

# Agroecology & Sustainable Food Systems (BS): Urban Horticulture Concentration

The Bachelor of Science in Agroecology and Sustainable Food Systems: Urban Horticulture Concentration is one of the four concentrations offered in by the Department of Horticultural Science. Students are offered a unique look at various aspects of Horticulture and Food Systems. Two of the concentrations, Agroecology Research and Production and Community Food systems, are supported and advised by faculty in the Crop and Soil Sciences Department.

Students in the Urban Horticulture concentration are required to take two Biology courses, two Soil Science courses, General Chemistry, and Ecology. These students also required to take interdisciplinary courses that focus on the societal issues of food availability and security. The remaining courses for the major are selected from a series of Foundational and Restricted electives.

Students can follow paths toward sustainable and multidisciplinary approaches in growing food in urban systems and food security.

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Plan Requirements

Code	Title	Hours	Counts towards
<b>Orientation</b>			
ALS 103	Freshman Transitions and Diversity in Agriculture & Life Sciences	1	
or ALS 303	Transfer Transitions and Diversity in Agriculture & Life Sciences		
HS 290	Horticulture: Careers and Opportunities	1	
<b>Mathematics &amp; Natural Sciences</b>			
MA 107	Precalculus I	3	
or MA 114	Introduction to Finite Mathematics with Applications		
Select one of the following:			3
MA 121	Elements of Calculus		

or MA 131	Calculus for Life and Management Sciences A	
or ST 311	Introduction to Statistics	
AEC 360	Ecology	4
or PB 360	Ecology	
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
BIO 183	Introductory Biology: Cellular and Molecular Biology	4
or PB 200	Plant Life	
CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
CH 220	Introductory Organic Chemistry	3
CH 222	Organic Chemistry I Lab	1
or PY 131	Conceptual Physics	

## Communication/Advanced Writing

COM 110	Public Speaking	3
or COM 112	Interpersonal Communication	
Select one of the following:		
AEE 311	Communication Methods and Media	3
ENG 331	Communication for Engineering and Technology	
ENG 332	Communication for Business and Management	
ENG 333	Communication for Science and Research	

## Major Requirements

ARE 201	Introduction to Agricultural & Resource Economics	3
CS 230	Introduction to Agroecology	3
CS 415	Integrated Pest Management	3
CS 430	Advanced Agroecology	4

HS 201	The World of Horticulture: Principles and Practices	3
HS 410	Community Food Systems	3
HS 476	Crop Physiology and Production in Controlled Environments	3
HS 480	Sustainable Food Production (capstone)	1
PB 321	Introduction to Whole Plant Physiology	3
SSC 200	Soil Science	3
SSC 201	Soil Science Laboratory	1
SSC 427	Biological Approaches to Sustainable Soil Systems	3
SSC 428	Soil Management Principles for Sustainable Agriculture	1
STS 323	World Population and Food Prospects	3
Select one of the following:		3
HS 491	Sustainable Agriculture Entrepreneurship Study Abroad	
HS 492	Horticulture Internship	
HS 493	Research Experience in Horticultural Science	
HS 494	Teaching Experience in Horticultural Science	

**Concentration Electives**

Horticultural Science Electives (p. )	9
Advanced Horticultural Science Electives (p. )	6
Socio-Economic and Food System Electives (p. )	6
Advanced Socio-Economic and Food System Electives (p. )	3

**GEP Courses**

ENG 101	Academic Writing and Research <sup>1</sup>	4
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GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )	6
GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )	2
GEP Social Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/</a> )	3
GEP Elective ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> )	3
GEP Global Knowledge ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/</a> ) (verify requirement)	
World Language Proficiency ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/</a> ) (verify requirement)	
<b>Free Electives</b>	
Free Electives	4
<b>Total Hours</b>	<b>120</b>

<sup>1</sup> A grade of C- or higher is required.

<sup>2</sup> Students should consult their academic advisors to determine which courses fill this requirement.

**Horticultural Science Electives**

Code	Title	Hours	Counts towards
AEC 203	An Introduction to the Honey Bee and Beekeeping	3	
CS 211 or HS 215	Plant Genetics Agricultural Genetics	3	
ENT 425	General Entomology	3	
HS 421	Temperate-Zone Tree Fruits: Physiology and Culture	3	
HS 422	Small Fruit Production	3	
HS 431	Vegetable Production	4	
HS 432	Introduction to Permaculture	3	
HS 440	Greenhouse Management	3	
PB 215	Medicinal Plants	3	
PB 325	Culinary Botany	3	

PP 315	Principles of Plant Pathology	4
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### Advanced Horticultural Science Electives

Code	Title	Hours	Counts towards
HS 451	Plant Nutrition	3	
HS 462	Postharvest Physiology	3	
ENT 401	Honey Bee Biology and Management	3	
ENT 526	Organic Agriculture: Principles and Practices	3	
SSC 332	Environmental Soil Microbiology	3	
SSC 341	Soil Fertility and Nutrient Management	3	
SSC 461	Soil Physical Properties and Plant Growth	3	

