COLLEGE OF AGRICULTURE AND LIFE SCIENCES
GRADUATION REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

1. Credit Requirements

A. Minimum Total Credits: 120 academic credits are required for graduation.

Important Exceptions:
- Repeated courses increase the number of credits required for graduation by the number of credits in the course. These credits do count toward the minimum 12 credits required for full-time status.
- Review or supplemental courses (e.g., 1000- to 1099-level) increase the number of credits required for graduation by the number of credits in the course. These credits do not count toward the minimum 12 credits required for full-time status.
- Physical Education courses do not count toward 120 credits for graduation. They do not count toward the minimum 12 credits required for full-time status.

B. Minimum Credits at Cornell: 60 academic credits must be completed at Cornell (includes CALS Exchange, Cornell in Rome, Capital Semester and Urban Semester).

C. Maximum Non-Cornell Credits: 60 non-Cornell credits (AP, CASE, IB, GCE, French Baccalauréat transfer, Cornell Abroad) can be applied toward degree requirements. A first year student is able to transfer in 30 credits before the first semester in CALS. (AP, CASE, IB, GCE, French Baccalauréat, and transfer credits)

D. Minimum Credits from College of Agriculture and Life Sciences: 55 CALS credits are required for graduation. CALS credits include all courses from departments within CALS, and courses offered in the Biological Sciences, Biology & Society, Earth and Atmospheric Sciences, Information Science, Nutritional Science, Statistical Science, and Sea Semester Departments.

E. Minimum Letter-Graded Credits: 100 (prorated with transfer credits Table 1).

F. Maximum Credits earned through Independent Study, Research, Teaching Assistantships, and/or Internships: 15 credits of “unstructured” coursework can be applied toward graduation requirements (prorated with transfer credits Table 1).

2. Physical Education Requirement

A. Pass two Physical Education (PE) courses with a satisfactory grade in two different semesters. Exception: External transfer students are credited with one course of physical education for each semester previously enrolled full-time (12 or more credits) at another college before matriculation.

B. Pass a required swim test, administered during orientation. External transfer students who are exempt from PE are exempt from the swim test.

C. Students are expected to complete the physical education requirement in their first two semesters at Cornell.

3. Residency Requirements

A. Eight semesters of full-time study are expected. Transfer students are credited with one semester in residence for each full-time semester (or equivalent) earned at another institution.

B. Internal transfer students must be enrolled in CALS for at least two semesters includes conditional semester sponsored by CALS in the Internal Transfer Division.

C. The final semester before graduation must be completed in a Cornell program as a full-time student.

D. Students in the ninth and final semester may apply for prorated tuition. The eligibility criteria are listed online at http://www.cals.cornell.edu/cals/current/registrar/current-students/cals-graduation/prorated.cfm.
4. Grade-Point Average (GPA) Requirements

Minimum cumulative GPA: 2.00 or above must be maintained. The cumulative GPA includes all letter grades earned at Cornell.

5. Schedule Requirements

A. A minimum of 12 academic credits per semester is required to be a full-time student in good academic standing. NOTE: Students must enroll in an average of 15 credits per semester to be on track to graduate in 8 semesters.

B. Students must enroll in at least one CALS course each semester until 55 CALS credits have been earned.

C. Review or supplemental courses (1000- to 1099-level courses and Physical Education (PE) courses) do not count toward the 12 credit minimum required for full-time status.

D. Freshmen may not enroll in more than 18 credits, not including PE or review/supplemental courses and are limited to one S-U optional course per semester.

6. Distribution Requirements

The purpose of the distribution requirement is to have all students achieve common learning outcomes. It is expected that through college and major course requirements graduates will be able to:

- Explain, evaluate, and effectively interpret factual claims, theories and assumptions in the student’s discipline(s) (especially in one or more of the college’s priority areas of land grant-agricultural sciences, applied social sciences, environmental sciences, and/or life sciences) and more broadly in the sciences and humanities
- Find, access, critically evaluate, and ethically use information
- Integrate quantitative and qualitative information to reach defensible and creative conclusions
- Communicate effectively through writing, speech, and visual information
- Articulate the views of people with diverse perspectives
- Demonstrate the capability to work both independently and in cooperation with others

Through study of the physical and life sciences, students develop their understanding and appreciation of the physical sciences, enhance their quantitative reasoning skills, and gain an appreciation of the variability of living organisms. The social sciences and humanities give students perspective on the structure and values of the society in which we live, and prepare them to make decisions on ethical issues that will affect their work and role in society. Written and oral expression is designed to help students become competent and confident in the use of oral and written communication to express themselves and their ideas.

