are provided near the end of this section.

Students with a score of 4 or 5 on the BC examination may take any of the following third-semester courses (MATH 221, 223, or 213). Students with these scores who wish to take courses in the engineering calculus sequence and who have had no multivariable calculus may give up their AP credit for the second semester and take the second-semester engineering calculus course, MATH 192. On the other hand, students with scores of 4 or 5 on the BC examination who can also demonstrate sufficient mastery of introductory multivariable calculus (which is covered in MATH 192 but not on the BC examination) on the College of Engineering placement exam may take either of the second-year engineering calculus courses, MATH 293 or 294. Students with a 3 on the BC examination, or a 3, 4, or 5 on the AB examination, may take any of the second-semester calculus courses (MATH 112, 122, or

192); however, students in the latter category who take MATH 192 may have to make up some material on techniques and applications of integration. For purposes of advanced placement and credit, AB subscores on the BC examination are regarded as equivalent to the same scores on the AB examination. Students who receive the borderline passing score of 3 on the AB examination or an AB subscore of 3 on the BC examination and who wish to continue with calculus are strongly advised to take MATH 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 score of 1 or 2 on the AB examination, nor for a score of 1 or 2 on the BC examination, unless the AB subscore on that examination is at least 3.

A placement examination in mathematics for non-engineering students is offered at Cornell only during Orientation Week and should be taken by

- 1) students who have had at least a semester of calculus but did not take a CEEB Advanced Placement Examination; or
- 2) students who believe that their placement is incorrect.

The exam covers the material of the AP calculus program. Students are strongly urged to take this departmental placement exam even if they feel that their grasp of the material is uncertain. The placement information is useful in any case, and the grade on this test does not become a part of the student's record. No advance registration for the departmental examination is necessary.

The College of Engineering and the Biological and Environmental Engineering (BEE) program in the College of Agriculture and Life Sciences will give credit for MATH 191 (four credits), and permission to take MATH 192, for a score of 3, 4, or 5 on the BC examination, or the score of 5 on the AB examination, or for a satisfactory score on the Engineering Mathematics Placement Examination. Credit for MATH 191 and 192 (eight credits), and permission to take MATH 293 or 294, will be given to students in the Engineering College or BEE program who achieve a suitably high score on the Engineering Mathematics Placement Examination.

Modern Foreign 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 earned 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 the Cornell Advanced Standing Examination (CASE).
- 2) Students who achieve a minimum score of 65 on the Cornell language placement test

given during Orientation Week are eligible to take the Cornell Advanced Standing Examination (CASE). Outstanding performance on this examination can result in a maximum of three credits.

- 3) For formal language work at an accredited college, credit is considered by the relevant department on submission of a syllabus and transcript. Sometimes an exam score or the CASE is also required.
- 4) Native speakers of languages other than English may, if an examination by the appropriate department is available, be granted a maximum of three credits for proficiency equivalent to that required in English for a first-year writing seminar.

Information about times and places of placement tests is available in the orientation booklet and from Academic and Career Counseling Services on the web at sao.cornell.edu/orientation/placement.htm. 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; Miriam Zupal, 183 Goldwin Smith Hall, for German; Doreen Silva, 226 Morrill Hall, for Russian; Kim Robinson, 388 Rockefeller Hall, for Asian languages, Nava Scharf, 409 White Hall, for Hebrew; Munther Younes, 409 White Hall, for Arabic.

Music

Advanced placement and credit are awarded only in music theory, and only on the basis of an examination administered by the Department of Music; that is, credit cannot be earned on the basis of the AP, IB, or other examinations from outside Cornell, nor on the basis of course work done elsewhere. Outstanding performance on the departmental examination will earn students three credits and placement directly into MUSIC 152 (Tonal Theory II). In rare instances students may place into MUSIC 251, in which case they will earn six credits. The placement examination is normally administered on the Sunday during fall Orientation Week. For more information about the examination, see the departmental web site.

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 PHYS 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 PHYS 112 or 207 instead of eight credits in PHYS 101 and 102. Those earning a score of 3 will receive four credits in PHYS 101.

Physics C—Mechanics: Students earning a score of 4 or 5 may receive four credits for PHYS 112 or 207, or placement into PHYS 116, a more analytic first-semester course, with no AP credit.

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

Students may not accept credit for an advanced placement course if they receive credit for a Cornell course with similar content. Students may receive credit for only one of the courses in each group:

PHYS 101, 112, 116, 207

PHYS 102, 208, 213, 217

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.

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, University Health Services, or the Bursar.

Individuals must become registered students by the end of the third week of the semester or they will be subject to a financial penalty.

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. Courses may be added, dropped, or changed online through Just the Facts. Permission only courses and courses with specific add/drop procedures will be handled using a manual add/drop form. The 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	\$100*	\$100*

*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. Sponsorship 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 2003-2004

Endowed Divisions

Undergraduate

Architecture, Art, and Planning Arts and Sciences Engineering Hotel Administration	\$28,630
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Graduate

Graduate School (with chairman in an endowed college)	28,630
Johnson Graduate School of Management	32,800

Professional

Law School	
Entering students	32,970
2nd year students	32,820
3rd year students	32,200

Contract Divisions (tuition rates are tentative)

Undergraduate

Agriculture and Life Sciences Human Ecology Industrial and Labor Relations	
New York resident*	\$14,500
Nonresident (new students)*	25,800
Nonresident* (continuing students)	24,680

Graduate and Professional Students

Graduate School (with chair in a contract college)	16,600
Veterinary Medicine	
New York State resident DVM	19,100
Nonresident DVM	27,000
Graduate	16,600

Student Activities Fee

Undergraduate students	\$124
Graduate and Professional students	\$50

Summer Session (2003)

\$720
per credit**

In Absentia Fees

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

Excess-Hours Tuition

unavailable

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 University Bursar following matriculation.

New contract college undergraduate nonresident students are defined as

- new entering students (i.e., freshmen).
- new transfers from external colleges (including transfers from two-year institutions with which Cornell has transfer agreements).
- new transfers from an endowed Cornell college to a contract college.

- students who have deferred entry of more than one semester.
- returning students who had withdrawn from the university.
- graduates who are returning for additional degrees.
- students with a leave of absence for more than one year.

****Regular session rate.** Special program rates may vary.

Fees and Expenses

Undergraduate applicants to Cornell pay a nonrefundable \$65 application fee when submitting an application for admission. The Graduate and Law School application fee is \$65. Application to the Johnson Graduate School of Management costs \$200.

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. All students refer to the "Proration Schedule for Withdrawals and Leaves of Absence" below.

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.

Proration Schedule for Withdrawals and Leaves of Absence

Fall 2003 and Spring 2004

Percentage	All Students	
	Fall 2003	Spring 2004
no charge	8/26-8/31	1/22-1/27
10% charge	9/1-9/7	1/28-2/3
20% charge	9/8-9/21	2/4-2/17
30% charge	9/22-9/28	2/18-2/24
40% charge	9/29-10/5	2/25-3/2
50% charge	10/6-10/12	3/3-3/9
60% charge	10/13-10/19	3/10-3/16
80% charge	10/20-10/26	3/17-3/23
100% charge	10/27	3/24

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, web site: www.univco.cornell.edu/bursar.

Student Health Insurance

Because of the high cost of medical care, it is Cornell University policy that every full-time registered student must have health insurance coverage.

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 population-specific material for undergraduates, graduate students, and professional students is mailed to each student in July. Undergraduates, graduate students, and professional students each have separate deadlines and guidelines. Please be sure to check the July mailing for complete details.

