MAJOR REQUIREMENTS FOR AGRICULTURAL SCIENCES

This document refers to and is a companion to the checklist.

Students majoring in Agricultural Sciences must complete the requirements outlined in the following pages, or equivalents taken at other institutions. The major is deliberately flexible in concentration and course choices. This does not indicate ease of degree completion, rather opportunity for students with diverse backgrounds and interests to find common coursework/preparation for a variety of agricultural career options. Each student should consult with their faculty advisor in crafting and revisiting course selections that are challenging, fulfilling, and meet individual goals. In particular, those considering undergraduate research or graduate school should work closely to choose the correct rigor of foundational coursework in the life sciences and statistics.

In addition to the life sciences core of biology, chemistry, and statistics that also counts towards CALS requirements, all Agricultural Sciences students are required to complete:

a) total of 13 core courses, several categories offer choices, and
b) concentration of at least 12 credits. There are five concentrations and students often are able to complete more than one.

<table>
<thead>
<tr>
<th>AG SCIENCES CREDIT CATEGORIES</th>
<th>CREDIT TOTALS</th>
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<tbody>
<tr>
<td>CALS Distribution Requirements</td>
<td>39</td>
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<tr>
<td>Required Core Courses for Major</td>
<td>37+</td>
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<tr>
<td>Minimum Required Credits for Concentration</td>
<td>12</td>
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<tr>
<td>Elective Credits</td>
<td>32+</td>
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<tr>
<td>TOTAL Credits</td>
<td>120</td>
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LIFE SCIENCES CORE (biology, chemistry, mathematics)

1. **INTRODUCTORY BIOLOGY** – Minimum 6 cr. from the following list or equivalents:
   - BIOAP 1100, Domestic Animal Biology, fall, 4 credits *Fall MWF 9:05
   - BIOEE 1610 Ecology and the Environment, fall, spring, 3-4 credits
   - BIOEE 1780 Evolutionary Biology and Diversity, fall, spring, 4-5 credits
   - BIOG 1140 Foundations of Biology, fall, 4 credits (recommended as first course)
   - BIOG 1440 or BIOG 1445 Comparative Physiology, fall, spring, summer, 3-4 credits
   - BIOG 1500 Investigative Biology Laboratory, fall, spring, summer, 2 credits
   - BIOMG 1350 Cell and Developmental Biology, fall, spring, 3 credits
   - PLBIO 2410 Introductory Plant Biodiversity and Evolution, fall, 3 credits
   - PLHRT 1115 The Nature of Plants, spring, 3 credits
   
   Students should discuss biology options with their advisor depending on goals and interests, in particular those students interested in research, graduate school, and/or pre-med/vet.

2. **CHEMISTRY** – Minimum one course. Choose from the following four sequences:
   - CHEM 1560 fall, 4 credits (Intro to General Chemistry)
   - CHEM 1560/1570 (Intro to General Chemistry and Organic and Biological Chemistry)
   - CHEM 2070/1570 (General Chemistry and Organic and Biological Chemistry)
   - CHEM 2070/2080/3530 or 2070/2080/3570/3580
   
   At least one life sciences chemistry course required. Two semesters of chemistry including organic chemistry recommended for students in the life sciences and/or pre-med/vet. Non-life sciences courses without a lab like CHEM 1150 are NOT accepted. Interested in the plant sciences including cropping systems or horticulture? Consider PLBIO 1560, Application of CHEM 1560 to Plant Sciences (fall), when taking introductory chemistry.
Agricultural Sciences Curriculum – 2018-2019

3. **MATHEMATICS** – For mathematics proficiency, all students must complete one 3-4 credit course in **introductory statistics** at Cornell, or elsewhere. Choices include options that have forbidden overlaps:

- AEM 2100 Introductory Statistics, fall, 4 credits
- STSCI 2100 Introductory Statistics, fall, spring, summer, 4 credits *(cross-list ILRST, take STSCI)*
- STSCI 2150 Introductory Statistics for Biology, fall, spring, 4 credits

**Seeking additional experience (e.g., grad school track)?** After 2100-level or with AP Statistics credit, consider BTRY 3020/STSCI 3200 Biological Statistics II, spring, 4 credits OR ENTOM 3030, Applied Statistics: Biological Experiments in Practice, spring 3 credits *(alt. yrs. only)*

**AGRICULTURAL SCIENCES CORE COURSES** *(13 total, 6 requirements offer course choices)*

Core requirements are strongly encouraged to be completed for letter grade. If you want to change your grading option to S-U, you must request approval by notifying your advisor and the Ag Sciences director beforehand. A core course may **not** also be double-counted as a concentration course for Ag Sciences Major graduation requirements.