Important Notes:
Credits received for independent study, fieldwork, teaching, research, work experience, and internships cannot be used to fulfill the distribution requirement. Review or supplemental courses, such as 1000- to 1099-level courses, will not be counted in the distribution areas.

First-Year Writing Seminars (FWS) cannot be used to satisfy the Physical and Life Sciences distribution area.
**Physical and Life Sciences:** 18 credits in at least three disciplines of which 6 credits must be introductory life sciences/biology and 3 credits in chemistry or physics.

**Introductory Life Sciences/Biology Requirement:** Student’s must complete at least 6 academic credits from the following: *(Students should consult with their advisor/major department to clarify major requirements. The recommendations below should be used as a guideline for students and advisors when selecting appropriate courses for your curriculum.)*

Advanced Placement Credit; or

<table>
<thead>
<tr>
<th>Advising Recommendation</th>
<th>Course number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the Biological Sciences Majors: <a href="http://biology.cornell.edu/academics/rRequirmentsmajor.html">http://biology.cornell.edu/academics/rRequirmentsmajor.html</a></td>
<td>BIOG 1440</td>
<td>Comparative Physiology</td>
<td>3</td>
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<tr>
<td></td>
<td>BIOMG 1350</td>
<td>Cell and Developmental Biology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOEE 1610</td>
<td>Ecology and the Environment</td>
<td>3 or 4</td>
</tr>
<tr>
<td></td>
<td>BIOG 1500</td>
<td>Investigative Laboratory</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>BIOEE1780</td>
<td>Evolutionary Biology and Diversity</td>
<td>4 or 5</td>
</tr>
<tr>
<td></td>
<td>BIOEE 2525/2526</td>
<td>Ecology and Conservation of Wildlife in the Neotropics</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>BIOSM 1500 (summer)</td>
<td>Investigative Marine Biology Laboratory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 1610 (summer)</td>
<td>Ecology and the Marine Environment</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 2770 (summer)</td>
<td>Marine and Coastal Conservation Biology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 3830 (summer)</td>
<td>Field Marine Invertebrate Biology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 1780 (summer)</td>
<td>Evolution and Marine Diversity</td>
<td>4</td>
</tr>
<tr>
<td>For the Life Sciences Majors</td>
<td>BIOAP (former ANSC) 1100</td>
<td>Domestic Animal Biology</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>BIOMG 1290</td>
<td>Personal Genomics and Medicine</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOMG 1150</td>
<td>Human Genetics: Science &amp; Society</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOG 1140</td>
<td>Foundations of Biology</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>BIOEE 2070/STS 2871</td>
<td>Evolution</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLHR 1112 (summer)</td>
<td>Lawns, Gardens and Landscapes</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLHR 1115</td>
<td>The Nature of Plants</td>
<td>3</td>
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<tr>
<td></td>
<td>PLBIO 2400</td>
<td>Green World Blue Planet</td>
<td>3</td>
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<tr>
<td></td>
<td>PLBIO 2410</td>
<td>Plant Diversity and Evolution</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLBIO 2450 (summer)</td>
<td>Plant Biology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOMS 1130 (summer)</td>
<td>Introduction to Reproduction</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 1500 (summer)</td>
<td>Investigative Marine Biology Laboratory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 1610 (summer)</td>
<td>Ecology and the Marine Environment</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 1650 (summer)</td>
<td>Introduction to Marine Mammal Biology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOSM 1780 (summer)</td>
<td>Evolution and Marine Diversity</td>
<td>4</td>
</tr>
<tr>
<td>For the Non-Life Science Majors</td>
<td>EAS/BIOEE 1551(summer)</td>
<td>Field Introductory Oceanography (Intro Biology will be fulfilled when combined with EAS/BIOEE 1540 on campus)</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>PLSCS/BIOMI 1120</td>
<td>Microbes, the Earth, &amp; Everything</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BIOEE/EAS 1560</td>
<td>Introductory Oceanography with Laboratory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ENTOM 2020</td>
<td>Invasions</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ENTOM 2030</td>
<td>Honey Bees: Their Intriguing Biology &amp; Interactions with Humans</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLBIO 1120</td>
<td>Issues in Social Biology: from Diet to Diseases, DNA to Deforestation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLBIO 2470</td>
<td>Plants and People</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLBIO 2490</td>
<td>Hollywood Biology: Science in Cinema</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLBRG 2010</td>
<td>Plants, Genes, and Global Food Production</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ENTOM 2011</td>
<td>Alien Empire: Bizarre Biology of Bugs</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLHR/FDSC/VIEN 2204</td>
<td>Principles &amp; Practices of Growing Grapes and Making Wines</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLPPM 2013</td>
<td>Mushrooms, Molds, and More</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLPPM 2015</td>
<td>Mushrooms, Molds and Molecules</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PLPPM 2900</td>
<td>Celebrating Inquiry— the Wonder of Willow</td>
<td>3</td>
</tr>
</tbody>
</table>
Chemistry/Physics: All CHEM and PHYS courses (does not include FWS or supplemental courses)