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 30). Graduate and professional students who prefer to pay monthly must enroll in the installment payment plan no later than September 30. 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.comell.edu/student_insurance

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 A.M.	08:50 A.M.
75 MIN	08:40 A.M.	09:55 A.M.
50 MIN	09:05 A.M.	09:55 A.M.
50 MIN	10:10 A.M.	11:00 A.M.
50 MIN	11:15 A.M.	12:05 P.M.
50 MIN	12:20 P.M.	01:10 P.M.
50 MIN	01:25 P.M.	02:15 P.M.
50 MIN	02:30 P.M.	03:20 P.M.
75 MIN	02:55 P.M.	04:10 P.M.
50 MIN	03:35 P.M.	04:25 P.M.
50 MIN	07:30 P.M.	08:20 P.M.
75 MIN	07:30 P.M.	08:45 P.M.
50 MIN	08:35 P.M.	09:25 P.M.

Tuesday/Thursday

50 MIN	08:00 A.M.	08:50 A.M.
75 MIN	08:40 A.M.	09:55 A.M.
50 MIN	09:05 A.M.	09:55 A.M.
50 MIN	10:10 A.M.	11:00 A.M.
75 MIN	10:10 A.M.	11:25 A.M.
50 MIN	11:15 A.M.	12:05 P.M.
75 MIN	11:40 A.M.	12:55 P.M.
50 MIN	12:20 P.M.	01:10 P.M.
50 MIN	01:25 P.M.	02:15 P.M.
75 MIN	01:25 P.M.	02:40 P.M.

50 MIN	02:30 P.M.	03:20 P.M.
75 MIN	02:55 P.M.	04:10 P.M.
50 MIN	03:35 P.M.	04:25 P.M.

NO EVENING CLASSES

Friday

50 MIN	08:00 A.M.	08:50 A.M.
50 MIN	09:05 A.M.	09:55 A.M.
50 MIN	10:10 A.M.	11:00 A.M.
50 MIN	11:15 A.M.	12:05 P.M.
50 MIN	12:20 P.M.	01:10 P.M.
50 MIN	01:25 P.M.	02:15 P.M.
50 MIN	02:30 P.M.	03:20 P.M.
50 MIN	03:35 P.M.	04:25 P.M.

NO EVENING CLASSES

Laboratories and similar exercises

1 HR 55 MIN	08:00 A.M.	09:55 A.M.
	10:10 A.M.	12:05 P.M.
	12:20 P.M.	02:15 P.M.
	02:30 P.M.	04:25 P.M.

(Mon. and Wed.) 07:30 P.M. 09:25 P.M.

2 HR 25 MIN	07:30 A.M.	09:55 A.M.
	10:10 A.M.	12:35 P.M.
	02:00 P.M.	04:25 P.M.

(Mon. and Wed.) 07:30 P.M. 09:55 P.M.

3 HR	08:00 A.M.	11:00 A.M.
	10:10 A.M.	01:10 P.M.
	01:25 P.M.	04:25 P.M.

(Mon. and Wed.) 07:30 P.M. 10:30 P.M.

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 and on the web at www.cornell.edu/Academic/class.html.

General Rules Governing Final Examinations

Legislation of the university faculty governing study periods and examinations is as follows:

- No final examinations can be given at a time other than the time appearing on the official examination schedule promulgated by the Office of the University Registrar without prior written permission of the dean of the faculty.
- 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.
- Permission will be given by the dean of the faculty to offer an alternate examination 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.
- 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.
- 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.
- Faculty can require students to submit papers during the week preceding the study period.
- 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:

- 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.
- 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:

- the S-U system have symbol equivalents which are uniform within the university: "S" means C- or above; "U" means D+, D-, or failure.
- S-U options be chosen by the student during the first three weeks of the term.
- 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.
- 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. (d) Only one optional S-U course is allowed per semester.

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 ENGL 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 is one foundation course in the veterinary curriculum that is 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:

- the student has a substantial equity at a passing level in the course with respect to work completed, and
- 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

- inspect and review their education records;
- challenge contents of education records;
- a hearing if the challenge is unsatisfactory;
- include an explanatory statement in the education records if the outcome of the hearing is unsatisfactory;

- prevent disclosure of personally identifiable information*;
- secure a copy of the institutional policy which includes the location of all education records**; and
- 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 for all university projects that use humans as research subjects, assuring compliance to federal regulations protecting human subjects in research at universities. A human subject is defined by federal regulations as "a living individual about whom an investigator obtains data through intervention or interaction with the individual, or identifiable private information." Projects affected by regulation include, but are not limited to, experiments and psychological or physical tests on humans, surveys, questionnaires, and studies of existing data, documents, or records in which there are individual identifiers. All proposals involving human subjects in any category, including those initiated by students, must be submitted to the University Committee on Human Subjects for review before the research projects begin. The guidelines for the use of human subjects in research are available at www.osp.cornell.edu/Compliance/UCHS/homepageUCHS.htm. Inquiries and communications about the guidelines should be directed to the committee's coordinator, 123 Day Hall (255-5138).

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. The use of live vertebrates in instruction is reviewed and approved by the Institutional Animal Care and Use Committee (IACUC).

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 *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 of 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 chair of the Institutional Animal Care and Use Committee (IACUC) at 253-3735 or by e-mail at iacuc@cornell.edu.
9. Faculty should instruct students in the responsible use of animals. For more information see www.univco.Cornell.edu/policy/CURA.for.html.

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, Andrew D. White Professors-at-Large engage in a variety of activities including public lectures, ongoing courses,

and collaborative research, as well as holding office hours for undergraduate and graduate students. They serve for a six-year term and are full members of the faculty when in residence.

Term Ending in 2004

Bal, Mieke, cultural analyst
Cleese, John, writer and actor
Macdonald, David W., mammalogist 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

Goldsworthy, Andy, sculptor
Sacks, Oliver, physician and writer

Term Ending in 2007

Pretty, Jules, sustainable agriculture ecologist
Short, Roger, reproductive physiologist

Term Ending in 2008

Hölldobler, Bert, zoologist
Subrahmanyam, Sanjay, economic historian

Term Ending in 2009

Behrends, Okko, legal historian
Butler, Judith, cultural theorist
Venter, Craig, geneticist

FRANK H. T. RHODES CLASS OF '56 UNIVERSITY PROFESSORSHIP

To commemorate their 40th reunion, the Class of 1956 initiated an endowment to create the Frank H. T. Rhodes Class of '56 University Professorship in honor of Cornell's ninth president (1977-1995). The purpose of the Rhodes Class of '56 Professorship is to strengthen the undergraduate experience by bringing to the university individuals from every walk of life who represent excellence of achievement and to create opportunities for interaction with undergraduates. The endowment also makes it possible to create public events related to the professorship such as lectures, performances, films, art exhibits, or conferences. Rhodes Class of '56 Professors are full members of the faculty while in residence. Appointments are awarded for a period of one to five years. During each year of their appointment, Rhodes Class of '56 Professors visit the campus for a minimum of two weeks to engage in a variety of activities including public lectures, ongoing courses, and collaborative research.

