

# Agricultural Education (BS): Agronomy Concentration

To see more about what you will learn in this program, visit the Learning Outcomes website (<https://apps.oirp.ncsu.edu/pgas/>)!

The Agricultural Education major within the Department of Agricultural and Human Sciences prepares graduates to teach agriculture, serve as FFA advisors, and supervise agricultural experiences (SAE) in public and private schools.

The Agronomy concentration is one of seven concentrations offered for the Bachelor of Science in Agricultural Education.

- Students interested in Agricultural Education may be eligible to apply for the North Carolina Teaching Fellows Program at NC State.
- Student teachers of agriculture may apply for Ed Scholars through NC State.
- Many alumni pursue careers in middle and high schools, universities and community colleges, county extension offices, and in the agricultural industry

## Teacher Licensure

Completion of the B.S. program in Agricultural Education leads to teacher licensure in North Carolina for grades 6-12. Because of North Carolina's reciprocity agreements, graduates also can pursue certification in about 35 states. Download the Teacher Licensure Checklist (<https://cals.ncsu.edu/agricultural-and-human-sciences/wp-content/uploads/sites/13/2017/06/Teacher-Licensure-Checklist.pdf>) to review the requirements for admissions to teacher education candidacy and help you stay on course.

For more information about this program, including contact information, visit our website (<https://cals.ncsu.edu/agricultural-and-human-sciences/undergraduate/#agricultural-education-major>).

## Contact

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## Plan Requirements

Code	Title	Hours	Counts towards
<b>Orientation</b>			
AEE 103	Fundamentals of Agricultural and Extension Education	1	
or ALS 103	Freshman Transitions and Diversity in Agriculture & Life Sciences		
or ALS 303	Transfer Transitions and Diversity in Agriculture & Life Sciences		
<b>Writing and Speaking</b>			
COM 110	Public Speaking	3	

### Sciences

BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
BIO 183	Introductory Biology: Cellular and Molecular Biology	4
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4

### Agricultural Education

AEE 101	Introduction to Career and Technical Education <sup>1</sup>	1
AEE 206	Introduction to Teaching Agriculture <sup>1</sup>	3
AEE 226	Computer Applications and Information Technology in Agricultural & Extension Ed <sup>1</sup>	3
AEE 303	Administration and Supervision of Student Organizations <sup>1</sup>	3
AEE 322	Experiential Learning in Agriculture <sup>1</sup>	3
AEE 326	Teaching Diverse Learners in AED <sup>1</sup>	3
AEE 327	Conducting Summer Programs in Agricultural Education	1
AEE 424	Planning Agricultural Educational Programs <sup>1</sup>	3
AEE 426	Methods of Teaching Agriculture <sup>1</sup>	3
AEE 427	Student Teaching in Agriculture <sup>1</sup>	8
AEE 491	Seminar in Agricultural Education	1

### Other Professional Education

EDP 304	Educational Psychology <sup>1</sup>	3
ELP 344	School and Society <sup>1</sup>	3
ED 311 & ED 312	Classroom Assessment Principles and Practices and Classroom Assessment Principles and Practices Professional Learning Lab <sup>1</sup>	3

**Teaching Content Courses**

BAET 201 or TDE 110	Shop Processes and Management Materials & Processes Technology	3
ANS 150 & ANS 151	Introduction to Animal Science and Introduction to Animal Science Lab	4
SSC 200 & SSC 201	Soil Science and Soil Science Laboratory	4
Select one of the following Economics courses:		3
ARE 201	Introduction to Agricultural & Resource Economics	
EC 201	Principles of Microeconomics	
EC 205	Fundamentals of Economics	

**Agronomy Concentration**

CS 213	Crop Science	4
CS 230	Introduction to Agroecology	3
CS 411	Crop Ecology	3
SSC 341	Soil Fertility and Nutrient Management	3
SSC 342	Soil and Plant Nutrient Analysis	1
PB 321 or PB 421	Introduction to Whole Plant Physiology Plant Physiology	3
Agronomy Elective (p. 12)		3
Agriculture Elective (p. 2)		3

**GEP Courses In The Major**

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 Mathematical Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/</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 Additional Breadth ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> ) (Mathematical Sciences/Natural Sciences/Engineering)	3
GEP Interdisciplinary Perspectives ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/</a> )	2
GEP U.S. Diversity ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-us-diversity/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-us-diversity/</a> ) (verify requirement)	
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)	
Foreign Language Proficiency ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/foreign-language-proficiency/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/foreign-language-proficiency/</a> ) (verify requirement)	
<b>Free Electives <sup>2</sup></b>	<b>3</b>
<b>Total Hours</b>	<b>120</b>

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

<sup>2</sup> Courses graded "S" for Satisfactory are allowed.

