

# 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.

Dr. Jodi Driedger (<https://cals.ncsu.edu/horticultural-science/people/jssonger/>)  
Department of Horticultural Science  
Box 7609, N.C. State University  
Kilgore Hall 114  
Raleigh, NC 27695-7609  
919.601.6204  
[jssonger@ncsu.edu](mailto:jssonger@ncsu.edu)

## Plan Requirements

Code	Title	Hours
<b>Orientation</b>		
ALS 103 or ALS 303	First-year Success in Agriculture and Life Sciences Transfer Success in Agriculture and Life Sciences	1
HS 290	Horticulture: Careers and Opportunities	1
<b>Mathematics &amp; Natural Sciences</b>		
MA 107 or MA 114	Precalculus I Introduction to Finite Mathematics with Applications	3
Select one of the following:		3
MA 121 or MA 131 or ST 311	Elements of Calculus Calculus for Life and Management Sciences A Introduction to Statistics	4
AEC 360 or PB 360	Ecology Ecology	4
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
BIO 183 or PB 200	Introductory Biology: Cellular and Molecular Biology Plant Life	4

CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
CH 220	Introductory Organic Chemistry	3
CH 222 or PY 131	Organic Chemistry I Lab Conceptual Physics	1

### Communication/Advanced Writing

COM 110 or COM 112	Public Speaking Interpersonal Communication	3
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Select one of the following: 3

AEE 311	Communication Methods and Media	
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
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)		

GEP Foundations of American Democracy (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-fad/>) (verify requirement)

World Language Proficiency (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/>) (verify requirement)

#### Free Electives

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
AEC 203	An Introduction to the Honey Bee and Beekeeping	3
CS 211	Plant Genetics	3
or HS 215	Agricultural Genetics	
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

## Advanced Horticultural Science Electives

Code	Title	Hours
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
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
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
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

Fall Semester		Hours
ALS 103	First-year Success in Agriculture and 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

**Hours** **17**

#### Spring Semester

BIO 183	Introductory Biology: Cellular and Molecular Biology	4
or PB 200	or Plant Life	
COM 110	Public Speaking	3
or COM 112	or Interpersonal Communication	
Select one of the following:		3
MA 121	Elements of Calculus	
or MA 131	or Calculus for Life and Management Sciences A	
or ST 311	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 (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/>) 1

**Hours 14**

## 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 (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/>) 3

GEP Social Sciences (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/>) 3

PB 360 Ecology 4

**Hours 17**

### Spring Semester

AEE 311 Communication Methods and Media 3

or ENG 331 (Select one of the following:)  
or ENG 332 or Communication for Engineering and  
or ENG 333 Technology  
or Communication for Business and  
Management  
or Communication for Science and  
Research

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

**Hours 16**

## 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

**Hours 11**

### 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

**Hours 16**

## Fourth Year

### Fall Semester

Advanced Horticultural Science Electives (p. ) 3

HS 410 Community Food Systems 3

HS 492/493 Horticulture Internship 3  
or HS 493 or Research Experience in Horticultural  
or HS 494 Science  
or Teaching Experience in Horticultural  
Science

HS 480 Sustainable Food Production (capstone) 1

Free Elective 4

Socio-Economic and Food System Electives (p. ) 3

**Hours 17**

### Spring Semester

HS 476 Crop Physiology and Production in Controlled Environments 3

Advanced Horticultural Science Electives (p. ) 3

GEP Elective (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) 3

Advanced Socio-Economic and Food System Electives (p. ) 3

**Hours 12**

**Total Hours 120**

## 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 (<https://www.focus2career.com/Portal/Register.cfm?SID=1929>) (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/>)