### Socio-Economic and Food System Electives

Code	Title	Hours	Counts towards
ACC 200	Introduction to Managerial Accounting	3	
ACC 280	Survey of Financial and Managerial Accounting	3	
ARE 215	Small Business Accounting	3	
ARE 270	Principles of Agribusiness Entrepreneurship	3	
ARE 303	Farm Management	3	
ARE 304	Agribusiness Management	3	
ARE 306	Agricultural Law	3	
ARE 309	Environmental Law & Economic Policy	3	
ARE 311	Agricultural Markets	3	
FS 301	Introduction to Human Nutrition	3	
or NTR 301	Introduction to Human Nutrition		
IDS 211	Eating through American History	3	
NTR 210	Introduction to Community Food Security	3	

NTR 310	Food Insecurity and Federal Nutrition Programs	3
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NTR 330	Public Health Nutrition	3
SOC 211	Community and Health	3
SOC 241	Sociology of Agriculture and Rural Society	3
SOC 241A	Sociology of Agriculture and Rural Society	3

### Advanced Socio-Economic and Food System Electives

Code	Title	Hours	Counts towards
AEE 433	Leadership and Management of Volunteers in Agricultural and Extension Education	3	
ARE 433	U.S. Agricultural Policy	3	
ARE 448	International Agricultural Trade	3	
IDS 203	Humans and the Environment	3	
PB 345	Economic Botany	3	
PB 346	Economic Botany Lab	1	
SOC 311	Community Relationships	3	
SOC 342	International Development	3	
SOC 350	Food and Society	3	

#### Semester Sequence

First Year		Hours
Fall Semester		
ALS 103	Freshman Transitions and Diversity in Agriculture & Life Sciences	1
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
ENG 101	Academic Writing and Research	4
HS 201	The World of Horticulture: Principles and Practices	3
MA 107	Precalculus I	3
HS 290	Horticulture: Careers and Opportunities	1
GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )		1

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**Hours** **17**

**Spring Semester**

BIO 183 or PB 200	Introductory Biology: Cellular and Molecular Biology or Plant Life	4
COM 110 or COM 112	Public Speaking or Interpersonal Communication	3
Select one of the following:		3
MA 121 or MA 131 or ST 311	Elements of Calculus or Calculus for Life and Management Sciences A or Introduction to Statistics	
GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )		3
GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )		1
<b>Hours</b>		<b>14</b>

**Second Year****Fall Semester**

CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
CS 230	Introduction to Agroecology	3
GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )		3
GEP Social Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/</a> )		3
PB 360	Ecology	4
<b>Hours</b>		<b>17</b>

**Spring Semester**

AEE 311 or ENG 331 or ENG 332 or ENG 333	Communication Methods and Media (Select one of the following): or Communication for Engineering and Technology or Communication for Business and Management or Communication for Science and Research	3
ARE 201	Introduction to Agricultural & Resource Economics	3
Horticultural Science Electives (p. )		3
PB 321	Introduction to Whole Plant Physiology	3
SSC 200	Soil Science	3
SSC 201	Soil Science Laboratory	1
<b>Hours</b>		<b>16</b>

**Third Year****Fall Semester**

CH 220	Introductory Organic Chemistry	3
CH 222	Organic Chemistry I Lab	1
Horticultural Science Electives (p. )		3
SSC 427	Biological Approaches to Sustainable Soil Systems	3
SSC 428	Soil Management Principles for Sustainable Agriculture	1
<b>Hours</b>		<b>11</b>

**Spring Semester**

CS 415	Integrated Pest Management	3
CS 430	Advanced Agroecology	4
STS 323	World Population and Food Prospects	3
Socio-Economic and Food System Electives (p. )		3
Horticultural Science Electives (p. )		3
<b>Hours</b>		<b>16</b>

**Fourth Year****Fall Semester**

Advanced Horticultural Science Electives (p. )		3
HS 410	Community Food Systems	3
HS 492/493 or HS 493 or HS 494	Horticulture Internship or Research Experience in Horticultural Science or Teaching Experience in Horticultural Science	3
HS 480	Sustainable Food Production (capstone)	1
Free Elective		4
Socio-Economic and Food System Electives (p. )		3
<b>Hours</b>		<b>17</b>

**Spring Semester**

HS 476	Crop Physiology and Production in Controlled Environments	3
Advanced Horticultural Science Electives (p. )		3
GEP Elective ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> )		3
Advanced Socio-Economic and Food System Electives (p. )		3
<b>Hours</b>		<b>12</b>
<b>Total Hours</b>		<b>120</b>

**Career Opportunities****Career Titles**

- Farm Nursery Manager
- Organic Farming
- Sustainable Agriculture Specialist

**Learn More About Careers**

NCcareers.org (<https://nccareers.org/>)

Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (<https://www.bls.gov/ooh/>)

Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (<https://www.careeronestop.org/>)

View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation. Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (<https://careers.dasa.ncsu.edu/explore-careers/career-assessments/>) (NC State student email address required)

This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (<https://careers.dasa.ncsu.edu/about/hours-appointments/>) to discuss the results.

Focus 2 Apply Assessment (Available to prospective students)

A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.

Careers in Crop and Soil Sciences (<https://cals.ncsu.edu/crop-and-soil-sciences/careers/>)

AgCareers.com (<http://agcareers.com/>)