**Courses commonly taken in the first year:**

1. **AGSCI/PLSCS 1125** Guided Explorations: Growing You and Your Path in the Agricultural Sciences, fall, 1 credit. **Required for fall freshmen and transfers.** Other transfers (internal, intra-CALS, double majors, January-entry students) should consult director /coordinator.
2. **PLSCI 1101** Plant Science and Systems, fall, 4 credits *(must be taken for 4 credits, with lab)*
3. **PLSCS 1900** Sustainable Agriculture: Food, Farming, and the Future, fall, 3 credits

**Courses commonly taken in the second year:**

4. **SELECT at least one Food Science course from choices:**
   - FDSC 1500 Food Choices and Issues, fall, 3 credits
   - FDSC 2000/NS 3450 Intro to Physiochemical and Biological Aspects of Food, fall, 3 credits
   - FDSC 3960 Food Safety Assurance, spring, 2 credits
5. **PLSCS 2600** Soil Science, fall, 4 credits *(Fall MWF 9:05)*
6. **PLSCS 2110/4050** Field Crop Systems, fall, 4 credits
7. **SELECT at least one Communication or Education course from choices:**
   - **Purpose of requirement:** Ag Sciences students should have enhanced skills that reach beyond the CALS written and oral expression course requirements (9 credits total, at least 6 written). Soft skills including written and oral communication, collaboration and teamwork, conflict resolution, leadership, and managing others are consistently valued by employers. *If a course not listed below interests you and meets the spirit of this requirement, email director, coordinator, and your advisor for approval. COMM 2010 not accepted.*
   - COMM 2850/STS 2851 Communication, Environment, Science, Health, spring, 3 credits [SBA]
   - COMM 3210 Communication and the Environment, spring, 3 credits [SBA] *(odd yrs. only)*
   - COMM 4860 Risk Communication, fall, 3 credits [SBA]
   - EDUC 2200 Introduction to Adult Learning: Education Workshop *fall, spring, 3 credits [D, KCM]*
   - EDUC 2210 Methods and Contexts of Adult and Community Learning: Leading and Teaching with Purpose, fall, spring, 3 credits [D, KCM]
   - EDUC 2410 The Art of Teaching, fall, spring, 4 credits [CA]
   - EDUC 3510 Careers in Agriculture, Extension, and Adult Education, spring, 3 credits
   - COMM/EDUC/HD 3110 Educational Psychology, fall, spring, 4 credits [CA, KCM]
   - ENTOM 3350 Naturalist Outreach Practicum, fall, 3 credits [CALS oral expression credit]
   - ILRHR 2600, Human Resource Management, fall, winter, summer, 3 credits
   - ILRLR 3300 Argumentation and Debate, fall, spring, 4 credits [CALS oral expression credit]
   - LEAD 3100, Foundations in Leadership: Skills for Professional Success and Life, fall, 3 credits
   - PLSCI 3940 Skills for Public Engagement, spring, 3 credits [CALS oral expression credit]

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**AGRICULTURAL SCIENCES CORE COURSES (cont.)**

8. SELECT at least one Introductory Business Management course from choices:
   - AEM 1200 Introduction to Business Management, *spring, summer 3 credits* (not open to freshmen)
   - AEM 3020 Farm Business Management, *fall, 4 credits* *Fall MWF 9:05*

9. SELECT at least one Genetics course from choices:
   - ANSC 2210 Introductory Animal Genetics, *spring, 4 credits* (recommended for students in the Animal Science concentration)
   - BIOMG 2800 Lectures in Genetics and Genomics, *fall, spring, or summer, 3 credits*
     **This course may be taken without lab.** Grad school track? Consider taking BIOMG 2801, Lab in Genetics and Genomics, as well. **NOTE: BIOMG 2800 is the most rigorous intro genetics course.**
   - PLBRG 2250 Plant Genetics, *spring, 4 credits* *Fall MWF 9:05*

**Courses commonly taken in the third year:**

10. AGSCI 4960 Internship Experience, *1-3 credits*
    All students must complete an agriculturally-related internship of at least the equivalent of **six weeks of full time effort** and earn one credit of AGSCI 4960, the internship credit, **after** matriculating into Cornell as a full time student and **before** their final Cornell semester. Retroactive credit is **not allowed** (for those with work experiences prior to matriculating full time). Students wishing to complete their internship during a leave such as a semester abroad or leave of absence, **must make arrangements in advance** and complete the learning agreement to receive credit. Students should seek resume-building experiences each year of their studies. **Freshmen are not eligible to complete the internship requirement. Sophomores are particularly encouraged to complete the requirement.** Home farm students are encouraged to intern at an external business or organization. However, there is flexibility to pursue individual career goals. Address questions to the major coordinator, who also coordinates the internship requirement.