Term Ending in 2003

Nye, Bill, science guy
Reno, Janet, attorney

Term Ending in 2005

Meier, Richard, architect
Scolnick, Edward M., biomedical scientist

Term Ending in 2006

McKinney, Cynthia, educator and politician
Pilger, John, journalist and documentary filmmaker

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 Honors Introduction to Analysis
 MATH 414 Honors Introduction to Analysis
 MATH 433 Honors Algebra Linear
 MATH 434 Honors Introduction to Algebra
 MATH 611-612 Real and Complex Analysis
 MATH 615 Mathematical Methods in Physics
 MATH 621 Measure Theory and Lebesgue Integration
 MATH 622 Applied Functional Analysis
 MATH 631-632 Algebra
 MATH 634 Algebra
 MATH 651 Introductory Algebraic Topology
 MATH 661 Geometric Topology
 T&AM 612-613 Methods of 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

COM S 671 Introduction to Automated Reasoning
 COM S 677 Reasoning about Uncertainty
 COM S 682 Theory of Computing

COM S 715 Seminar in Programming Refinement Logics
 MATH 486 Applied Logic (also CS 486)
 MATH 681 Logic
 MATH 781-782 Seminar in Logic
 MATH 783 Model Theory
 MATH 784 Recursion Theory
 MATH 787 Set Theory
 MATH 788 Topics in Applied Logic

Numerical Mathematics and Operations Research

COM S 522 Computational Tools and Methods for Finance
 COM S 621 Matrix Computations
 COM S 622 Numerical Optimization and Nonlinear Algebraic Equations
 COM S 624 Numerical Solution of Differential Equations
 COM S 664 Machine Vision
 COM S 681 Analysis of Algorithms
 COM S 721 Topics in Numerical Analysis
 ECE 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 Introduction to Combinatorics
 MATH 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

CHEME 472 Feedback Control Systems (also ECE 471 and MAE 478)
 ECE 411 Random Signals in Communications and Signal Processing
 ECE 425 Digital Signal Processing
 ECE 467-468 Telecommunication Systems I and II
 ECE 521 Theory of Linear Systems
 ECE 522 Nonlinear Systems: Analysis, Stability, Control and Applications
 ECE 525 Adaptive Filtering in Communication Systems
 ECE 526 Signal Representation and Modeling
 ECE 561 Error-Control Codes
 ECE 562 Fundamental Information Theory
 ECE 563 Communication Networks
 ECE 565 Statistical Signal Processing
 ECE 567 Advanced Digital Communication
 ECE 577 Feedforward Neural Networks
 M&AE 677 Robust and Optimal Control

Mathematical Biology

BTRY 662 Mathematical Ecology (also STBTRY 662)
 BTRY 697 Individual Study in Biometry and Statistics

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 Analysis of Nonlinear Systems: Stability, Bifurcation, and Continuation
 M&AE 601 Foundations of Fluid Dynamics and Aerodynamics
 M&AE 602 Fluid Dynamics at High Reynolds Numbers
 M&AE 733 Stability of Fluid Flow
 M&AE 734 Analysis of Turbulent Flows
 M&AE 736 Theory of 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 (also M&AE 680 and CEE 676)
 T&AM 671 Hamiltonian 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 (also MATH 717)

Probability and Statistics

ECE 562 Fundamental Information Theory
 ECE 563 Communication Networks
 ECE 565 Statistical Signal Processing
 ECE 566 Wireless Networks
 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 Probability
 OR&IE 662 Advanced Stochastic Processes
 OR&IE 670 Statistical Principles
 OR&IE 671 Intermediate Applied Statistics
 BTRY 408 Theory of Probability
 BTRY 409 Theory of Statistics

Robotics and Vision

COM S 664 Machine Vision
 ECE 547 Computer Vision
 ECE 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 Bonding in Molecules
 ECE 407 Quantum Electronics
 PHYS 553-554 General Relativity (ASTRO 509-510)
 PHYS 561 Classical Electrodynamics
 PHYS 562 Statistical Physics
 PHYS 572 Quantum Mechanics I
 PHYS 574 Quantum Mechanics II
 PHYS 651-652 Relativistic Quantum Field Theory

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 16 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, East Asian 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.)

Cornell's international programs are poised to anticipate and respond to changing global circumstances and perspectives. 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 enables Cornell alumni to join faculty in discussion of key world events.

The center promotes graduate students' overseas field research through an annual competition for travel grants and assistance with other fellowship programs. The Fulbright fellowship program, administered by the center, is available to graduating seniors as well as graduate students.

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 Administration:

TBA, director
Leilani Peck, associate director
170 Uris Hall

Comparative Muslim Societies Committee:

David Powers, director
386 Rockefeller Hall

East Asia Program (formerly China-Japan Program):

John Whitman, director
140 Uris Hall

Latin American Studies Program:

Mary Roldan, director
190 Uris Hall

South Asia Program:

Alaka Basu, director
170 Uris Hall

Southeast Asia Program:

Thak Chaloemtiarana, director
180 Uris Hall

Institute for African Development:

Muna Ndulo, director
170 Uris Hall

Institute for European Studies:

Davydd Greenwood, director
120 Uris Hall

International Programs in the College of Agriculture and Life Sciences:

James Haldeman, senior associate director
31 Warren Hall

Berger International Legal Studies:

John Barceló, director
309 Myron Taylor Hall

International Political Economy:

Jonathan Kirshner, director
B2 McGraw Hall

Gender and Global Change:

Lourdes Benería, director
391 Uris Hall

International Studies in Planning:

Barbara Lynch, director
106 West Sibley Hall

Population and Development Program:

Thomas Hirschl, director
333 Warren Hall

Comparative Societal Analysis:

Valerie Bunce, acting director
204 White Hall

Cornell Participatory Action Research Network:

Jane Mt Pleasant, director
450 Caldwell Hall

Peace Studies Program:

Matthew Evangelista, director
130 Uris Hall

Program in International Nutrition:

Edward Frongillo, director
B17 Savage Hall

Program on Comparative Economic Development:

Kaushik Basu, director
458 Uris Hall

Cornell International Institute for Food, Agriculture, and Development:

Norman Uphoff, director
31 Warren Hall

Cornell Food and Nutrition Policy Program:

David Sahn, director
308 Savage Hall

International Relations Concentration:

David Lee, director
248 Warren Hall

CENTER FOR THE STUDY OF INEQUALITY

Office: 363 Uris Hall
Telephone: 607-254-8674
Fax: 607-254-8672
Email: inequality@cornell.edu
URL: www.inequality.cornell.edu

The Center for the Study of Inequality (CSI) fosters basic and applied research on social, economic, and cultural inequalities and the processes by which such inequalities change and persist. The study of inequality lies at the heart of current debates about welfare reform, affirmative action, the "glass ceiling," globalization, and any number of other contemporary policy issues. In recent years, public and scholarly interest in issues of inequality has intensified, not merely because of historic increases in income inequality in the United States and other advanced industrial countries, but also because inequalities of race, ethnicity, and gender are evolving in equally dramatic and complicated ways. The mission of CSI is to support research and teaching relevant to issues of inequality, to disseminate research findings coming out of this research, and to otherwise facilitate the study of inequality in the United States and throughout the world.

Symposia and Lecture Series

The CSI regularly sponsors symposia, workshops, and lecture series that draw attention to the most pressing problems and controversies in the field. The current schedule of symposia and lecture series is listed on the center's web site (www.inequality.cornell.edu).

Research Support

For faculty affiliates of CSI, small seed grants for inequality-related research are available, especially for research that has the potential to attract external funding. The CSI also runs a small grant program that supports graduate and undergraduate research on poverty or inequality. The application deadline for all grants is May 1, 2003 (for further details, see www.inequality.cornell.edu/support/index.shtml).