Other Physical/Life Sciences Courses:
- AEM 2100; 4100
- ANSC 2120, 2150, 2210, 2400, 3200, 3700, 3920
- ANTHR 4495
- ASTRO
- BEE 4590
- BIOLOGY (except BIOG 2000, BIONB 4310, BIOSM 2040 and 4940’s)
- BTRY
- CHEM
- CRP 3210
- CS 4775
- DSOC 2020
- EAS (EXCEPT 2900)
- ENTOM 2010, 2100, 2120, 2150, 2410, 2600, 3070, 3150, 3310, 3340, 3440, 3690, 4440, 4550, 4630
- FDSC 2000
- HADM 2201, 2010
- IARD 2020, 4050, 4140, 4495
- ILRST 2100, 2110, 3100, 5110
- MATH
- NS 1150, 1220, 3200, 3310, 3320, 3410, 4310, 4410, 4520, 4444
- NTRES 1101, 2010, 2100, 2830, 3100, 3130, 3220, 3260, 4130, 4200, 4201, 4220
- PAM 2101
- PHYS
- PLBRG 2010, 2250, 4010, 4030, 4050
- PLHRT 2200, 3600, 4000, 4400, 4450, 4490
- PLHRG 2010, 2013, 2015, 2950, 3010, 3090, 3190, 3290, 4010, 4020, 4250, 4330, 4480
- PLSCS 1900, 2110, 2600, 3150, 3170, 4050, 4140, 4440
- PSYCH 3500
- SEA
- SNES 1101
- SOC 3010/6010
- STSCI 2100, 2110, 2200, 4080, 4090, 4500, 5010, 5110, 5020, 5951, 5990, 6000
- TOX 3070

Quantitative Literacy Requirement: College learning goals require minimum competency in quantitative literacy to complete a degree in the College of Agriculture and Life Sciences. This requirement can be satisfied in one of three ways:

- Earning a score of 4 or 5 on the AP Calculus exam or the AP Statistics exam; or
- Transferring an approved calculus or statistics course with a grade of “C” or better; or
- Taking an approved math or statistics course at Cornell. (All 3 - 4 credit math or statistics courses (except MATH 1000 and all MATH First-Year Writing Seminars) are approved to complete the quantitative literacy requirement in CALS). Many majors require statistics.
**Social Sciences and Humanities:** Students must complete four courses of 3 or more credits each from the following seven categories of courses in the humanities and social sciences. At least one course MUST be completed from three different categories. No more than two courses in the same department will be counted toward the distribution requirement. To view a detailed list of these courses, please view the search engine on DUST (https://dust.cals.cornell.edu) titled “Find Courses for Distribution Requirement”. If the course can be counted towards this requirement the course will be coded in the Courses of Study with the category prefix listed below after the title.