11. SELECT at least one Animal Science course from choices:
    - BIOAP 1100, Domestic Animal Biology, *fall, 4 credits* *Fall MWF 9:05*
    - ANSC 2120, Animal Nutrition, *fall, 4 credits*
    - ANSC 2500, Dairy Cattle Principles, *spring, 3 credits*
    - ANSC 2650, Equine Biology and Management, *fall, 3 credits*
    - ANSC 3500, Meat Science, *fall, 3 credits* **NOTE:** Students selecting ANSC 3500 must work with an advisor to ensure supplementation with animal production experience from either work/home farm background. **No animal production experience and don’t plan any? Select another course.**
    - ANSC 3600, Beef Cattle, *spring, 3 credits,* (even yrs. only)
    - ANSC 3800, Sheep, *spring, 3 credits,* (odd yrs. only)

12. SELECT at least one International Agriculture course from choices:
    - AEM/FDSC 3290 International Agribusiness Study Trip, *spring, 2 credits* (prereqs, course fee, application) **(alt. yrs. only)**
    - ANSC 2550/2551 or 3560/3561 alt. years Dairy Study Trips, *fall-spring, 2 cr., CUDS,* (must complete 2 credits)
    - DSOC/IARD 1100 Perspectives on International Ag and Rural Development, *fall, 3 credits*
    - FDSC/IARD 4020 Agriculture in Developing Nations I, *fall, 2 credits*
    - FDSC/IARD/NTRES 4800 Global Seminar: Building Sustainable Environments and Secure Food Systems for a Modern World, *spring, 3 credits*
    - IARD/PLSCS 4140 Tropical Cropping Systems: Biodiversity, Social and Environmental Impacts, *fall, 4 credits* [D]

**Course commonly taken in fourth year:**

13. ENTOM/PLSCS 4440 Integrated Pest Management, *spring, 4 credits*
CONCENTRATIONS

Concentration coursework must be taken letter grade, if student-option for course grade provided. Students are required to select at least one of the five concentrations and complete at least 12 credits. It is possible to complete more than one. Concentrations are not listed on the transcript or diploma, but students can note their concentration in DUST (https://dust.cals.cornell.edu/). NOTE: A concentration course may not also be double-counted as a core course for Ag Sciences Major graduation requirements.

Curious about minors? Commonly pursued minors are listed inside each concentration. Want to explore more minors? See all of CALS minors (https://admissions.cals.cornell.edu/academics/minors/). Cornell offers over 120 minors (http://www.cornell.edu/academics/fields.cfm). Ag Sciences students may double-count any concentration or core course towards an additional minor or double major.

1. Animal Science
   4. Organic Agriculture

2. Business Management and Policy
   5. Sustainable Cropping Systems Management

3. Education and Society
   Sustainable Agriculture Concentration phased out 2018-19. See more detail pg. 8

We recognize student interest in the broad environmental sciences. To accommodate this, a petition may be submitted to pursue the Climate Change Minor (http://www.eas.cornell.edu/academics/undergraduate/climate-change-minor.cfm) in substitution for a concentration. This must be initiated by the end of the first semester, junior year. The minor is 18 credits and the full minor must be completed to plan this option. To begin the process, email the Ag Sciences coordinator for petition paperwork.

1. ANIMAL SCIENCE CONCENTRATION

SELECT 12 credits, at least 6 credits from each of the two lists below that does NOT also overlap with the core animal science course requirement for all students (explained on page 3). For example, if you take ANSC 2500 or 3600/3800 for your core requirement, also complete 12 credits from the 2 lists below.

List 1:
   BIOAP 1100 Domestic Animal Biology, fall, 4 credits *Fall MWF 9:05
   ANSC 2120 Animal Nutrition, fall, 4 credits
   ANSC 2400 Animal Reproduction and Development, spring, 3 credits
   ANSC 2410 Animal Reproduction and Development Lab, spring, 1 credit

List 2:
   ANSC 2500 Dairy Cattle Principles, spring, 3 credits
   ANSC 2650 Equine Biology and Management, fall, 3 credits
   ANSC 3500 Meat Science, fall, 3 credits
   ANSC 3600 Beef Cattle, spring, 3 credits (even yrs. only)
   ANSC 3800 Sheep, spring 3 credits (odd yrs. only)

Relevant Minors: Many students interested in animal production or veterinary medicine choose to double major in Animal Science. There is also a minor available, (https://ansci.cals.cornell.edu/undergraduate/).

2. BUSINESS MANAGEMENT AND POLICY CONCENTRATION

This concentration offers two tracks. Students may not mix and match between tracks for satisfaction of the concentration. NOTE: All Agricultural Sciences students are required to complete an introductory business management course, either AEM 1200 Business Management, spring, summer, 3 credits (not open to freshmen) or AEM 3020 Farm Business Management, fall, 4 credits. This general level requirement also applies to business concentration students. Students in this concentration should also strongly consider microeconomics. Macroeconomics and a course in spreadsheet modeling (AEM 2011) or Excel may also be beneficial.
2. BUSINESS MANAGEMENT AND POLICY CONCENTRATION

a. TRACK ONE: BUSINESS MANAGEMENT

Students select between two course choices for each of the three set courses (accounting, finance, and marketing) and choose a fourth course from five categories of choices below.