**Agriculture Electives**

Code	Title	Hours	Counts towards
<b>Agriculture Elective</b>			
ARE 215	Small Business Accounting	3	
ARE 260	Marketing and Risk Management in the Pork Industry	1	
ARE 270	Principles of Agribusiness Entrepreneurship	3	

ARE 295	Special Topics in Agricultural & Resource Economics (200 Level)	1-6	ARE 425	Contracts and Organizations in Agriculture	3
ARE 301	Intermediate Microeconomics	3	ARE 433	U.S. Agricultural Policy	3
ARE 303	Farm Management	3	ARE 444	Ethics in Agribusiness	3
ARE 304	Agribusiness Management	3	ARE 448	International Agricultural Trade	3
ARE 306	Agricultural Law	3	ARE 455	Agribusiness Analytics	3
ARE 309	Environmental Law & Economic Policy	3	ARE 470	Agribusiness Entrepreneurship Clinical Skills Development	3
ARE 311	Agricultural Markets	3	ARE 475	Food Policy	3
ARE 312	Agribusiness Marketing	3	ARE 490	Career Seminar in Agriculture & Resource Economics	1
ARE 321	Agricultural Financial Management	3	ARE 492	External Learning Experience	1-6
ARE 323	Agribusiness Finance	3	ARE 493	Special Problems/ Research Exploration	1-6
ARE 332	Human Resource Management for Agribusiness	3	ARE 494	Agribusiness Study Abroad	1-6
ARE 336	Introduction to Resource and Environmental Economics	3	ARE 495	Special Topics in Agricultural and Resource Economics	1-6
ARE 345	Global Agribusiness Management	3	ARE 590	Special Topics in ARE	1-99
ARE 370	Agribusiness New Venture Development	3	EC 301	Intermediate Microeconomics	3
ARE 395	Special Topics in Agricultural and Resource Economics (300 level)	1-6	EC 336	Introduction to Resource and Environmental Economics	3
ARE 404	Advanced Agribusiness Management	3	<b>Group C - Applied Sci &amp; Tech</b>		
ARE 412	Advanced Agribusiness Marketing	3	AEE 101	Introduction to Career and Technical Education	1
ARE 413	Applied Agribusiness Marketing	3	AEE 206	Introduction to Teaching Agriculture	3
ARE 415	Introduction to Commodity Futures Markets	3	AEE 208	Agricultural Biotechnology: Issues and Implications	3
ARE 420	Taxation in Agriculture, Production, and Agribusiness	3	AEE 230	Introduction to Cooperative Extension	3

AEE 303	Administration and Supervision of Student Organizations	3	AEE 460	Organizational Leadership Development in Agriculture and Life Sciences	3
AEE 311	Communication Methods and Media	3	AEE 478	Advanced Issues in Extension Education	3
AEE 322	Experiential Learning in Agriculture	3	AEE 490	Seminar in Agricultural and Extension Education	1
AEE 323	Leadership Development in Agriculture and Life Sciences	3	AEE 533	Leadership and Management of Volunteers in Agricultural and Extension Education	3
AEE 325	Planning and Delivering Non-Formal Education	3	ALS 110	Academic and Career Skills Seminar	1
AEE 326	Teaching Diverse Learners in AED	3	ANS 105	Introduction to Companion Animal Science	3
AEE 327	Conducting Summer Programs in Agricultural Education	1	ANS 110	Introduction to Equine Science	3
AEE 350	Personal Leadership Development in Agriculture and Life Sciences	3	ANS 150	Introduction to Animal Science	3
AEE 360	Developing Team Leadership in Agriculture and Life Sciences	3	ANS 151	Introduction to Animal Science Lab	1
AEE 423	Practicum in Agricultural Extension/ Industry	8	ANS 201	Techniques of Animal Care	2
AEE 424	Planning Agricultural Educational Programs	3	ANS 208	Agricultural Biotechnology: Issues and Implications	3
AEE 426	Methods of Teaching Agriculture	3	ANS 225	Principles of Animal Nutrition	3
AEE 427	Student Teaching in Agriculture	8	ANS 303	Principles of Equine Evaluation	2
AEE 433	Leadership and Management of Volunteers in Agricultural and Extension Education	3	ANS 304	Dairy Cattle Evaluation	2
AEE 435	Professional Presentations in Agricultural Organizations	3	ANS 309	Livestock Evaluation	3
			ANS 322	Muscle Foods and Eggs	3
			ANS 324	Milk and Dairy Products	3
			ANS 400	Companion Animal Management	3
			ANS 402	Beef Cattle Management	3
			ANS 403	Swine Management	3