Internships

The CSI serves as a clearinghouse for student internships that are relevant to the study of inequality. For a full listing of possible internships, please consult the center's web site at www.inequality.cornell.edu/academics/index.shtml.

Dissemination

The working paper series on the center web site assists in disseminating research findings, opinion pieces, and related scholarship from some of the top scholars of inequality in the world. This series can be found at www.inequality.cornell.edu/publications/index.shtml.

Awards

The CSI presents a Distinguished Book Award and Distinguished Paper Award for publications that significantly advance our understanding of inequality. The recipients are invited each year to Cornell University to present their research (see www.inequality.cornell.edu/publications/awards.shtml).

Undergraduate Concentration

The inequality concentration allows undergraduate students to supplement their studies for their major with a coherent program of courses oriented toward the study of inequality. The concentration is organized into tracks examining such topics as globalization and inequality, social policy, the ethics of inequality, poverty and economic development, social movements, education and inequality, race and ethnicity in comparative perspective, the family and inequality, and literature, postmodernism, and inequality. The concentration is open to students enrolled in any of the seven Cornell undergraduate colleges. If the requirements of the concentration are met, a special notation to this effect will be recorded on the transcript (see www.inequality.cornell.edu/academics/undergraduate.shtml for further information).

For more information about CSI, please contact Jessica Henning, executive administrator of CSI (254-8674 or inequality@cornell.edu).

COGNITIVE STUDIES

282 Uris Hall (255-6431) (cogst@cornell.edu)
www.cogstud.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, Electrical and Computer Engineering, Human Development, Linguistics, Mathematics, Mechanical and Aerospace Engineering, Neurobiology and Behavior, Philosophy, Psychology, Science and Technology Studies, 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 Program" 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 Shimon Edelman, director of graduate studies, (255-6365, se37@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 in the Cognitive Studies Program section under Arts and Sciences.

CORNELL ABROAD

300 Caldwell Hall 607/255-6224, fax 607/255-8700, e-mail: CUAbroad@cornell.edu, web: 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. To earn credit for overseas study during the fall and/or spring semester(s), 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 forty 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, Ghana, 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; *Cornell FALCON for the spring semester or full year at the Inter-University Program for Chinese Language Studies at Tsinghua University, Beijing; Peking, Nanjing and Fudan Universities (CIEE); International Chinese Language Program at National Taiwan University; IES Beijing
- India: School for International Training; St. Stephen's College Delhi (through Brown or Rutgers Universities);
- Indonesia: Institut Keguruan Dan Ilmu Pendidikan (IKIP) in Malang (CIEE);
- Japan: *Kyoto Center for Japanese Studies; various university programs; IES Tokyo;
- 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

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

EUROPE

- Denmark: *Denmark's International Study Program (DIS);
- France: *EDUCO (Cornell, Duke, and Emory in Paris) at Université de Paris VII, Paris IV, Paris I, Institut d'Études Politiques de Paris ("Sciences Po"); Critical Studies Program at the University of Paris (CIEE); Paris Internship (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 the National University Colleges of Dublin, Galway, and Cork;
- Italy: *Cornell College of Art, Architecture, and Planning Program in Rome; Arcadia University in Florence at the Accademia Italiana; Bologna Cooperative Studies Program; Boston University Program in Padova; IES Milan; Intercollegiate Center for Classical Studies in Rome; Syracuse University program in Florence;
- Netherlands: University of Amsterdam; Leiden University;
- 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 Practicum at the University of Göteborg; The Swedish Program at the University of Stockholm;

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

Externally sponsored programs in the UK include the British American Drama Academy, the Arcadia University, Boston, and Rochester University internships, the Marymount College Program at the London College of Fashion, and the Hansard Parliamentary Internship Programme.

Students studying in the United Kingdom enjoy a variety of services, and cultural activities, provided by the Cornell-Brown-Penn UK Centre in London.

LATIN AMERICA, CENTRAL AMERICA, AND THE CARIBBEAN

Argentina and Chile: various university-based study abroad programs, through the Cooperating Programs in the Americas (COPA) of Butler University and the University of Illinois;

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

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

Cuba: the University of Havana through COPA; School for International Training;

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 Américas-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;

Jordan: University of Jordan (CIEE);

Lebanon: American University of Beirut;

Morocco: School for International Training

Other Locations

Cornell students are by no means limited to the locations listed above or to the programs identified for particular countries. In recent years, they have also studied in Austria, Croatia, 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 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 during 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 as early as 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 an excellent resource for program offerings and links to universities and programs worldwide, as well as for downloadable applications and comprehensive information on all aspects of study abroad. Students meet with the study abroad advisers in their colleges to discuss how they will meet college degree requirements.

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 2004 semester and the 2004–2005 academic year is February 15, 2004, for all programs *except* Oxford and Cambridge, for which the deadline to study at those universities for the full year in 2004–2005 is November 1, 2003. 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 course work 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, Israel, 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 halls of residence for university students, 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 in Cornell programs pay a uniform Cornell Abroad tuition per semester, which covers tuition, housing during term (except in UK universities), orientation, program-sponsored trips and events, and administrative and financial aid costs, including emergency medical evacuation and repatriation insurance. It may include other

items (e.g., meals, commuter passes) depending on the program. Students pay other costs (e.g., airfare and personal expenses) directly. Different fee levels for Cornell programs reflect the relative cost of operating the programs.

Pending approval by the Board of Trustees, in 2003–2004, the Cornell Abroad tuition for students participating in the Berlin Consortium for German Studies, the Cornell Nepal Study Program, EDUCO (Emory, Duke, and Cornell in Paris), the Michigan-Cornell-Penn Program in Seville, and the Swedish Child Care Practicum at the University of Goteborg is \$16,800.

There are three tiers of Cornell Abroad tuition for universities in the United Kingdom: Group 1, University of Cambridge, Oxford, and the King's College pre-med program, at \$14,700 per semester; Group 2, University of Edinburgh, St. Andrews, Imperial College, King's College, London School of Economics, School of Oriental and African Studies, and University College London, at \$13,500; and Group 3, University of Birmingham, Bristol, East Anglia, Glasgow, Manchester, Sussex, Warwick, and York, at \$10,500 per semester.

For Denmark's International Studies Program (DIS), the Cornell Abroad tuition is \$15,975 per semester, and for the Kyoto Center for Japanese Studies (KCJS), the tuition is \$21,700 per semester.

Students studying in all other programs in 2003–2004 pay the tuition and other costs charged by their programs and a Cornell international program tuition of \$3,890 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 two semesters of financial aid, consistent with general university aid 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 of Cornell Abroad stay in regular contact with representatives abroad and receive information regarding rapidly changing political situations worldwide 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 normally 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 (300 Caldwell Hall): Richard Gaulton Ph.D., director; Beatrice B. Szekeley 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 as well as a database of cost estimates. 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 site (www.einaudi.cornell.edu/cuabroad). The director and associate director are available at Cornell Abroad for walk-in advising.

College Study Abroad Advisers

Agriculture and Life Sciences: Bonnie Shelley, 140 Roberts Hall; *Architecture, Art, and Planning*: Jayne Worden, B-1 W. Sibley; *Arts and Sciences*: Dean Pat Wasyliv, 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*: Kevin Harris, 101 Ives Hall.

CORNELL IN WASHINGTON PROGRAM

<http://ciw.cornell.edu>
M101 McGraw 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 administrative space is located on the first floor and 27 residential units for approximately 60 students 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 program office at M101 McGraw Hall. Students may also apply on line at ciw.cornell.edu. Applications should be submitted the semester prior to participation.