1. **Financial Accounting**, choices include either:
   - AEM 2210 Financial Accounting, *fall, spring, summer*, 3 credits **OR** HADM 2230 Financial Accounting Principles, *fall, spring*, 3 credits

2. **Finance**, choices include either:
   - AEM 2241 Finance **OR** HADM 2250 Finance, *both courses fall, spring* 3 credits **OR** AEM 2050 Agriculture and Agribusiness Finance, *spring* 3 credits [SBA]. **Students planning careers in finance**—consider taking AEM 2241 or supplemental courses beyond the one-course requirement.

3. **Marketing**, choices include either:
   - AEM 2400 Marketing, *fall, winter, summer*, 3 credits **OR** HADM 2410 Marketing Principles, *fall*, 3 credits

4. **Choice**, Additional minimum of 3 credits from choices listed in five categories directly below. **All courses are 3 credits** (unless otherwise noted). Courses at the 3000 or 4000 level often have numerous prerequisites, particularly in finance. Students, review courses in the catalog ([http://courses.cornell.edu](http://courses.cornell.edu)) and plan well with faculty advisor support.

**Management**

- AEM 3200 Business Law I (F), ILRHR 2600 Human Resource Management (F, S) **OR** HADM 2810 (F, S), AEM 3260 Cooperative Business Management [3] (S), AEM 3290 International Agribusiness Study Trip [2 cr] (S alt yrs.), AEM 4030 Farm Management Study Trip [1 cr] (S alt yrs.), AEM 4190 Strategic Thinking (S)

**Entrepreneurship**

- AEM 1220 Entrepreneurship in the Life Sciences [1 cr] (S), AEM 2220 Foundational Perspectives and Contemporary Issues in Entrepreneurship (F, S), AEM 3249 Entrepreneurial Marketing and Strategy (F), AEM 3250 Business Planning Processes for New Ventures [4 cr] (F), AEM 3340 Women, Leadership, and Entrepreneurship [1 cr] (F), AEM 3380 Social Entrepreneurs, Innovators, and Problem Solvers (F, Su), AEM 4140 Behavioral Economics and Managerial Decisions (F), AEM 4380 Entrepreneurial Strategy for Technology Ventures [1.5 cr] (S), AEM 4420 Emerging Markets (F), HADM 3135 Conversations with Entrepreneurs [2 cr] (F, S), HADM 4130 Entrepreneurial Management (F, S), HADM 4211 Entrepreneurial Finance (S), NBA 3000 Entrepreneur and Private Equity (F, S)

**Finance**

- AEM 2011 Spreadsheet Modeling for Non-Dyson (F, W, S, Su), AEM 2300 International Trade and Finance (S, Su), AEM 4000 Practitioner's Overview of Securities Markets and Investment Banking [1] (S), AEM 4010 Commercial Bank Management [1] (F), AEM 4040 Credit & Banking in Agriculture (S), AEM 4060 Risk Simulation and Optimization (S), AEM 4070 Advanced Financial Analytics (S), AEM 4110 Introduction to Econometrics (F), AEM 4150 Price Analysis (F), AEM 4210 Derivatives and Risk Management (S), AEM 4230 Contemporary Topics in Applied Finance (F), AEM 4260 Fixed Income Securities (F), AEM 4280 Valuation of Capital Investment (F), AEM 4290 International Financial Management (F), AEM 4570 Advanced Corporate Finance (F), AEM 4620 Technology and Financial Markets [2] (F), AEM 6400 Analysis of Agricultural Markets (F)

**Food Industry Management**

- AEM 2480 Food and Consumer Packaged Goods Industry Dynamics (S), AEM 3120 Branding and Brand Management [1] (S), AEM 3270 Marketing-Operations Simulation [2] (F), AEM 3440 Consumer Behavior (F) **OR** HADM 3470 (F, S), AEM 4020 Food and Brand Workshop I (F), AEM 4021 Food and Brand Workshop II (S), AEM 4400 Retail Strategy (F), AEM 4460 Food Marketing Colloquium [1] (F)

**Policy**

- AEM 3040 Dairy Markets and Policy Seminar [2-3 cr] (S), AEM 4310 Agricultural and Food Policy (S), AEM 4450 Toward a Sustainable Global Food System Policy for Developing Countries (F), AEM 4640 Economics of Agricultural Development (F)
2. BUSINESS MANAGEMENT AND POLICY CONCENTRATION

b. TRACK TWO: POLICY

Three required categories of classes equaling a minimum of 12 credits. NOTE: prerequisite coursework not counted towards this concentration is Microeconomics. At Cornell Introductory Economics is ECON 1110. Some courses below also require Macroeconomics.