ANS 404	Dairy Cattle Management	3	BAE 452	Engineering Design II	2
ANS 408	Small Ruminant Management	3	BAE 462	Machinery Design and Applications	3
ANS 410	Equine Breeding Farm Management	3	BAE 472	Irrigation and Drainage	3
ANS 425	Feed Manufacturing Technology	3	BAE 473	Introduction to Hydrologic and Water Quality Modeling	3
ANS 440	Animal Genetic Improvement	3	BAE 474	Principles and Applications of Ecological Engineering	3
ANS 453	Physiology and Genetics of Growth and Development	3	BAE 481	Structures & Environment	3
ANS 454	Lactation, Milk and Nutrition	3	BAE 501	Sensors and Controls	3
ANS 525	Feed Manufacturing Technology	3	BAE 535	Precision Agriculture Technology	3
ANS 540	Animal Genetic Improvement	3	BAE 572	Irrigation and Drainage	3
ANS 553	Physiology and Genetics of Growth and Development	3	BAE 573	Introduction to Hydrologic and Water Quality Modeling	3
ANS 554	Lactation, Milk and Nutrition	3	BAET 201	Shop Processes and Management	3
BAE 100	Introduction to Biological and Agricultural Engineering and Technology	1	BAET 323	Water Management	3
BAE 202	Introduction to Biological and Agricultural Engineering Methods	4	BAET 332	Management of Animal Environments	4
BAE 302	Transport Phenomena	3	BAET 333	Processing Agricultural Products	4
BAE 322	Introduction to Food Process Engineering	3	BAET 343	Agricultural Electrification	4
BAE 361	Analytical Methods in Engineering Design	3	BAET 411	Agricultural Machinery and Power Units	4
BAE 371	Fundamentals of Hydrology for Engineers	3	BAET 432	Agricultural and Environmental Safety and Health	3
BAE 401	Sensors and Controls	3	BAET 443	Environmental Restoration Implementation	3
BAE 435	Precision Agriculture Technology	3	BEC 330	Principles and Applications of Bioseparations	2
BAE 451	Engineering Design I	2	BEC 436	Introduction to Downstream Process Development	2

BEC 440	Expression Systems in Biomanufacturing 1	3	MSE 203	Introduction to the Materials Science of Biomaterials	3
BEC 536	Introduction to Downstream Process Development	2	NTR 425	Feed Manufacturing Technology	3
BEC 540	Expression Systems in Biomanufacturing 1	3	NTR 454	Lactation, Milk and Nutrition	3
BME 203	Introduction to the Materials Science of Biomaterials	3	NTR 525	Feed Manufacturing Technology	3
BME 207	Biomedical Electronics	4	PB 208	Agricultural Biotechnology: Issues and Implications	3
BME 342	Analytical and Experimental Methods for Biomedical Engineers	3	PO 322	Muscle Foods and Eggs	3
BME 385	Bioinstrumentation	3	PO 425	Feed Manufacturing Technology	3
BME 412	Biomedical Signal Processing	3	PO 525	Feed Manufacturing Technology	3
BME 425	Bioelectricity	3	PP 470	Advanced Turfgrass Pest Management	2
BME 525	Bioelectricity	3	SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
CS 470	Advanced Turfgrass Pest Management	2	SSC 473	Introduction to Hydrologic and Water Quality Modeling	3
ECI 424	Student Teaching in Modern Foreign Languages	12	SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
ENT 470	Advanced Turfgrass Pest Management	2	SSC 573	Introduction to Hydrologic and Water Quality Modeling	3
FM 425	Feed Manufacturing Technology	3	USC 291	Service Learning Program Leader Development I	1
FM 525	Feed Manufacturing Technology	3	USC 292	Service Learning Program Leader Development II	2
FS 322	Muscle Foods and Eggs	3	<b>Group C - Applied Sci &amp; Tech</b>		
FS 324	Milk and Dairy Products	3	AEC 420	Introduction to Fisheries Science	3
FS 435	Food Safety Management Systems	3	AEE 206	Introduction to Teaching Agriculture	3
FS 535	Food Safety Management Systems	3			