Information

The Cornell in Washington program web site 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 program office at M101 McGraw 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

The Cornell Institute for Public Affairs (CIPA) offers a university-wide two-year program of graduate professional studies leading to a Master of Public Administration (MPA) degree. CIPA's mission is to prepare professionals to be effective, ethical, and creative leaders for government and nonprofit organizations, and for institutions in the private sector that interact with both.

The world needs capable creative leaders who can deal effectively with the emerging issues of public affairs. The opportunities to work constructively are expanding rapidly for those who are well prepared, and CIPA graduates are finding that their talents are in demand. They are joining the worldwide community of professionals who reach across public and private spheres to bring about positive change in the public arena. CIPA graduates are employed in a broad range of activities. Some are publicly elected officials; others hold professional appointments. Program alumni are represented in governments at all levels, in foundations, in consulting firms, in the United Nations, in nongovernmental organizations, in universities, and in many areas of the private sector. Several CIPA fellows (students) have won the distinguished Presidential Management Internship award, and many graduates have gone on to further study in law school or PhD programs.

Faculty

The depth and flexibility of the program is reflected in the growing number of affiliated faculty members. CIPA is not confined within a single school or college, but spans the entire University. More than 90 field faculty, representing 25 departments, welcome CIPA fellows into their courses and serve on thesis committees. About 30 members of this group, known as program faculty, teach courses taken most frequently by CIPA students. Within this group, core faculty provide instruction in the foundation courses. These core faculty include David B. Lewis, CIPA director, City and Regional Planning; Nancy Chau, Applied Economics and Management; Arch Dotson, Government; Ted Lowi, the John L. Senior Professor of American Institutions in the Department of Government; and Jerry Ziegler, in the Department of Policy Analysis and Management.

Advising

Each fellow works with an academic adviser to develop an academic plan focusing on the student's individual interests. With the resources available at Cornell, a CIPA fellow can elect to concentrate in a variety of areas within the arena of public affairs. Fellows frequently take courses in the Law School, the Graduate School of Management, the Division of Nutritional Sciences, the College of Arts and Sciences, the School of Industrial and Labor Relations, the College of Agriculture and Life Sciences, the College of Engineering, the College of Architecture, Art, and Planning, the Hotel School, and the College of Human Ecology. They may also choose to participate in cross-disciplinary initiatives such as the Latin American Studies Program, the Cornell International Institute for Food, Agriculture, and Development, and the Institute for African Development.

Complementary Degrees

CIPA students may elect to combine their MPA study program with complementary degree study, such as a JD from the Cornell Law School, an MBA from the Graduate School of Management, an MMH from the Hotel School, or an MRP from the field of City and Regional Planning.

Accelerated Master's Program

An accelerated program for Cornell undergraduates allows students to apply to CIPA in their junior year, begin CIPA-related course work in their senior year, and complete the MPA in just one year beyond their undergraduate studies.

Foundation Courses

Foundation course work is intended to give students the basic analytical and conceptual capabilities for pursuing specialized studies in their chosen concentration. Students take three courses in each of the following areas:

- Quantitative Analysis
- Administration, Politics, and Public Policy
- Economics and Public Finance

Concentration Areas

Concentration course work enables students to focus on a specific area of public affairs study. Five graduate-level courses are required in the area of the student's chosen study concentration. These courses are intended to support the student's thesis work and are to be selected in consultation with the student's thesis adviser. CIPA offers eight concentration options:

- International Development Studies
- Social Policy
- Finance and Fiscal Policy
- Government, Politics, and Policy Studies
- Human Rights and Social Justice
- Science and Technology Policy
- Social Policy
- Public and Non-Profit Management

Thesis

Each fellow writes a thesis integrating conceptual tools, theories, and analytical techniques by applying them to a problem in his or her concentration. The culmination of study in the MPA program, the thesis is intended to be both critical and creative, reflecting the student's ability to identify and analyze important public policy questions and generate practical solutions.

Residence Requirement

Students are required to spend four semesters of study in residence to complete the MPA. Those who enroll in the Cornell Accelerated Master's Program can earn the equivalent of two semesters in residence during their senior year.

Internships

Students are expected to engage in public affairs work related to their respective areas of concentration during the summer between their first and second year of graduate study. The objective is to gain pragmatic professional experience to complement formal academic

study. The following opportunities are available to CIPA fellows at the local, state, national, and international levels.

Local

CIPA fellows have been placed in internships throughout the city of Ithaca and Tompkins County. CIPA fellows have worked in the mayor's office, Ithaca Youth Bureau, Tompkins County Office for the Aging, County Workforce Development Board, Board of Representatives, Department of Planning, and Department of Health.

State

The New York State Assembly Graduate Internship program provides research and policy development experiences for qualified graduate students. It affords CIPA fellows a unique professional learning experience and the opportunity to develop their understanding of the legislative process at the state level.

National

The Cornell In Washington Program blends practical work experience, Cornell courses, and exposure to one of the world's great capital cities. It provides the opportunity to investigate and explore public policy from the perspective of institutions in the public, private, and non-profit sectors.

International

Many of our CIPA fellows are placed in summer or semester internships with the United Nations either in New York City or abroad in locations such as Nairobi and Bangkok. Through Cornell's Rome Program, students have the opportunity to be placed in a United Nations internship while taking Cornell courses in Rome, Italy. The Cornell-Nepal Study Program offers students a chance to observe, first-hand, changes in a developing country.

Student Organization

Fellows organize and manage a variety of professional development activities that provide opportunities to share their work experience and to meet distinguished faculty and practitioners in the field of public policy from around the world. Students schedule and coordinate the weekly Colloquium Program, they produce a debate-format television show (*Point of View*) that airs twice a week during the school year, and they publish a journal of student policy research (*The Current*). Student officers in the Cornell Public Affairs Society (CPAS) and Women in Public Policy (WPP) guide these endeavors. They are elected in November and serve for one calendar year.

Each year, during spring break, CIPA students travel to Washington, D.C., where they attend a session of Congress and meet with government representatives and officials in organizations such as the World Bank and the U.S. Agency for International Development.

CIPA fellows have a range of on-campus policy-related conferences to choose from each semester. These conferences are sponsored by various public policy-affiliated programs at Cornell. CIPA fellows also attend national conferences of organizations such as APPAM (Association for Public Policy Analysis and Management) and NASPAA (National Association of Schools of Public Affairs and Administration).

Admission

The CIPA program seeks a diverse pool of applicants who have studied in a wide range of disciplines. No specific background or undergraduate major is required, although individuals with previous work experience in policy making or implementation are strongly encouraged to apply.

Admission to CIPA is selective. Decisions are based on an evaluation of the applicant's overall academic record, GRE scores, and potential for public policy leadership as evidenced by professional work; community, extracurricular, or other relevant experience; a written statement of purpose; and letters of recommendation.

CIPA has a policy of rolling admission. For an application or for more information, contact the Cornell Institute for Public Affairs, 473 Hollister Hall (phone: 607-255-8018; fax: 607-255-5240; e-mail: cipa@cornell.edu; web site: www.cipa.cornell.edu).

Financial Aid

CIPA offers a variety of funding options. Although the institute is unable to provide full fellowships for any individual student, fellows often win support from Fulbright, Truman, or World Bank fellowships. In addition, Cornell offers numerous assistantship and employment opportunities for graduate students. Applicants are encouraged to explore all available sources of external funding, including grants that may be provided by current employers. Decisions concerning CIPA funding are made in March, so those wishing to be considered should complete the application by March 1.

