

**Bachelor of Science in Agriculture**  
**Major: Sustainable Plant Systems**  
**Specialization: Controlled Environment Agriculture**

*Controlled Environment Agriculture is an interdisciplinary crop production science integrating horticultural science, plant health management, applied environmental science, and applied biological engineering to achieve sustainable crop production in various climate regions. Students will take classes in plant science, greenhouse management, hydroponics, fruit and vegetable production, plant health management, agricultural meteorology, and introductory engineering principles. Students in this major will complete a minimum of 121 hours outlined as follows.*

General Education Requirements		
Requirement	Course Options	Hours
GE Launch Seminar	<b>GENED 1201</b>	1
Writing and Information Literacy	<b>Student Choice</b>	3
Mathematical & Quantitative Reasoning/Data Analysis	Major requirement: <b>MATH 1130, 1148, 1150, 1151, or 1156 *</b> (or <i>Student Choice – see below</i> )	4-5
Literary, Visual and Performing Arts	<b>Student Choice</b>	3
Historical & Cultural Studies	<b>Student Choice</b>	3
Natural Science	Major requirement: <b>BIOLOGY 1113 *</b> (or <i>Student Choice – see below</i> )	4
Social & Behavioral Sciences	Major requirement: <b>AEDECON 2001 or ECON 2001.01 *</b> (or <i>Student Choice – see below</i> )	3
Race, Ethnic and Gender Diversity	<b>Student Choice</b>	3
Theme: <b>Citizenship for a Diverse &amp; Just World</b> <sup>a</sup>	<b>Student Choice</b>	4-6
Theme: <b>Student Choice</b> <sup>a</sup>	<b>Student Choice</b>	4-6
GE Reflection	<b>GENED 4001</b>	1
<b>Credit Hours:</b>		<b>33-38</b>

\* Indicates a pre/corequisite course for this major that also satisfies this GE category. If a student makes an alternative selection in this GE category, **they must also complete this course.**

B.S. in Agriculture Degree Requirements		
Requirement	Course Options	Hours
College & Department Survey	<b>FAES 1100 (0.5) &amp; HCS 1100 (0.5)</b>	1
Oral Expression	<b>AGRCOMM 3130 or COMM 2110</b>	3
Additional Science	<b>CHEM 1110, 1210, or 1220</b>	5
Internship	<b>FAES 3191 &amp; HCS 4191.01</b>	2
Minor Equiv. <sup>b</sup>	<i>See pg. 2</i>	15-18
<b>Credit Hours:</b>		<b>26-29</b>

General Education:	<b>33-38</b>
Degree Requirements:	<b>26-29</b>
Major:	<b>52</b>
Open Electives:	<b>2-10</b>
<b>Minimum Total Credit Hours:</b>	<b>121</b>

Major Coursework		
Course	Title	Hours
<b>HCS 2202</b>	Form and Function in Cultivated Plants	4
<b>HCS 2204</b>	Ecology of Managed Plant Systems <sup>❖</sup>	3
<b>HCS 2205</b>	Ecology of Managed Plant Systems Lab	1
<b>HCS 2260</b>	Data Analysis and Interpretation for Decision Making	3
<b>HCS 3200</b>	Intro to Horticulture	3
<b>HCS 3310</b>	Crop Responses to the Environment	3
<b>HCS 3320</b>	Plant Propagation	3
<b>HCS 3521</b>	Greenhouse Systems and Management	2
<b>HCS 4300</b>	Hydroponic Crop Production	2
<b>HCS 4301</b>	Hydroponic Crop Production Lab	1
<b>HCS 5200 -or- HCS 5602</b>	Advanced Horticultural Systems -or- Ecology of Agriculture (Capstone)	3
<b>ENTMLGY 5610</b>	Greenhouse Plant Health and Pest Management	3
<b>GEOG 5900</b>	Weather, Climate, and Global Warming	3
<b>PLNTPH 3001</b>	General Plant Pathology	3
<b>Major Electives: Select 15 credit hours from:</b>		
<b>HCS 2305</b>	Organic Gardening	1
<b>HCS 2306</b>	Sustainable Vegetable Production Practicum	3
<b>HCS 2307</b>	Sustainable Agriculture Practical Experience	2
<b>HCS 2340.01</b>	Woody Ornamental Plants	3
<b>HCS 2340.02</b>	Herbaceous Ornamental Plants	3
<b>HCS 3380</b>	Latino Workforce in Land Based Industries	2
<b>HCS 3420</b>	Seed Science	3
<b>HCS 3488.01</b>	Professional Development in Hort. And Crop Science	1-3
<b>HCS/AGSYSMT 3585</b>	Digital Agriculture <sup>❖</sup>	3
<b>HCS 4520</b>	Medicinal Plants	3
<b>HCS 4998</b> <sup>c</sup>	Undergraduate Research	1-6
<b>HCS 4999</b> <sup>c</sup>	Research with Distinction	1-6
<b>HCS 4999H</b> <sup>c</sup>	Honors Research with Distinction	1-6
<b>HCS 5097.03-04 &amp; 5797.03-04</b>	Study Abroad Predeparture & Study Abroad	4
<b>HCS 5325</b>	Plant Genetics	3
<b>HCS 5450</b>	Vegetable Crop Production and Physiology	3
<b>HCS 5460</b>	Fruit Crop Physiology and Production	3
<b>HCS 5621</b>	Physiology of Cultivated Plants	3
<b>HCS 5887</b>	Introduction to Experimental Design	3
<b>HORTTEC 3560</b>	Integrated Greenhouse Climate Control	4
<b>Credit Hours:</b>		<b>52</b>