AEE 303	Administration and Supervision of Student Organizations	3
AEE 322	Experiential Learning in Agriculture	3
AEE 327	Conducting Summer Programs in Agricultural Education	1
AEE 424	Planning Agricultural Educational Programs	3
AEE 426	Methods of Teaching Agriculture	3
AEE 427	Student Teaching in Agriculture	8
ANS 322	Muscle Foods and Eggs	3
ANS 324	Milk and Dairy Products	3
ANS 330	Laboratory Animal Science	3
ANS 411	Management of Growing and Performance Horses	3
ANS 425	Feed Manufacturing Technology	3
ANS 525	Feed Manufacturing Technology	3
BAE 325	Introductory Geomatics	3
BAE 425	Industrial Microbiology and Bioprocessing	3
BAE 435	Precision Agriculture Technology	3
BAE 525	Industrial Microbiology and Bioprocessing	3
BAE 535	Precision Agriculture Technology	3
BBS 201	Introduction to Biopharmaceutica Science	3
BBS 301	Process Validation Science	3

BBS 426	Upstream Biomanufacturing Laboratory	2
BBS 526	Upstream Biomanufacturing Laboratory	2
BCH 220	Role of Biotechnology in Society	3
BEC 426	Upstream Biomanufacturing Laboratory	2
BEC 483	Tissue Engineering Technologies	2
BEC 526	Upstream Biomanufacturing Laboratory	2
BEC 583	Tissue Engineering Technologies	2
BME 444	Orthopaedic Biomechanics	3
BME 451	BME Senior Design: Product Development	3
BME 452	BME Senior Design: Product Implementation and Strategy	3
BME 466	Polymeric Biomaterials Engineering	3
BME 467	Mechanics of Tissues & Implants Requirements	3
BME 483	Tissue Engineering Technologies	2
BME 484	Fundamentals of Tissue Engineering	3
BME 544	Orthopaedic Biomechanics	3
BME 566	Polymeric Biomaterials Engineering	3
BME 583	Tissue Engineering Technologies	2
BME 584	Fundamentals of Tissue Engineering	3
CS 200	Introduction to Turfgrass Management	4

CS 210	Lawns and Sports Turf	3	ES 400	Analysis of Environmental Issues	3
CS 213	Crop Science	3	FM 425	Feed Manufacturing Technology	3
CS 216	Southern Row Crop Production - Cotton, Peanuts, and Tobacco	3	FM 460	Feed Mill Operations and Leadership	3
CS 218	Southern Row Crop Production - Corn, Small Grains and Soybeans	3	FM 480	Feed Quality Assurance & Formulation	3
CS 230	Introduction to Agroecology	3	FM 490	Feed Science Seminar	1
CS 312	Grassland Management for Natural Resources Conservation	3	FM 525	Feed Manufacturing Technology	3
CS 400	Turf Cultural Systems	3	FOR 318	Forest Pathology	3
CS 411	Crop Ecology	3	FOR 420	Watershed and Wetlands Hydrology	4
CS 413	Plant Breeding	2	FOR 472	Forest Soils	4
CS 414	Weed Science	4	FOR 520	Watershed and Wetlands Hydrology	4
CS 415	Integrated Pest Management	3	FS 201	Introduction to Food Science	3
CS 424	Seed Physiology	3	FS 290	Careers in Food and Bioprocessing Sciences	1
CS 430	Advanced Agroecology	4	FS 322	Muscle Foods and Eggs	3
CS 465	Turf Management Systems and Environmental Quality	3	FS 324	Milk and Dairy Products	3
CS 524	Seed Physiology	3	FS 330	Science of Food Preparation	3
CS 565	Turf Management Systems and Environmental Quality	3	FS 352	Introduction to Microbiological Food Safety Hazards	3
CSSC 490	Senior Seminar in Crop Science and Soil Science	1	FS 354	Food Sanitation	3
ECI 424	Student Teaching in Modern Foreign Languages	12	FS 416	Quality Control in Food and Bioprocessing	3
ENT 203	An Introduction to the Honey Bee and Beekeeping	3	FS 421	Food Preservation	3
ENT 401	Honey Bee Biology and Management	3	FS 426	Upstream Biomanufacturing Laboratory	2
ES 100	Introduction to Environmental Sciences	3	FS 435	Food Safety Management Systems	3
ES 200	Climate Change and Sustainability	3	FS 453	Food Laws and Regulations	3
ES 300	Energy and Environment	3	FS 462	Postharvest Physiology	3