CORNELL PLANTATIONS

One Plantations Road (255-3020)
URL: 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 evolutionary biology, landscape, 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 natural 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, tour guides, computer assistants, gardeners, and writers for our magazine and newsletter. A number of student internships are also offered each summer. Maps, information, publications, and class brochures (for noncredit classes and workshops) are available at 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, and a Master of Professional Studies program offers fully funded fellowships in Public Garden Management.

PROGRAM ON ETHICS & PUBLIC LIFE

240 Goldwin Smith 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 & 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 seeks 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 242/GOVT 260 Social and Political Philosophy
PHIL 246/B&SOC 206/S&TS 206 Ethics and the World Environment
PHIL 247 Ethics and Public Life
PHIL 342 Law, Society, and Morality
GOVT 469/PHIL 369 Limiting War: The Morality of Modern State Violence

GOVT 412 Voting and Political Participation
GOVT 466/FGSS 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
CRP 549 Ethics and Practical Judgment in Planning Practice
ENGR 360/S&TS 360/ABEN 489 Engineering Ethics
GOVT 474/PHIL 446 Topics in Social and Political Philosophy
ILRHR 366 Women at Work
ILRCB 401 My Brother's Keeper: Volunteerism and Philanthropy
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
LAW 748 Legal Ethics and Professionalism
MIL S 441 Leadership, Management, and Ethics for Junior Military Officers
NAV S 402 Leadership and Ethics
NBA 578 Business Ethics
NTRES 407 Religion, Ethics, and the Environment
NTRES 411 Seminar in Environmental Ethics
PAM 567 Health and Welfare Policy
PHIL 145 Contemporary Moral Issues
PHIL 151 Philosophy of Sport
PHIL 241 Ethics
PHIL 245 Ethics and Health Care
PHIL 341 Ethical Theory
PHIL 344 History of Ethics: Ancient and Medieval
PHIL 345 History of Ethics: Modern
PHIL 346 Modern Political Philosophy
PHIL 447 Contemporary Ethical Theory

Michele M. Moody-Adams, Wyn and William Y. Hutchinson Professor of Ethics & Public Life, and Professor of Philosophy; Burke Hendrix, Assistant Professor of Government and Assistant Professor of Ethics & Public Life; Henry Shue, Professor of Ethics & Public Life and Professor of Philosophy; Tom Berry, Visiting Assistant Professor of Ethics & Public Life.

PROGRAM IN REAL ESTATE

114 West Sibley Hall (255-7110)

The two-year Master of Professional Studies in Real Estate (MPS/RE) degree program is an interdisciplinary 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 and industry-related 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, delivery, 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 contribute 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, the real estate development process, real estate finance and investments, managerial finance, residential development, real estate law, construction planning and operations, design in real estate development and real estate marketing and management, along with a weekly industry seminar. Elective courses are taken in a chosen area of concentration, and there is a leadership and management distribution requirement. Many concentration options are possible and may be structured from the hundreds of related courses taught at Cornell University (e.g., development, finance, investments, real estate consulting, sustainable development, property and asset management, real estate marketing and market analysis, or international real estate concentrations). Students complete real-world, semester-long project workshops during their second and final semesters.

Admissions

Applicants to the Program in Real Estate must have completed a bachelor's degree with a good academic record. Applicants must submit a résumé plus two letters of recommendation either from faculty familiar with the applicant's academic work, or if appropriate, professional recommendations based on work experience. Competitive scores for the GMAT are required. International students, for whom English is a second language, will need to achieve a minimum TOEFL score of 250 (computer based) or 600 (paper based). There is no work experience required for admission; however, it is strongly preferred that applicants have at least some work experience; three to five years has been typical. For more information, contact C. Bradley Olson, Director of the Program in Real Estate, or the Graduate Field Assistant, at 607-255-7110, 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 sub-disciplines (e.g., atmospheric science, geology/geophysics, biogeochemistry, 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. PHYS 207 and 208, or PHYS 112 and 213 if PHYS 214 will also be taken (see below)
 - c. CHEM 207 and 208
 - d. BIO 101/103 and 102/104 (or 105-106) or BIO 109 and 110
 - e. THREE ADDITIONAL 3-4 credit courses in basic science and math, generally 100- and 200-level classes. One or both of the following may be included in the selection:
 - EAS 201 Physics and Chemistry of the Earth
 - BIOEE 261 Ecology and the Environment

Other examples are MATH 293, MATH 294, MATH 213, 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/NTRES 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 among 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, but are not limited to, 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)

T. J. DiCiccio (chair); M. T. Wells (director of graduate studies); J. A. Bunge (director of professional programs); K. Athreya, T. Berger, C. Bustamante, C. Castillo-Chavez, T. DiCiccio, R. Durrett, E. Dynkin, T. Fine, Y. Hong, J. T. G. Hwang, H. Kesten, N. Kiefer, G. Lawler, R. Nielson, M. Nussbaum, P. Protter, S. Resnick, D. Ruppert, G. Samorodnitsky, S. Schwager, R. Strawderman, B. Turnbull, 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 Biological Statistics and Computational Biology (BSCB) 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 BSCB 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: Biological Statistics, 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: Biological Statistics and Computational Biology (CALB), STBTRY; Engineering Statistics Unit (ENGR), STENGR; Mathematical Statistics Unit (ARTS), STMATH; Social Statistics Unit (ILR and ARTS), 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.

[ST 578 Statistical Methods for Reliability Survival Data] Prerequisites: OR 270 or equivalent, plus some senior elective-level course in applied statistics such as regression, data mining, or time series. This course provides an introduction to probabilistic and statistical methodology for the analysis of life-length data. Because of the presence of such features as censoring, skewed distributions, and time-varying covariates, special statistical techniques are required. Topics include: life distributions, life tables, truncation and censoring, Kaplan-Meier estimate, accelerated life tests, Weibull and lognormal regression models, Cox proportional hazards model, regression diagnostics, system reliability, repairable systems reliability, repeated events. Use of statistical computing packages, such as SAS and Splus, is stressed to perform data analyses, although no previous experience is assumed.

600 Statistics Seminar Fall and spring. 1 credit. S-U only. Prerequisite or corequisite: BTRY 409 or permission of instructor.

Biological Statistics Unit

- STBTRY 301 Statistical Methods I (enroll in BTRY 301)
- 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 482 Statistical Genomics (enroll in BTRY 482)
- 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 652 Computationally Intensive Statistical Inference]
- [STBTRY 672 Topics in Environmental Statistics (BTRY 672)]
- STBTRY 682 Statistical Genomics (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 310 Introduction to Probability and Random Signals (enroll in ECE 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 ECE 411)
- STENGR 436 A Mathematical Examination of Fair Representation (enroll in OR&IE 436)
- [STENGR 461 Stochastic Calculus for Applications (enroll in OR&IE 461)]
- STENGR 467 Telecommunication Systems I (enroll in ECE 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 ECE 562)