<sup>a</sup> Students complete either a 4-credit course or two 3-credit courses in each of two General Education Theme areas: Citizenship for a Diverse & Just World (required), and the student's choice of available GE Themes. If any major-required courses are identified as a GE Theme course, one course in each GE Theme area may double count in the GE and major hours. Theme courses are identified with a <sup>❖</sup> symbol.

<sup>b</sup> Students in this program complete a group of courses called a minor equivalent. Declaring an additional minor is not required.

<sup>c</sup> Only up to 6 credits of any combination of 4193, 4998, 4999, or 4999H can count towards major electives.

<sup>d</sup> Review prerequisites.

Minor Equivalent (15-18 hours)		
Select 15-18 credits from <u>one</u> of the groups below (courses selected as major elective options cannot also count in the minor equivalent):		
Group A: Production and Management		
Course	Title	Hours
AEDECON 2400	Diversity in the Workplace: Challenges and Opportunities	3
AEDECON 2500	Introduction to Sustainability ❖	3
AEDECON 3101	Principles of Agribusiness Management	3
AEDECON 3102	Principles of Agribusiness Marketing	3
AEDECON 3103	Principles of Agribusiness Finance	3
AEDECON 3160	Human Resource Management in Small Business	3
AGSYSMT 2193 <sup>d</sup>	Individual Studies	1-2
AGSYSMT 2240	Basic Metal Fabrication for Agriculture	3
AGSYSMT 2310	Electrical Power for Agricultural and Residential Applications	2
AGSYSMT 3232	Engines and Power Transmission	3
AGSYSMT 3320	Facilities for Agricultural and Greenhouse Production	3
HCS/AGSYSMT 3585	Digital Agriculture (if not taken as major elective) ❖	3
AGSYSMT 5560	UAS and Remote Sensing in Agriculture	3
BUSMHR 2210	Personal Leadership & Team Effectiveness	3
BUSML 3150	Foundations of Marketing	3
CONSCI 2910	Consumer Problems and Perspectives	3
CSHSPMG 3910	Customer Experience Management	3
CONSYSTM 2205	Introduction to Construction Systems Management	3
CONSYSTM 2241	Construction Materials and Methods II	3
CONSYSTM 2440	Construction Surveying and Site Development	4
ENR 3000	Soil Science	3
ENR 3001	Soil Science Laboratory	1
ENR 5279	Urban Soils and Ecosystem Services	3
ENTMLGY 4600	Introduction to Insect Science	1
ENTMLGY 4601	General Insect Pest Management	2
ENTMLGY 5500	Biological Control of Arthropod Pests	3
ENTMLGY 5600	Integrated Pest Management	3
ENTMLGY 5800	Pesticide Science	3
FABENG 2100	Energy in Biological Systems	1
FABENG 3120	Thermodynamics in Food, Agricultural and Biological Engineering	4
FABENG 3130	Heat and Mass Transfer in Food, Agricultural and Biological Engineering	4
PLNTPH 3002	General Plant Pathology Lab	2
PLNTPH 5110	Ecology and Management of Pathogens and Insects Affecting Trees in Forest and Urban Environments	3
PLNTPH 5120	Diseases of Ornamental Plants	3
PLNTPH 5150	Diseases of Vegetable and Fruit Crops	2
PLNTPH 5603	Plant Disease Management	3

Group B: Research		
CHEM 2310 <sup>d</sup>	Introductory Organic Chemistry	4
BIOCHEM 4511	Introduction to Biological Chemistry	4
EEOB 3310.01 or 3310.02	Evolution	4
EEOB 3410	Ecology	4
ENR 5268	Soils and Climate Change	3
ENR 5274	Ecosystems Simulation	3