Social Sciences & Humanities Categories:

- Cultural Analysis (CA)
- Foreign Language (FL)
- Human Diversity (D)
- Historical Analysis (HA)
- Social and Behavioral Analysis (SBA)
- Knowledge, Cognition, and Moral Reasoning (KCM)
- Literature and the Arts (LA)

*Category descriptions can be found in Table 2*

**Written and Oral Expression:** 9 credits total, of which at least 6 must be in written expression. Oral expression is not required by the college (it may be for some majors); all 9 credits may be in written expression. Courses in written and oral expression may be selected from the following:

<table>
<thead>
<tr>
<th>Oral Expression</th>
<th>Written Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 2010, 3060</td>
<td>First-Year Writing Seminars</td>
</tr>
<tr>
<td>ENTOM 3350</td>
<td>AEM 2000</td>
</tr>
<tr>
<td>ILRLR 3300 (2300)</td>
<td>COMM 2310, 3010, 3030, 3040, 3060, 3020</td>
</tr>
<tr>
<td>PMA 3815</td>
<td>DSOC 4800</td>
</tr>
<tr>
<td>AEM 2700</td>
<td>ENGL 2800, 2810, 2880, 2890, 3820-3850, 3880, 3890</td>
</tr>
<tr>
<td></td>
<td>SOC 3620</td>
</tr>
<tr>
<td></td>
<td>STS 3020</td>
</tr>
</tbody>
</table>
### Table 1: Proration Chart for Students with Non-Cornell Credit

<table>
<thead>
<tr>
<th>Number of Non-Cornell Credits Accepted by CALS</th>
<th>Number of Structured Credits Required for Graduation</th>
<th>Number of Letter-Graded Credits Required for Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 7</td>
<td>105 structured credits</td>
<td>100 letter-graded credits</td>
</tr>
<tr>
<td></td>
<td>(15 unstructured credits allowed)</td>
<td>(20 S/U credits allowed)</td>
</tr>
<tr>
<td>8 - 15 (Equivalent to 1 semester of coursework)</td>
<td>92 structured credits</td>
<td>88 letter-graded credits</td>
</tr>
<tr>
<td></td>
<td>(13 unstructured credits allowed)</td>
<td>(17 S/U credits allowed)</td>
</tr>
<tr>
<td>16-30 (Equivalent to 2 semesters of coursework)</td>
<td>80 structured credits</td>
<td>75 letter-graded credits</td>
</tr>
<tr>
<td></td>
<td>(11 unstructured credits allowed)</td>
<td>(15 S/U credits allowed)</td>
</tr>
<tr>
<td>31-45 (Equivalent to 3 semesters of coursework)</td>
<td>66 structured credits</td>
<td>63 letter-graded credits</td>
</tr>
<tr>
<td></td>
<td>(9 unstructured credits allowed)</td>
<td>(12 S/U credits allowed)</td>
</tr>
<tr>
<td>46-60 (Equivalent to 4 semesters of coursework)</td>
<td>52 structured credits</td>
<td>50 letter-graded credits</td>
</tr>
<tr>
<td></td>
<td>(8 unstructured credits allowed)</td>
<td>(10 S/U credits allowed)</td>
</tr>
</tbody>
</table>

**Structured Credit Rationale:**
Faculty legislation states that an entering first-year student can count up to 15 non-structured credits toward graduation. It also states that a student is expected to register in the college for 8 semesters. If you divide the number of non-structured credits allowed (15) by the number of expected semesters in residence (8), students need to average 13 structured credits a semester.

**Letter-Graded Credit Rationale:**
Faculty legislation states that an entering first-year student needs to complete a minimum of 100 letter-graded credits for graduation. It also states that a student is expected to register in the college for 8 semesters. If you divide the number of letter-graded credits required (100) by the number of expected semesters in residence (8), students need to average 12.5 letter graded credits a semester.
### Table 2: SOCIAL SCIENCES & HUMANITIES: CATEGORY DESCRIPTIONS

#### Human Diversity (D)
These courses address several of the College’s stated goals for undergraduate education, specifically, the expectation that in the course of earning a degree, students will enhance their abilities to communicate with people of different cultural perspectives; to listen carefully and respectfully to the views of others, especially views with which they disagree; and to employ ethical reasoning in judging ideas, actions, and their implications. These courses explore the challenges of building a diverse society, and/or examine the various processes that marginalize people and produce unequal power relations in terms of race, nationality, ethnicity, sexuality, religion, gender, age, or economic status.

#### Historical Analysis (HA)
these courses interpret continuities and changes--political, social, economic, diplomatic, religious, intellectual, artistic, scientific--through time. The focus may be on groups of people, dominant or subordinate, a specific country or region, an event, a process, or a time period.