- [STENGR 517 Artificial Neural Networks (enroll in ECE 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 580 Simulation Modeling and Analysis (enroll in OR&IE 580)
- STENGR 650 Applied Stochastic Processes (enroll in OR&IE 650)
- STENGR 651 Probability (enroll in OR&IE 651)
- [STENGR 662 Advanced Stochastic Processes—Martingale Theory (enroll in OR&IE 662)]
- [STENGR 665 Storage Data Communication Models (enroll in OR&IE 665)]
- STENGR 670 Statistical Principles (enroll in OR&IE 670)
- STENGR 671 Intermediate Applied Statistics (enroll in OR&IE 671)
- STENGR 674 Statistical Learning Theory for Data Mining (enroll in OR&IE 674)
- [STENGR 677 Sequential Methods in Statistics (enroll in OR&IE 677)]
- STENGR 680 Simulation (enroll in OR&IE 680)
- [STENGR 768 Selected Topics in Applied Probability (enroll in OR&IE 768)]
- STENGR 769 Selected Topics in Applied Probability (enroll in OR&IE 769)
- [STENGR 778 Selected Topics in Applied Statistics (enroll in OR&IE 778)]

Mathematical Statistics and Probability Unit

- STMATH 171 Statistical Theory and Application in the Real World (enroll in MATH 171)
- STMATH 311 Introduction to Analysis (enroll in MATH 311)
- STMATH 471 Basic Probability (enroll in MATH 471)
- STMATH 472 Statistics (enroll in MATH 472)
- 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 774 Asymptotic Statistics (enroll in MATH 774)
- 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 319 Introduction to Statistics and Probability (enroll in ECON 319)
 STSOC 320 Introduction to Econometrics II (enroll in ECON 320)
 STSOC 321 Applied Econometrics II (enroll in ECON 321)
 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 619 Special Topics in Social Statistics (enroll in ILRST 619)]
 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 721 Time Series Econometrics (enroll in ECON 721)
 STSOC 722 Semi/Nonparametric Econometrics (enroll in ECON 722)
 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

- AEM 410 Business Statistics
 AEM 411 Introduction to Econometrics
 AEM 417 Decision Models for Small and Large Business
 AEM 710 Econometrics I
 AEM 713 Quantitative Methods I
 BTRY 101 Introduction to Biometry I
 BTRY 102 Introduction to Biometry II
 [BTRY 421 Matrix Computations]

- [BTRY 726 Problems and Perspectives in Computational Molecular Biology]
 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
 OR&IE 674 Statistical Learning Theory for Data Mining
 OR&IE 468/568 Financial Engineering with Stochastic Calculus I
 OR&IE 469/569 Financial Engineering with Stochastic Calculus II
 OR&IE 576 Regression
 OR&IE 464/566 Extreme Value Analysis with Applications to Finance and Data Communication
 OR&IE 677 Sequential Methods in Statistics
 PAM 215 Research Methods
 PAM 230 Introduction to Policy Analysis
 PAM 423 Risk Management and Policy
 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 664 Introduction to Epidemiology
 VETPMD 665 Study Design
 VETPMD 666 Advanced Methods in Epidemiology

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, web: www.cfe.cornell.edu/icet/.

TOX 370 Pesticides and the Environment (ENTOM 370)
 TOX 437 Eukaryotic Cell Proliferation (BIO S 437)
 TOX 490 Insect Toxicology and Insecticidal Chemistry (ENTOM 690)
 TOX 607 Ecotoxicology (NTRES 607)
 TOX 610 Introductory Chemical and Environmental Toxicology (NTRES 610)
 TOX 611 Molecular Toxicology
 TOX 625 Nutritional Toxicology (AN SC 625)
 TOX 698 Current Topics in Environmental Toxicology (NS 700, NTRES 698, BEE 698)
 TOX 702 Seminar in Toxicology
 TOX 750 Cancer Cell Biology (Biological Sciences 750, Vet. Pathology 750)
 TOX 899 Master's Thesis and Research
 TOX 999 Doctoral Thesis and Research

Business and Preprofessional Study

UNDERGRADUATE BUSINESS STUDY

Cornell offers an accredited general undergraduate business degree program as well as world-renowned business-related programs in five other colleges and schools. Because the choices are so diverse, students are encouraged to explore the offerings carefully to identify the program that best matches their business career goals. (Graduate study is available in the Johnson Graduate School of Management as well as in graduate fields associated with each of the undergraduate options.)

Applied economics and management. The Department of Applied Economics and Management (AEM) in the College of Agriculture and Life Sciences is home to Cornell's general undergraduate business degree. Accredited by AACSB International—The Association to Advance Collegiate Schools of Business, AEM's undergraduate business program offers courses that prepare students for careers in finance, marketing, management, and business strategy. Students also may participate in AEM's specialized programs focusing on entrepreneurship, agribusiness, small business, and food industry management. Courses reflect the program's analytical, applied economics focus. (Web: aem.cornell.edu)

Arts and sciences. Many of the liberal arts majors offered by the College of Arts and Sciences provide students with a background for a successful business career. In particular are majors in economics, mathematics, sociology, and psychology. Economics focuses on the production, distribution, and consumption of goods and services; monetary systems; and economic theories. Students interested in the human dimensions of business can choose sociology or psychology. Mathematics majors can choose concentrations in computer science, operations research, or economics to prepare for careers in areas such as actuarial science or finance. (Web: www.arts.cornell.edu)

Engineering. Many of today's business managers hold engineering degrees. Each of the College of Engineering's 10 major fields prepares students for business careers. Operations research and engineering is the most business-oriented engineering field, preparing graduates for careers such as investment banking and process engineering. Engineering students in any field can take a business-oriented minor in areas such as engineering management, industrial systems and information technology, and operations research and management science. An entrepreneurship in engineering option is also available. (Web: www.engineering.cornell.edu)

Hotel administration. The School of Hotel Administration, the world's leading hospitality management program, prepares students for management and entrepreneurial careers in businesses such as hotels, resorts, restaurants, amusement parks, sports arenas, cruise lines, and airlines. The school offers a rigorous business curriculum with courses in finance and real estate; hospitality facilities and operations; marketing, tourism, strategy, and

information systems; and organizational management, communication, and law. The school's 150-room conference hotel gives students the opportunity to apply what they learn in a real-world business. (Web: www.hotelschool.cornell.edu)

Human ecology. The College of Human Ecology offers three business-oriented majors. The apparel and textile management major prepares students for careers in the fashion industry, for example, as a retail executive or merchandise buyer. Students majoring in facility planning and management study interior design, management, environmental psychology, and real estate to pursue careers as facility planners and consultants. The policy analysis and management major offers concentrations in health care, consumer economics, and family/social services, and its graduates pursue careers as nonprofit managers, consumer advocates, finance specialists, and marketing researchers. (Web: www.humec.cornell.edu)

Industrial and labor relations. The School of Industrial and Labor Relations (ILR) focuses on the "people" side of business. Its professional-level curriculum provides a strong social science foundation in organizational behavior, human resource management, labor law, labor economics, history, and statistics. Students can then develop special interests in management, dispute resolution, negotiation, employee relations, labor unions, collective bargaining, public policy, and international labor issues. Most ILR graduates begin careers in areas such as management, consulting, and public policy, but about one-third go directly to law school. (Web: www.ilr.cornell.edu)

Related Areas

Entrepreneurship and Personal Enterprise Program. This university-wide program is open to all Cornell students interested in eventually starting their own businesses or working for venture capital firms. A series of almost 50 linked entrepreneurship-related courses are offered by the above six colleges and schools as well as by the Johnson Graduate School of Management and the School of Veterinary Science. (Web: epe.cornell.edu)

International programs. Several additional programs allow business students to focus on a particular geographic area. Concentrations are offered in Latin American Studies, Modern European Studies, East Asian Studies, South Asian Studies, Southeast Asian Studies, and Africana Studies (all in the College of Arts and Sciences). The College of Agriculture and Life Sciences offers an interdepartmental program in international agriculture.