FS 475	Problems and Design in Food and Bioprocessing Science	3	FW 565	African Ecology and Conservation	4
FS 516	Quality Control in Food and Bioprocessing		GPH 201	Fundamentals of Global Public Health	3
FS 521	Food Preservation	3	HS 432	Introduction to Permaculture	3
FS 526	Upstream Biomanufacturing Laboratory	2	HS 462	Postharvest Physiology	3
FS 535	Food Safety Management Systems	3	HS 532	Introduction to Permaculture	3
FS 553	Food Laws and Regulations	3	HS 562	Postharvest Physiology	3
FS 562	Postharvest Physiology	3	IDS 303	Humans and the Environment	3
FW 221	Conservation of Natural Resources	3	NR 303	Humans and the Environment	3
FW 311	Piedmont Wildlife Ecology and Management	3	NR 350	International Sustainable Resource Use	4
FW 312	Fisheries Techniques and Management	1	NR 406	Conservation of Biological Diversity	3
FW 313	Mountain Wildlife Ecology and Management	1	NR 420	Watershed and Wetlands Hydrology	4
FW 314	Coastal Ecology and Management	1	NR 460	Renewable Natural Resource Management and Policy	3
FW 353	Wildlife Management	3	NR 520	Watershed and Wetlands Hydrology	4
FW 403	Urban Wildlife Management	3	NR 560	Renewable Natural Resource Management and Policy	3
FW 411	Human Dimensions of Wildlife and Fisheries	3	NTR 425	Feed Manufacturing Technology	3
FW 453	Principles of Wildlife Science	4	NTR 525	Feed Manufacturing Technology	3
FW 460	International Wildlife Management and Conservation	3	PO 322	Muscle Foods and Eggs	3
FW 465	African Ecology and Conservation	4	PO 424	Poultry Meat Production	3
FW 511	Human Dimensions of Wildlife and Fisheries	3	PO 425	Feed Manufacturing Technology	3
FW 560	International Wildlife Management and Conservation	3	PO 435	Poultry Incubation & Breeding	4
			PO 525	Feed Manufacturing Technology	3
			PP 318	Forest Pathology	3

SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture	3	BME 298	Biomedical Engineering Design and Manufacturing I	
SSC 462	Soil-Crop Management Systems	3	BME 398	Biomedical Engineering Design and Manufacturing II	2
SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3	CS 470	Advanced Turfgrass Pest Management	2
TE 466	Polymeric Biomaterials Engineering	3	CSSC 490	Senior Seminar in Crop Science and Soil Science	1
TE 467	Mechanics of Tissues & Implants Requirements	3	ENT 470	Advanced Turfgrass Pest Management	2
TE 566	Polymeric Biomaterials Engineering		FM 425	Feed Manufacturing Technology	3
VMP 401	Poultry Diseases	4	FM 525	Feed Manufacturing Technology	3
VMP 420	Disease of Farm Animals	3	FOR 318	Forest Pathology	3
<b>Group C - Applied Sci &amp; Tech</b>			FOR 420	Watershed and Wetlands Hydrology	4
AEC 419	Freshwater Ecology	4	FOR 472	Forest Soils	4
AEC 423	Introduction to Fisheries Sciences Laboratory	1	FOR 520	Watershed and Wetlands Hydrology	4
AEC 519	Freshwater Ecology	4	FS 322	Muscle Foods and Eggs	3
BAET 323	Water Management	3	FS 435	Food Safety Management Systems	3
ANS 322	Muscle Foods and Eggs	3	FS 462	Postharvest Physiology	3
ANS 425	Feed Manufacturing Technology	3	FS 535	Food Safety Management Systems	3
ANS 525	Feed Manufacturing Technology	3	FS 562	Postharvest Physiology	3
BIO 227	Understanding Structural Diversity through Biological Illustration	3	FW 221	Conservation of Natural Resources	3
BME 204	Biomedical Measurements	3	FW 404	Wildlife Habitat Management	3
BME 217	Biomedical Electronics Laboratory	1	FW 460	International Wildlife Management and Conservation	3
			FW 560	International Wildlife Management and Conservation	3
			HS 200	Home Horticulture	3