#### Knowledge, Cognition, and Moral Reasoning (KCM)
These courses investigate the bases of human knowledge in its broadest sense, ranging from cognitive faculties shared by humans and animals such as perception, to abstract reasoning, to the ability to form and justify moral judgments. Courses investigating the sources, structure, and limits of cognition may use the methodologies of science, cognitive psychology, linguistics, or philosophy. Courses focusing on moral reasoning explore ways of reflecting on ethical questions that concern the nature of justice, the good life, or human values in general.

#### Literature and the Arts (LA)
these courses explore literature and the arts in two different but related ways. Some courses focus on the critical study of artworks and on their history, aesthetics, and theory. These courses develop skills of reading, observing, and hearing and encourage reflection on such experiences; many investigate the interplay among individual achievement, artistic tradition, and historical context. Other courses are devoted to the production and performance of artworks (in creative writing, performing arts, and media such as film and video). These courses emphasize the interaction among technical mastery, cognitive knowledge, and creative imagination.

#### Social and Behavioral Analysis (SBA)
These courses examine human life in its social context through the use of social scientific methods, often including hypothesis testing, scientific sampling techniques, and statistical analysis. Topics studied range from the thoughts, feelings, beliefs, and attitudes of individuals to interpersonal relations between individuals (e.g., in friendship, love, conflict) to larger social organizations (e.g., the family, society, religious or educational or civic institutions, the economy, government) to the relationships and conflicts among groups or individuals (e.g., discrimination, inequality, prejudice, stigmas, conflict resolution).

#### Foreign Language (FL)
These courses are taught by the following departments: Africana Studies and Research Center (AS&RC - language only), Asian Studies (BENGL, BURM, CHIN, HINDI, INDO, JAPAN, KHMER, KOREA, SANSK, TAG, THAI, and VIET), Classics (CLASS, LATIN, GREEK and Sanskrit - language only), German Studies (GERST - language only, DUTCH, and SWED), Linguistics (LING - languages only), Near Eastern Studies (NES - languages only), Romance Studies (CATAL, FRROM, ITALA, PORT, QUECH, and SPANR), and Russian Studies(RUSSA, HUNGR, POLSH, SEBCR, and UKRAN).

#### Cultural Analysis (CA)
These courses study human life in particular cultural contexts through interpretive analysis of individual behavior, discourse, and social practice. Topics include belief systems (science, medicine, and religion), expressive arts and symbolic behavior (visual arts, performance, poetry, myth, narrative, and ritual), identity (nationality, race, ethnicity, gender, and sexuality), social groups and institutions (family, market, and community), power and politics (states, colonialism, and inequality).
Physical Education (PG 2): Must pass swim test and pass 2 physical education classes

* Transfer students are exempt with 2 or more semesters at another institution

Pass Swim Test
Physical Education
Physical Education

Physical and Life Sciences (PG 2): 18 credits in at least 3 disciplines of which 6 credits must be introductory life sciences/biology, 3 credits in chemistry or physics and a Quantitative Literacy Course.

Introductory Life Sciences (Biology)
Introductory Life Sciences (Biology)
Chemistry/Physics
Quantitative Literacy (can be completed with a 4 or 5 on AP calculus or Stats, transferring a Calc or Stats with "C" or higher, completing an approved math or Stats course at Cornell)
Other
Other

Social Sciences and Humanities (PG 4): 4 courses of 3 or more credit each. At least 1 course MUST be completed from 3 different categories: (CA), (FL), (D)*, (HA), (SBA), (KCM), (LA)

* Freshman entering fall 2009 or later MUST complete one (D)
* Transfers entering fall 2010 or later MUST complete one (D)

Human Diversity Category
Second Category
Third Category
Final Course

Written and Oral Expression (PG 4): 9 credits total of which 6 must be written expression (Oral expression not required by college, but may be for your major. All 9 credits may be written)

Written Expression
Written Expression
Written or Oral

Total Credit Requirements (PG 1)

120 academic credits

- 60 academic credits must be at Cornell
  - Physical Education does not count
  - Supplemental courses do not count
  - ESL Courses do not count
- 55 credits must be from CALS
- 100 must be Letter-Graded
  - Pro-rated for Transfers

- 105 must be structured
  - 15 maximum can be earned through Independent Study, Research, TA-ing, and/or Internships. Pro-rated for Transfers

Table 1