1. Introductory Economics course. Choices include:
   AEM 1500, An Introduction to the Economics of Environmental and Natural Resources, spring, 3 credits [SBA]
   AEM 2000, Contemporary Controversies in the Global Economy, fall, spring, 3 credits [CALS written expression credit]
   AEM 2350, Introduction to the Economics of Development, fall, summer, 3 credits [SBA]
   AEM 2500, Environmental and Resource Economics, fall, 3 credits [SBA]

2. Intermediate Economics course. Choices include either:
   ECON 3030, Intermediate Microeconomic Theory, fall, spring, summer, 4 credits or
   PAM 2000, Intermediate Microeconomics, spring, 4 credits

3. Minimum of 6 credits of coursework in policy. Choices include:
   AEM 3040, Dairy Markets and Policy Seminar, spring 2-3 credits
   AEM 4310, Agricultural and Food Policy, spring 3 credits
   AEM/NS 4450, Toward a Sustainable Global Food System: Food Policy for Developing Countries, fall, 3 credits [SBA]
   AEM 4640, Economics of Agricultural Development, fall, 3 credits [SBA, D]


3. EDUCATION AND SOCIETY CONCENTRATION

This broad concentration is designed to serve the varied needs of students interested in the social aspects of agriculture ranging from classroom teaching and non-formal education, to social justice, world health, and science writing. There are seven minors represented. Students may select one minor and must pursue a minimum of 12 credits towards completion of that minor. Mixing coursework from more than one minor is not permitted. Satisfying all requirements to earn the minor is strongly encouraged (most minors range from 15-18 credits). NOTE: All students, including those pursuing this concentration, must complete a core course for the Communication or Education requirement (pg. 2 options). This may not be double-counted towards concentration coursework.

Choose ONE minor and complete a minimum of 12 credits:

1. Communication
   https://communication.cals.cornell.edu/undergraduate-program/Minor-Requirements/
2. Community Food Systems
   https://devsoc.cals.cornell.edu/undergraduate/Minor/Community-Food-Systems/
3. Creative Writing or English
   http://english.cornell.edu/undergraduate#Minors
4. Development Sociology
   https://devsoc.cals.cornell.edu/undergraduate/Minor/General/
5. Education
   https://education.cals.cornell.edu/undergraduate/Minor/Requirements/
6. Global Health
   https://www.human.cornell.edu/dns/academics/UndergraduateMinors/global
### 4. SUSTAINABLE CROPPING SYSTEMS MANAGEMENT CONCENTRATION

**SELECT** at least 2 credits in each of the four categories below. At least 6 credits must be 300 level or above. **Seeking further foundation knowledge in crop production?** Consider taking coursework including: PLBIO 2410 (fall), PLSCI 1420 (spring), PLBIO 3420/3421 (spring). Also consider PLBIO 1560, Application of CHEM 1560 to Plant Sciences (fall), when taking introductory chemistry.