#### Policies and General Requirements for Degree

- A minimum of 121 total credit hours. Remedial coursework (English 1109; EDUTL 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1010; Mathematics 1040, 1050, 1073, 1074, 1075) do not count toward the 121-hour minimum requirement for the BS degree.
- A minimum of 30 semester hours of credit earned through regular course enrollment at this University, and regular course enrollment in the last semester in the College of Food, Agricultural, and Environmental Sciences.
- A cumulative point-hour ratio of at least 2.00 on all coursework completed at The Ohio State University as well as at least a 2.00 in the major.
- If a major-required course or major elective is a GE Theme course, two 3-4 cr courses (no more than one per theme area) is permitted to double count in the GE and major hours. GE Theme courses are indicated with a ❖ symbol.
- Students are encouraged to participate in education abroad opportunities. Consult with your advisor for how education abroad credit applies to your degree or consider the CFAES Global Option.
- Students must complete a minimum of 40 hours in major/major supporting coursework with at least 12 hours taken from the academic unit(s) offering the major at OSU in the baccalaureate program.
- Courses required in the major (including major supporting courses and major electives) may **not** be taken pass/non-pass.
- Coursework taken as open electives may include a maximum of 4 credit hours of physical activity courses (all 1139-1197 courses), and a maximum of 4 credit hours of campus music organizations.
- A college maximum of six hours of individual studies courses (x193) can be applied toward graduation; some majors may have a lower maximum.
- Students of CFAES must complete an internship of 1-2 hours as a requirement for degree. Any additional internship credit hours may count towards major hours (consult with your advisor). A college maximum of six hours of internship credit can be applied toward graduation; some majors may have a lower maximum.
- A maximum of three credits of 3488 can be applied toward graduation although some majors may have a lower maximum. A cumulative point-hour ratio of 2.0 is required to register for 3488 credit.
- Credit hours for 4999 ("with Research Distinction") and 4999H ("with Honors Research Distinction") are repeatable to maximum of six hours.
- **An application for degree must be submitted online at least two semesters prior to the intended graduation term. Application found at: <https://students.cfaes.ohio-state.edu/academics/undergraduate/graduation>**

#### Policies and General Requirements for Minors/Minor Equivalent

- The minor/minor equivalent must contain a minimum of 12 credit hours distinct from the major and/or additional minors (i.e., if a minor requires more than 12 credit hours, a student is permitted to overlap those hours beyond 12 with the major or with another minor).
  - A 2.00 cumulative point-hour ratio is required in the minor/minor equivalent with a minimum C- grade for any course to be listed in the minor or minor equivalent (includes transfer credit).
  - For programs requiring a minor: minors should be declared by the time students complete 60 hours.
  - A student is permitted to count up to 6 credit-hours of transfer and/or EM credit in the minor or minor equivalent.
- Coursework graded Pass/Non-Pass cannot count in the minor. No more than 3 credit-hours of course work graded S/U may count toward the minor. Maximum of 3 credit-hours of xx93 are allowed to count in the minor.

<sup>e</sup> Minimum cumulative GPA of 2.5 required for enrollment.

**4-Year Course Plan  
B.S. in Agriculture  
Major: Sustainable Plant Systems  
Specialization: Controlled Environment Agriculture (CEA)**

*This model plan of study is presented as a suggested path to graduate in four years. It is intended to be a useful guide; however, each student is unique and should review the Degree Requirements for their catalog year and work with their advisor to develop an individualized course plan that best fits their personal academic background and goals.*

*NOTE: This sheet should not be used in isolation. To graduate in a timely manner, students must consult their academic advisor on a regular basis.*