HS 201	The World of Horticulture: Principles and Practices	3	HS 521	Temperate-Zone Tree Fruits: Physiology and Culture	3
HS 203	Home Plant Propagation	3	HS 523	Viticulture	3
HS 242	Introduction to Small Scale Landscape Design	3	HS 562	Postharvest Physiology	3
HS 250	Home Landscape Design: Creating Garden Spaces	3	IDS 303	Humans and the Environment	3
HS 252	Landscape Graphic Communication		NR 300	Natural Resource Measurements	4
HS 272	Landscape Design/Build	6	NR 303	Humans and the Environment	
HS 290	Horticulture: Careers and Opportunities	1	NR 400	Natural Resource Management	4
HS 301	Plant Propagation	4	NR 420	Watershed and Wetlands Hydrology	4
HS 302	Gardening with Herbaceous Perennials	3	NR 421	Wetland Science and Management	3
HS 303	Ornamental Plant Identification I	3	NR 460	Renewable Natural Resource Management and Policy	3
HS 304	Ornamental Plant Identification II	3	NR 484	Environmental Impact Assessment	
HS 357	Landscape Grading and Drainage	4	NR 500	Natural Resource Management	4
HS 400	Residential Landscaping	6	NR 520	Watershed and Wetlands Hydrology	4
HS 411	Nursery Management	3	NR 521	Wetland Science and Management	3
HS 416	Planting Design	4	NR 560	Renewable Natural Resource Management and Policy	3
HS 421	Temperate-Zone Tree Fruits: Physiology and Culture	3	NTR 420	Applied Nutrition Education	3
HS 422	Small Fruit Production	3	NTR 425	Feed Manufacturing Technology	3
HS 423	Viticulture	3	NTR 525	Feed Manufacturing Technology	3
HS 431	Vegetable Production	4	PO 201	Poultry Science and Production	3
HS 440	Greenhouse Management	3	PO 201A	Poultry Science and Production	3
HS 442	Floriculture Crop Production	3	PO 202	Poultry Science and Production Laboratory	1
HS 462	Postharvest Physiology	3	PO 202A	Poultry Science and Production Laboratory	1
HS 471	Landscape Ecosystem Management	4	PO 290	Poultry Seminar	1
HS 516	Planting Design	4			

PO 322	Muscle Foods and Eggs	3
PO 340	Live Poultry and Poultry Product Evaluation, Grading, and Inspection	3
PO 410	Production and Management of Game Birds in Confinement	3
PO 411	Agrosecurity	3
PO 421	Commercial Egg Production	3
PO 425	Feed Manufacturing Technology	3
PO 433	Poultry Processing and Products	3
PO 525	Feed Manufacturing Technology	3
PO 533	Poultry Processing and Products	3
PP 315	Principles of Plant Pathology	4
PP 318	Forest Pathology	3
PP 470	Advanced Turfgrass Pest Management	2
SSC 185	Land and Life	3
SSC 341	Soil Fertility and Nutrient Management	3
SSC 342	Soil and Plant Nutrient Analysis	1
SSC 421	Role of Soils in Environmental Management	
SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 442	Soil and Environmental Biogeochemistry	3
SSC 452	Soil Classification	4
SSC 461	Soil Physical Properties and Plant Growth	3
SSC 462	Soil-Crop Management Systems	3
SSC 470	Wetland Soils	3

SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 570	Wetland Soils	3
TOX 201	Poisons, People and the Environment	3
TOX 401	Principles of Toxicology	4
TOX 415	Environmental Toxicology and Chemistry	4
TOX 501	Principles of Toxicology	4

## Agronomy Elective

Code	Title	Hours	Counts towards
ALS 103	Freshman Transitions and Diversity in Agriculture & Life Sciences		
ALS 303	Transfer Transitions and Diversity in Agriculture & Life Sciences		
BAE 435/535	Precision Agriculture Technology		
BAE 473/573	Introduction to Hydrologic and Water Quality Modeling		
BAET 323	Water Management		
CS 200	Introduction to Turfgrass Management		
CS 210	Lawns and Sports Turf		
CS 211	Plant Genetics		
CS 213	Crop Science		
CS 218	Southern Row Crop Production - Corn, Small Grains and Soybeans		
CS 224	Seeds, Biotechnology and Societies		
CS 230	Introduction to Agroecology		
CS 251	Production of Forage Crops		

CS 400	Turf Cultural Systems	CSSC 490	Senior Seminar in Crop Science and Soil Science
CS 410	Community Food Systems	CSSC 492	Professional Internship Experience in Crop and Soil Sciences
CS 411	Crop Ecology	CSSC 493	Research Experience in Crop and Soil Sciences
CS 413	Plant Breeding	CSSC 495	Special Topics in Crop and Soil Sciences
CS 414	Weed Science	ENT 470	Advanced Turfgrass Pest Management
CS 415	Integrated Pest Management	FOR 318	Forest Pathology
CS 418	Introduction to Regulatory Science in Agriculture	HS 144	Weeds & Diseases of Ornamentals
CS 424	Seed Physiology	HS 410	Community Food Systems
CS 428	Advanced Regulatory Science in Agriculture	HS 428	Service-Learning in Urban Agriculture Systems
CS 430	Advanced Agroecology	HS 502	Plant Disease: Methods & Diagnosis
CS 465	Turf Management Systems and Environmental Quality	HS 541	Plant Breeding Methods
CS 470	Advanced Turfgrass Pest Management	MB 501	Biology of Plant Pathogens
CS 480	Sustainable Food Production (capstone)	MB 532	Soil Microbiology
CS 502	Plant Disease: Methods & Diagnosis	MB 575	Introduction to Mycology
CS 518	Introduction to Regulatory Science in Agriculture	PB 501	Biology of Plant Pathogens
CS 524	Seed Physiology	PB 575	Introduction to Mycology
CS 528	Advanced Regulatory Science in Agriculture	PP 144	Weeds & Diseases of Ornamentals
CS 535	Root and Rhizosphere Processes for Plant Nutrition	PP 150	Introduction to Plant Molecular Biology
CS 541	Plant Breeding Methods	PP 222	Kingdom of Fungi
CS 565	Turf Management Systems and Environmental Quality	PP 232	Big Data in Your Pocket: Call it a Smartphone
CS 590	Special Topics	PP 241	The Worm's Tale: Parasites In Our Midst
CS 591	Special Problems	PP 315	Principles of Plant Pathology
CSSC 290	Professional Development in Crop & Soil Sciences	PP 318	Forest Pathology

PP 470	Advanced Turfgrass Pest Management
PP 492	External Learning Experience
PP 493	Special Problems in Plant Pathology
PP 495	Special Topics in Plant Pathology
PP 501	Biology of Plant Pathogens
PP 502	Plant Disease: Methods & Diagnosis
PP 506	Epidemiology and Plant Disease Control
PP 530	Agriculture, Ethics and the Environment
PP 540	Tropical Plant Pathology
PP 575	Introduction to Mycology
PP 590	Special Topics
SSC 185	Land and Life
SSC 200	Soil Science
SSC 201	Soil Science Laboratory
SSC 332	Environmental Soil Microbiology
SSC 341	Soil Fertility and Nutrient Management
SSC 342	Soil and Plant Nutrient Analysis
SSC 410	Soil Judging for Land Evaluation
SSC 421	Role of Soils in Environmental Management
SSC 427	Biological Approaches to Sustainable Soil Systems
SSC 428	Service-Learning in Urban Agriculture Systems
SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture
SSC 442	Soil and Environmental Biogeochemistry