<table>
<thead>
<tr>
<th>Category</th>
<th>Courses</th>
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<tbody>
<tr>
<td><strong>a) Field Crops</strong></td>
<td>PLBRG 2010 Plants, Genes, and Global Food Production, <strong>fall, 3 credits</strong></td>
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<td>PLBRG 4030 Genetic Improvement of Crop Plants, <strong>fall, 3 credits</strong></td>
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<td>PLSCS 2940 Introduction to Agricultural Machinery, <strong>fall, 2 credits</strong></td>
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<td>PLSCS 3170 Seed Science and Technology, <strong>fall, 3 credits (odd yrs. only)</strong> (not offered F17, next F19)</td>
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<td></td>
<td>PLSCS 4130 Physiology and Ecology of Yield, <strong>spring, 3 credits</strong></td>
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<td>PLSCS 3800 Principles and Practices in Certified Organic Agriculture, <strong>spring 2 credits</strong></td>
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<td>IARD/PLSCS 4140 Tropical Cropping Systems: Biodiversity, Social, and Environmental Impacts, <strong>fall, 4 credits [D]</strong></td>
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<td>PLSCS 4100 Plant Responses to Environmental Stresses &amp; Global Climate Change, <strong>fall, 3 credits</strong></td>
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<td>PLSCS 4910 Food, Farming and Personal Belief, <strong>spring, 1 credit</strong></td>
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<td><strong>b) Horticulture</strong></td>
<td>NTRES 3250 Forest Management and Maple Syrup Production, <strong>spring, 3 credits (even yrs. only)</strong></td>
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<td>PLHRT 3025 Hydroponic Food Crop Production and Management, <strong>spring, 4 credits (even yrs. only)</strong></td>
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<td>PLHRT 3100 Production and Marketing of Greenhouse Crops, <strong>spring, 4 credits (odd yrs. only)</strong></td>
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<td>PLHRT 3440 Viticulture and Vineyard Management, <strong>spring, 3 credits</strong></td>
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<td>PLHRT 3500 Principles of Vegetable Production, <strong>fall, 3 credits (even yrs. only)</strong></td>
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<td>PLHRT 4000 Principles of Plant Propagation, <strong>fall, 3 credits (alt. yrs. only)</strong></td>
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<td>PLHRT 4250 Postharvest Biology of Horticultural Crops, <strong>spring, 2 credits (alt. yrs. only)</strong></td>
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<td>PLHRT 4251 Postharvest Biology of Horticultural Crops Lab, <strong>spring, 1 credit (alt. yrs. only)</strong></td>
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<td>PLHRT 4420 Berry Crops: Culture and Management, *<em>fall, 3 credits (even yrs. only) <em>Fall MWF 9:05</em></em></td>
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<td>PLHRT 4450 Ecological Orchard Management, <strong>spring, 3 credits (alt. yrs. only)</strong></td>
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<td>PLHRT 4551 Principles of Nutrition and Nutrient Management in Crops and Landscape Plants, <strong>spring, 3 credits (even yrs. only)</strong></td>
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<td><strong>c) Pest Management</strong></td>
<td>Students who take 2 or more courses from this pest management list pursuing crop production and management are exempt from taking the core course, IPM (ENTOM/PLSCS 4440).</td>
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<tr>
<td></td>
<td>ENTOM/TOX 3070 Pesticides, the Environment, Human Health, <strong>fall, 2 credits (even yrs. only)</strong></td>
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<td>ENTOM 3410 Applied Entomology, <strong>fall, 3 credits (alt. yrs. only)</strong></td>
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<td></td>
<td>ENTOM/TOX 4900 Toxicology of Insecticides, <strong>spring, 3 credits (alt. yrs. only)</strong></td>
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<td>PLPPM 3800/3801 Biotechnology of Insecticides, <strong>spring, 3 credits (even yrs. only)</strong></td>
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<td>PLPPM 3101 Applied Entomology, <strong>fall, 4 credits</strong></td>
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<td>PLSCS 3150 Weed Biology and Ecology of Yield, <strong>fall, 4 credits</strong></td>
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<td>ENTOM/PLPPM/VIEN 3200 Grape Pest Management, <strong>fall, 3 credits</strong></td>
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<td><strong>d) Soil Science</strong></td>
<td>ANSC 4120 Whole-Farm Nutrient Management, <strong>spring, 4 credits</strong></td>
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<td>PLSCS 2200 Introduction to Mapping and Spatial Analysis with GIS, <strong>fall 3 credits</strong></td>
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<td>PLSCS 3210 Soil and Crop Management for Sustainability, <strong>spring, 4 credits</strong></td>
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<td>PLSCS 4110, Applied Remote Sensing and GIS for Resource Inventory and Analysis, <strong>fall 3 credits</strong></td>
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<td>PLSCS 4200 Geographic Information Systems, <strong>spring, 3 credits</strong></td>
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<td></td>
<td>PLSCS 4720 Nutrient Management in Agro-Ecosystems, <strong>spring, 4 credits</strong></td>
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<td>PLSCS 4660 Soil Ecology, <strong>spring, 4 credits</strong></td>
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<tr>
<td></td>
<td>EAS 4830 Environmental Biophysics, <strong>fall 3 credits (odd yrs. only)</strong></td>
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**Relevant Minors**: The School of Integrative Plant Sciences offers a range of eight minors ([https://sips.cals.cornell.edu/undergraduate/minors/](https://sips.cals.cornell.edu/undergraduate/minors/)). Additionally, the minor in Entomology ([https://entomology.cals.cornell.edu/undergraduate/courses/requirements-minor-entomology/](https://entomology.cals.cornell.edu/undergraduate/courses/requirements-minor-entomology/)) and Viticulture and Enology ([https://grapesandwine.cals.cornell.edu/undergraduate/minor-viticulture-and-enology/](https://grapesandwine.cals.cornell.edu/undergraduate/minor-viticulture-and-enology/)) are commonly pursued.
5. ORGANIC AGRICULTURE CONCENTRATION

Three required courses:
1. ENTOM/PLHRT 4730 Ecology of Agricultural Systems, fall, 3 credits
2. PLSCS 3800 Principles and Practices in Certified Organic Agriculture, spring 2 credits
3. PLSCS 3150 Weed Biology and Management, fall, 4 credits

Choose at least one 3-4 credit course from the following list:
- PLHRT 3440 Viticulture and Vineyard Management, spring, 3 credits
- PLHRT 3500 Principles of Vegetable Production, fall, 3 credits (even yrs. only)
- PLHRT 4420 Berry Crops: Culture and Management, fall, 3 credits (even yrs. only) *Fall MWF 9:05
- PLHRT 4450 Ecological Orchard Management, spring, 3 credits (alt. yrs. only)
- PLSCS 3210 Soil and Crop Management for Sustainability, spring, 4 credits
- IARD/PLSCS 4140 Tropical Cropping Systems: Biodiversity, Social, and Environmental Impacts, fall, 4 credits [D]

Relevant Minors: There is no organic agriculture minor at Cornell. Students interested in this concentration may be interested in minors in the Sustainable Cropping Systems or Education and Society concentrations (see pgs. 6-7).