<b>Freshman Year</b>	<b>Autumn Semester</b>			<b>Spring Semester</b>		
<b>Benchmarks</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>
-Complete Math requirement -Complete at least one science -Complete GE WIL	FAES 1100	College Survey	.5	CHEM 1110, 1210, or 1220	General Chemistry	5
	HCS 1100	Dept Survey	.5	GE Hist. & Cultural Studies		3
	GE Math	See options	4-5	GE WIL		3
	HCS 2204 ❖ <sup>b</sup> & 2205	Ecology of Managed Plant Systems❖ & Lab	4	HCS 2202	Form and Function in Cultivated Plants	4
	GE Lit, Vis and Perf Arts		3	GE Launch Seminar		1
	Minor Equiv. Elective		3			
<b>Hours: 31</b>		<b>Total:</b>	<b>15</b>		<b>Total:</b>	<b>16</b>
<b>Sophomore Year</b>	<b>Autumn Semester</b>			<b>Spring Semester</b>		
<b>Benchmarks</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>
-Complete three science courses by the end of this year -Begin to consider an internship location	HCS 3200	Intro to Horticulture	3	Major Elective		3
	GE Nat Sci: BIOLOGY 1113	Energy Transfer and Development	4	HCS 2260	Data Analysis	3
	Major Elective		2-3	AGRCOMM 3130	Oral Expression	3
	GE R.E. & G. Diversity		3	HCS 3320	Plant Propagation	3
	GE Theme Choice #1 <sup>b</sup>		3-4	GE SBS: AEDECON 2001	Prin. of Food & Res. Econ.	3
<b>Hours: 61</b>		<b>Total:</b>	<b>15</b>		<b>Total:</b>	<b>15</b>
<b>Junior Year</b>	<b>Autumn Semester</b>			<b>Spring Semester</b>		
<b>Benchmarks</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>
-Apply to graduate -Complete internship by end of the summer -Half of major hours to be completed by the end of the year	ENTMLGY 5610	Greenhouse Plant and Pest Management	3	HCS 3310	Crop Responses to Environ.	3
	HCS 5621	Greenhouse Systems and Management	3	HCS 4300/01	Hydroponic Crop Production & Lab	3
	PLNTPH 3001	General Plant Pathology	3	Major Elective		3
	GE Citizenship #1 <sup>b</sup>		3	Major Elective		3
	GE Theme Choice #2 <sup>b</sup> (or Open Elective)		3	GE Citizenship #2 <sup>b</sup> (or Open Elective)		3
<b>Hours: 91</b>		<b>Total:</b>	<b>15</b>		<b>Total:</b>	<b>15</b>
<b>Senior Year</b>	<b>Autumn Semester</b>			<b>Spring Semester</b>		
<b>Benchmarks</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>	<b>Course/Requirement</b>	<b>Course Name</b>	<b>Hours</b>
-Meet graduation requirements -Meet with a Career Services Advisor	HCS 4191.01 & FAES 3191	Internship	2	HCS 5200 or 5602	Advanced Horticultural Systems or Ecology of Ag. (Capstone)	3
	GEOG 5900	Weather, Climate and Global Warming	3	Major Elective		3
	Major Elective		3	Minor Equiv. Elective		3
	Minor Equiv. Elective		3	Minor Equiv. Elective		3
	Minor Equiv. Elective		3	Open Elective		3
	GENED 4001	GE Reflection	1			
<b>Hours: 91</b>		<b>Total:</b>	<b>15</b>		<b>Total:</b>	<b>15</b>

**Total credit hours for Bachelor of Science Degree: 121**

<sup>a</sup> One possible course from approved GE list or major requirement that has multiple options, as outlined in corresponding Degree Requirements document.

<sup>b</sup> Students complete either a 4-credit course or two 3-credit courses in each of two General Education Theme areas: Citizenship for a Diverse & Just World (required), and the student's choice of available GE Themes. If any major-required courses are identified as a GE Theme course, one course in each GE Theme area may double count in the GE and major hours. Theme courses are identified with a ❖ symbol.

## 4-Year Completion Checklist

Freshman Year	Autumn Semester			Spring Semester		
<b>Benchmarks</b>	<b>Course/Requirement</b>		✓	<b>Course/Requirement</b>		✓
<input type="checkbox"/> Complete Math requirement	FAES 1100					
	HCS 1100					
<input type="checkbox"/> Complete at least one science						
<input type="checkbox"/> Complete GE WIL						
Hours: _____	Notes:			Notes:		
Sophomore Year	Autumn Semester			Spring Semester		
<b>Benchmarks</b>	<b>Course/Requirement</b>		✓	<b>Course/Requirement</b>		✓
<input type="checkbox"/> Complete three science courses by the end of this year						
<input type="checkbox"/> Begin to consider an internship location						
Hours: _____	Notes:			Notes:		
Junior Year	Autumn Semester			Spring Semester		
<b>Benchmarks</b>	<b>Course/Requirement</b>		✓	<b>Course/Requirement</b>		✓
<input type="checkbox"/> Apply to graduate						
<input type="checkbox"/> Complete internship by end of the summer						
<input type="checkbox"/> Half of major hours to be completed by the end of the year						
Hours: _____	Notes:			Notes:		
Senior Year	Autumn Semester			Spring Semester		
<b>Benchmarks</b>	<b>Course/Requirement</b>		✓	<b>Course/Requirement</b>		✓
<input type="checkbox"/> Meet graduation requirements						
<input type="checkbox"/> Meet with a Career Services Advisor						
Hours: _____	Notes:			Notes:		

Total credit hours for Bachelor of Science Degree: 121