SSC 452	Soil Classification
SSC 455	Soils, Environmental Quality and Global Challenges
SSC 461	Soil Physical Properties and Plant Growth
SSC 462	Soil-Crop Management Systems
SSC 470	Wetland Soils
SSC 473	Introduction to Hydrologic and Water Quality Modeling
SSC 511	Soil Physics
SSC 521	Soil Chemistry
SSC 532	Soil Microbiology
SSC 535	Root and Rhizosphere Processes for Plant Nutrition
SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture
SSC 541	Soil Fertility
SSC 545	Remote Sensing Applications in Soil Science and Agriculture
SSC 551	Soil Morphology, Genesis and Classification
SSC 562	Environmental Applications Of Soil Science
SSC 570	Wetland Soils
SSC 573	Introduction to Hydrologic and Water Quality Modeling
SSC 590	Special Problems in Soil Science
SSC 592	Special Topics in Soil Science

## Semester Sequence

This is a sample.

### First Year

#### Fall Semester

AEE 101	Introduction to Career and Technical Education <sup>1</sup>	1
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#### Hours

AEE 103	Fundamentals of Agricultural and Extension Education <sup>2</sup>	1
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
COM 110	Public Speaking	3
ENG 101	Academic Writing and Research	4
GEP Mathematical Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/</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

**Hours** **17**

**Spring Semester**

AEE 226	Computer Applications and Information Technology in Agricultural & Extension Ed <sup>1</sup>	3
CS 213	Crop Science	3
BIO 183	Introductory Biology: Cellular and Molecular Biology	4
GEP Mathematical Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/</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

**Hours** **14**

**Second Year**

**Fall Semester**

AEE 206	Introduction to Teaching Agriculture <sup>1</sup>	3
CS 230	Introduction to Agroecology	3
BAET 201	Shop Processes and Management	3
Economics Elective (p. 1)		3
GEP Interdisciplinary Perspectives ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/</a> )		2

**Hours** **14**

**Spring Semester**

ANS 150	Introduction to Animal Science	3
ANS 151	Introduction to Animal Science Lab	1
CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
Agronomy Elective (p. 12)		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
PB 321 or PB 421	Introduction to Whole Plant Physiology or Plant Physiology	3

**Hours** **17**

**Third Year**

**Fall Semester**

AEE 322	Experiential Learning in Agriculture <sup>1</sup>	3
CS 411	Crop Ecology	3
EDP 304	Educational Psychology <sup>1</sup>	3
SSC 200	Soil Science	3
SSC 201	Soil Science Laboratory	1

Free Elective <sup>3</sup>		4
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**Hours** **17**

**Spring Semester**

AEE 303	Administration and Supervision of Student Organizations <sup>1</sup>	3
AEE 326	Teaching Diverse Learners in AED <sup>1</sup>	3
ELP 344	School and Society <sup>1</sup>	3
GEP Additional Breadth ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> ) (Mathematical Sciences/Natural Sciences/Engineering)		3

Agriculture Electives (p. 2)		3
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**Hours** **15**

**Fourth Year**

**Fall Semester**

AEE 327	Conducting Summer Programs in Agricultural Education	1
AEE 426	Methods of Teaching Agriculture <sup>1</sup>	3
SSC 341	Soil Fertility and Nutrient Management	3
SSC 342	Soil and Plant Nutrient Analysis	1
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
ED 311	Classroom Assessment Principles and Practices <sup>1</sup>	2
ED 312	Classroom Assessment Principles and Practices Professional Learning Lab <sup>1</sup>	1

**Hours** **14**

**Spring Semester**

AEE 424	Planning Agricultural Educational Programs	3
AEE 427	Student Teaching in Agriculture	8
AEE 491	Seminar in Agricultural Education	1

**Hours** **12**

**Total Hours** **120**

<sup>1</sup> A minimum grade of C- is required for graduation. A minimum grade of C is required for teacher licensure.

<sup>2</sup> Incoming freshmen complete AEE 103 Fundamentals of Agricultural and Extension Education. Transfer students may complete ALS 103 Freshman Transitions and Diversity in Agriculture & Life Sciences or ALS 303 Transfer Transitions and Diversity in Agriculture & Life Sciences.

<sup>3</sup> Total hours of free electives vary in order to allow the minimum hours required for the degree to equal 120 credit hrs.