SUSTAINABLE AGRICULTURE CONCENTRATION

(This concentration is phased out in the 2018-19 year. Students entering in and prior to fall 2018 may still pursue. Students entering spring 2019 and beyond should select another concentration.)

Two required courses:
- a) DSOC 3400 Agriculture, Food, Sustainability and Social Justice, fall, 3 credits [D, KCM, SBA], AND
- b) ENTOM/PLHRT 4730 Ecology of Agricultural Systems, fall, 3 credits

Choose at least 6 credits from the following list:
- AEM 4310 Agricultural and Food Policy, spring, 3 credits
- AEM/NS 4450 Toward a Sustainable Global Food System: Food Policy for Developing Countries, fall, 3 credits [SBA] (see prerequisites)
- EAS 2680 Climate and Global Warming, spring, 3 credits
- ANSC 3100 Introduction to Animal Welfare, fall, 2 credits
- ANSC 4000/IARD 4000 Feeding the World: Biological and Quantitative Analyses of Livestock and Crop Systems, fall 4 credits
- BEE 4010 Renewable Energy Systems, spring, 3 credits
- BIOEE 1610 Ecology and the Environment, fall, spring, 3-4 credits
- BIOEE 3611 Field Ecology, fall, 3 credits
- DSOC 3060 Farmworkers: Contemporary Issues and their Implications, fall, 1 credit [SBA]
- DSOC 3360 Rural Areas in Metropolitan Society, fall, 3 credits [SBA]
- ENTOM 3440 Insect Conservation Biology, fall, 3 credits (even yrs. only)
- NS 1150 Nutrition, Health, and Society, fall, 3 credits
- NS 3060 Nutritional Problems of Developing Nations, fall, 3 credits (odd yrs. only)
- NTRES 3240 Sustainable, Ecologically Based Management of Water Resources, spring, 3 credits
- NTRES 3250 Forest Management and Maple Syrup Production, spring, 3 credits (even yrs. only)
- PLHRT 3600 Climate Change and the Future of Food, fall, 3 credits
- PLHRT 4450 Ecological Orchard Management, spring, 3 credits (alt. yrs. only)
- PLSCS 2940 Introduction to Agricultural Machinery, fall, 2 credits
- PLSCS 3210 Soil and Crop Management for Sustainability, spring, 4 credits
- PLSCS 3800 Principles and Practices in Certified Organic Agriculture, spring 2 credits
- PLSCS 4910 Food, Farming and Personal Belief, spring, 1 credit
**EARNING YOUR DEGREE**
A Bachelor of Science from Cornell University and the College of Agriculture and Life Sciences requires 120 credits of coursework. At least 55 of those credits must be within CALS. There are two sets of requirements needed to earn a degree: 1) CALS requirements 2) major requirements.

**BASIC EQUATION FOR DEGREE COMPLETION:**
15 credits per semester x 8 semesters = 120 credits, degree

*CALS requires students to completed at least 55 credits in CALS courses.* Students who drop below 15 academic credits (not counting PE) or fail a course need to make up those credits in a subsequent semester.

**COURSE PLANNING WEBSITES TO LEARN**

*Note on textbooks:* Many courses won’t use a formal text, will have texts on library reserve, or there are ways to explore lower-cost options like renting through [https://www.chegg.com/](https://www.chegg.com/) or [https://www.amazon.com/](https://www.amazon.com/). Go to the first class meeting of each course before purchase.

**Studentcenter:** [studentcenter.cornell.edu](http://studentcenter.cornell.edu)
This is the university system that provides information about your registration status, aid, and where you enroll in the classes. Learn how to use studentcenter ([https://registrar.cornell.edu/classes-enrollment](https://registrar.cornell.edu/classes-enrollment)).

**DUST:** ([https://dust.cals.cornell.edu/](https://dust.cals.cornell.edu/))
This is the CALS system for tracking your degree progress and assisting you in learning about and completing CALS requirements for graduation. Use this at least twice a semester. MAKE SURE TO USE THIS SITE WHEN: 1) looking for a course that meets a CALS requirement (such as a humanities course requirement) 2) trying to determine if your credits have transferred into your record or you’re course planning into the future.