COMBINED DEGREE PROGRAMS

Highly qualified undergraduates may co-register with the Johnson Graduate School of Management during their senior year, thereby earning their M.B.A. degree in less than the usual time. Students in all Cornell undergraduate colleges may explore this option. The College of Engineering 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 course work.

SELECTED BUSINESS AND MANAGEMENT COURSES

Accounting

- AEM 221 Financial Accounting
- AEM 323 Managerial Accounting
- H ADM 123 Financial Accounting Principles
- H ADM 422 Taxation and Management Decisions
- OR&IE 350 Financial and Managerial Accounting

Agribusiness Management

- AEM 302 Farm Business Management
- AEM 329 International Agribusiness Study Trip
- AEM 346 Dairy Markets and Policy
- AEM 403 Farm Management Study Trip
- AEM 404 Advanced Agricultural Finance Seminar
- AEM 405 Agricultural Finance
- AEM 427 Agribusiness Strategy
- AEM 431 Food and Agricultural Policies

Communications

- COMM 201 Oral Communication
- COMM 301 Business and Professional Speaking
- COMM 401 Organizational Behavior and Communication
- H ADM 165 Managerial Communication I
- H ADM 364 Advanced Business Writing
- H ADM 462 Communication and the Multicultural Organization
- H ADM 463 Persuasive Communication in Organizations

Economics

- AEM 200 Contemporary Controversies in the Global Economy
- AEM 230 International Trade and Finance (also ECON 230)
- ECON 101 Introductory Microeconomics
- ECON 102 Introductory Macroeconomics
- ECON 313 Intermediate Microeconomic Theory
- ECON 331 Money and Credit
- ECON 351 Industrial Organization
- ILRLE 240 Economics of Wages and Employment
- ILRLE 443 Personnel Economics for Managers (also ECON 443)
- PAM 200 Intermediate Microeconomics

Entrepreneurship

- AEM 325 Personal Enterprise and Small Business Management
- AEM 425 Small Business Management Workshop
- ENGR 127 Introduction to Entrepreneurship and Enterprise Engineering (also M&AE 127)
- H ADM 413 Entrepreneurship

ILRHR 460 Human Resource Strategies for Entrepreneurial Firms

M&AE 461 Entrepreneurship for Engineers (also ENGRG 461 and OR&IE 452)

NBA 300 Entrepreneurship and Private Equity

PAM 457 Innovation and Entrepreneurship in the Health Care Industry

TXA 332 Designers as Entrepreneurs

Finance and Real Estate

AEM 324 Financial Management

AEM 420 Investments

AEM 421 Derivatives and Risk Management

AEM 423 Risk Management in Business

AEM 428 Valuation of Capital Investment

AEM 429 International Finance

ECON 333 Financial Economics

H ADM 125 Finance

H ADM 320 Real Estate Management

H ADM 322 Principles of Investment Management

H ADM 420 Principles of Real Estate

H ADM 424 Securities Analysis and Portfolio Management

ILRLE 240 Economics of Wages and Employment

OR&IE 451 Economic Analysis of Engineering Systems

Hospitality Management

H ADM 105 Introduction to Lodging

H ADM 106 Introduction to Food Service Operations

H ADM 236 Culinary Theory and Practice

H ADM 255 Hotel Development and Planning

H ADM 305 Hospitality Facilities Operations

H ADM 321 Hospitality Financial Management

H ADM 335 Restaurant Management

H ADM 387 Business and Hospitality Law

H ADM 475 Information Technology in the Hospitality Industry

International Business

AEM 335 International Technology Marketing of Biotechnology

AEM 430 International Trade Policy

AEM 432 Business and Governments in the Global Economy

AEM 442 Emerging Markets

AEM 449 Global Marketing Strategy

ECON 362 International Monetary Theory and Policy

ILRHR 456 International Human Resource Management

Law and Regulation

AEM 320 Business Law I

AEM 321 Business Law II

AEM 422 Estate Planning

COMM 428 Communication Law

ECON 354 Economics of Regulation

GOVT 389 International Law

H ADM 422 Taxation and Management

H ADM 487 Real Estate Law

H ADM 489 The Law of the Internet and e-Commerce

ILRCB 201 Labor and Employment Law

PAM 204 Economics of the Public Sector

PAM 340 The Economics of Consumer Policy

PAM 341 Economics of Consumer Law and Protection

Management

AEM 220 Introduction to Business Management

AEM 322 Technology, Information, and Business Strategy

AEM 327 Technological Change and Innovation Strategy

AEM 328 Innovation and Dynamic Management (also H ADM 449)

AEM 424 Management Strategy

AEM 443 Food Industry Strategy

AEM 555 Environmental Management and Policy

ENGRG 323 Engineering Economics and Management

H ADM 111 Principles of Management

H ADM 412 Managing Organizational Change

H ADM 441 Strategic Management

ILRHR 464 Business Strategy

PAM 220 Introduction to Management: Principles and Differences among Sectors

PAM 334 Corporations, Shareholders, and Policy

PAM 423 Risk Management and Policy

Marketing

AEM 240 Marketing

AEM 448 Food Merchandising

H ADM 241 Marketing Principles

H ADM 343 Marketing Research

H ADM 347 Consumer Behavior

H ADM 448 Marketing Communications

PAM 223 Consumer Markets

PAM 323 Consumer Markets II

NCC 553 Marketing Management

Organizational Behavior, Human Resource Management, and Sociology

H ADM 115 Organizational Behavior and Interpersonal Skills

H ADM 210 The Management of Human Resources

H ADM 412 Managing Organizational Change

ILRCB 300 Collective Bargaining

ILRHR 260 Human Resource Management

ILRHR 362 Career Development: Theory and Practice

ILRHR 462 Staffing, Training, and Development

ILRHR 463 Diversity and Employee Relations

ILROB 170 Introduction to Micro Organizational Behavior and Analysis

ILROB 171 Introduction to Macro Organizational Behavior and Analysis

ILROB 329 Organizational Cultures

ILROB 370 The Study of Work Motivation

SOC 203 Work and Family (also FGSS 203)

SOC 215 Organizations: An Introduction

SOC 370 Careers

Quantitative Decisions and Decision Science

AEM 210 Introductory Statistics

AEM 410 Business Statistics

AEM 411 Introduction to Econometrics

AEM 414 Behavioral Economics and Managerial Decisions

AEM 415 Price Analysis (also ECON 415)

AEM 416 Consumer Demographics and Market Analysis (also R SOC 331)

AEM 417 Decision Models for Small and Large Businesses

AEM 419 Strategic Thinking

ECON 319 Introduction to Statistics and Probability

ECON 321 Applied Econometrics

ENGRD 270 Basic Engineering Probability and Statistics

H ADM 301 Hospitality Quantitative Analysis

OR&IE 476 Applied Linear Statistical Models

ILRST 210 Statistics I

ILRST 310 Statistical Sampling

SOC 301 Evaluating Statistical Evidence

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. First-year writing seminars, required of nearly all Cornell first-year students, 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 *The 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 particular undergraduate courses be completed. These courses usually include general chemistry and organic chemistry, biology, and physics, and all must be taken with a lab. A year of English composition (or a first-year writing seminar) is also required. 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 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.

PREVETERINARY STUDY

There is no specific preveterinary program at Cornell, and students interested in veterinary medicine as a career should select a major 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, Cornell Career Services, 103 Barnes Hall, Ithaca, New York 14853-1601.