**CALS Degree Requirements/Course Planning Help:**
[http://cals.cornell.edu/cals/current/registrar/](http://cals.cornell.edu/cals/current/registrar/)
[http://cals.cornell.edu/cals/current/registrar/current-students/cals-graduation/index.cfm](http://cals.cornell.edu/cals/current/registrar/current-students/cals-graduation/index.cfm)

**Cornell Courses of Study:** ([http://courses.cornell.edu/](http://courses.cornell.edu/))
Classes are numbered in a sequence in each department based on level of difficulty (e.g., 1000-level for freshmen, 2000-level for sophomore, and so on). Classes also have prerequisites such as biology, chemistry, or calculus. Learn about classes and prerequisites in the catalog.

**Course and Time Rosters:** ([https://classes.cornell.edu/](https://classes.cornell.edu/))
Course plans MUST include times. For example: several required/key courses in the major are ONLY offered fall, MWF at 9:05. Make sure to check times when building a schedule.

**CoursePad.me:** ([https://coursepad.me/](https://coursepad.me/)) This tool help shuffle schedule options when course planning. **NOTE:** verify course times in the university roster ([https://classes.cornell.edu/](https://classes.cornell.edu/)) as well since this site is not CU-endorsed.

**Scheduler:** ([https://classes.cornell.edu/](https://classes.cornell.edu/)) This is a university-endorsed planning tool within the Class Roster that allows users to build and visualize semester schedules (NetID required). Users can explore different section combinations, add personal events, review class numbers and conflict information, download to a personal calendar and share schedules.
### AG SCIENCES FRESHMEN SCHEDULE

**FALL** (This is largely the only semester without much flexibility)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>TIME LECT</th>
<th>TIME LAB</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOG 1140 or other Bio</td>
<td>Foundations of Biology or other, see curriculum for options</td>
<td>TR 11:40-12:55</td>
<td>Discussion, various times</td>
<td>4</td>
</tr>
<tr>
<td>PLSCI 1101</td>
<td>Plant Science &amp; Systems <a href="http://blogs.cornell.edu/hort/category/hort-1101/">Link</a></td>
<td>MWF 10:10-11</td>
<td>W or F 1:25-4:25</td>
<td>4</td>
</tr>
<tr>
<td>PLSCS 1900</td>
<td>Sustainable Agriculture: Food, Farming &amp; the Future</td>
<td>TR 10:10-11</td>
<td>W or R 1:25-4:25</td>
<td>3</td>
</tr>
<tr>
<td>AGSC 1125</td>
<td>Guided Explorations in AGSCI</td>
<td>M 11:15-12:05</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>FWS</td>
<td>First year writing seminar BY BALLOT: <a href="http://knight.as.cornell.edu/fws-ballot">Link</a></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PE (1 non-academic credit)</td>
<td>Physical education, many choices</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL: 15 academic credits**

### COMMON FRESHMEN SCHEDULE CHOICES

**SPRING**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSES TITLE</th>
<th>TIME LECT</th>
<th>TIME LAB</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Another Biology course</td>
<td>see curriculum for options</td>
<td></td>
<td></td>
<td>2-3</td>
</tr>
<tr>
<td>Statistics</td>
<td>STSCI course options</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Humanities/ courses of interest</td>
<td>Many options, use DUST ‘find courses’ search tool</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>FWS</td>
<td>First year writing seminar BY BALLOT: <a href="http://knight.as.cornell.edu/fws-ballot">Link</a></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PE (1 non-academic credit)</td>
<td>Physical education, many choices</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL: 15 academic credits**
### COMMON SOPHOMORE SCHEDULE CHOICES

**FALL** *(This is a challenging science semester, best to complete chemistry and soils before junior year)*

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>TIME LECT</th>
<th>TIME LAB</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1560 or higher level gen chem for grad school, research track</td>
<td>Intro to General Chemistry</td>
<td>MWF 12:20-1:10</td>
<td>Choices: MTWF 1:25-4:25</td>
<td>4</td>
</tr>
<tr>
<td>PLSCS 2110</td>
<td>Field Crops Systems</td>
<td>MWF 10:10-11:00</td>
<td>Choices: MTW 1:25-4:25</td>
<td>4</td>
</tr>
<tr>
<td>Humanities, IARD course, Ed/Comm course, Oral Expression, FDSC core course</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL:** 15 academic credits

### COMMON SOPHOMORE SCHEDULE CHOICES

**SPRING**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>TIME LECT</th>
<th>TIME LAB</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics</td>
<td></td>
<td></td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>Course in core or concentration</td>
<td></td>
<td></td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>Humanities and/or Oral Expression</td>
<td></td>
<td></td>
<td></td>
<td>3-6</td>
</tr>
</tbody>
</table>

**TOTAL:** 15-17 academic credits

**Why are there no schedules for junior and senior year?** After sophomore year, most students have completed enough core and college requirements that scheduling becomes individualized and interest/concentration-focused. Students should work with their advisor, the coordinator, and seek peer-input on class planning. Transfer students are supported and encouraged to plan all remaining Cornell semesters at the start of their studies.