

Agricultural Education (BS): Animal Science 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 Animal Science 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
Orientation			
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		
Writing and Speaking			
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 ¹	1
AEE 206	Introduction to Teaching Agriculture ¹	3
AEE 226	Computer Applications and Information Technology in Agricultural & Extension Ed ¹	3
AEE 303	Administration and Supervision of Student Organizations ¹	3
AEE 322	Experiential Learning in Agriculture ¹	3
AEE 326	Teaching Diverse Learners in AED ¹	3
AEE 327	Conducting Summer Programs in Agricultural Education	1
AEE 424	Planning Agricultural Educational Programs ¹	3
AEE 426	Methods of Teaching Agriculture ¹	3
AEE 427	Student Teaching in Agriculture ¹	8
AEE 491	Seminar in Agricultural Education	1

Other Professional Education

EDP 304	Educational Psychology ¹	3
ELP 344	School and Society ¹	3
ED 311	Classroom Assessment Principles and Practices ¹	2
ED 312	Classroom Assessment Principles and Practices Professional Learning Lab ¹	1

Teaching Content Courses

BAET 201	Shop Processes and Management	3
or TDE 110	Materials & Processes Technology	
Plant Science Elective (p. 2)		3
SSC 200 & SSC 201	Soil Science and Soil Science Laboratory	4

Select one of the following Economics Electives: 3

ARE 201	Introduction to Agricultural & Resource Economics	
ARE 201A	Introduction to Agricultural & Resource Economics	
EC 201	Principles of Microeconomics	
EC 205	Fundamentals of Economics	

Animal Science Concentration

ANS 150 & ANS 151	Introduction to Animal Science and Introduction to Animal Science Lab	4
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Select one of the following Evaluation of Farm Animals courses: 2

ANS 205	Physiology of Domestic Animals	
ANS 303	Principles of Equine Evaluation	
ANS 304	Dairy Cattle Evaluation	
ANS 309	Livestock Evaluation	
ANS 225 or ANS 230	Principles of Animal Nutrition	3

ANS 215	Agricultural Genetics	3
or GN 301	Genetics in Human Affairs	

Animal Science Elective (p. 7) 2

ANS Restricted Elective (p. 9) 6

GEP Courses In The Major

ENG 101	Academic Writing and Research ¹	4
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GEP Humanities (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/>) 6

GEP Mathematical Sciences (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/>) 6

GEP Health and Exercise Studies (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/>) 2

GEP Additional Breadth (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) (Mathematical Sciences/Natural Sciences/Engineering) 3

GEP Interdisciplinary Perspectives (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/>) 5

GEP U.S. Diversity (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-us-diversity/>) (verify requirement)

GEP Global Knowledge (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/>) (verify requirement)

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

Free Electives 4

Total Hours 120

¹ A grade of C- or higher is required.

² Courses graded "S" for Satisfactory are allowed.

Plant Science Electives

Code	Title	Hours	Counts towards
AEC 423	Introduction to Fisheries Sciences Laboratory	1	

ALS 103	Freshman Transitions and Diversity in Agriculture & Life Sciences	1	CS 465	Turf Management Systems and Environmental Quality	3
ALS 303	Transfer Transitions and Diversity in Agriculture & Life Sciences	1	CS 470	Advanced Turfgrass Pest Management	2
ANS 215	Agricultural Genetics	3	CS 480	Sustainable Food Production (capstone)	1
CS 200	Introduction to Turfgrass Management	4	CS 502	Plant Disease: Methods & Diagnosis	2
CS 210	Lawns and Sports Turf	3	CS 518	Introduction to Regulatory Science in Agriculture	
CS 211	Plant Genetics	3	CS 524	Seed Physiology	3
CS 213	Crop Science	3	CS 541	Plant Breeding Methods	3
CS 214	Crop Science Laboratory	1	CS 565	Turf Management Systems and Environmental Quality	3
CS 216	Southern Row Crop Production - Cotton, Peanuts, and Tobacco	3	CS 590	Special Topics	1-6
CS 218	Southern Row Crop Production - Corn, Small Grains and Soybeans	3	CS 591	Special Problems	1-6
CS 224	Seeds, Biotechnology and Societies	3	CSSC 290	Professional Development in Crop & Soil Sciences	1
CS 230	Introduction to Agroecology	3	CSSC 490	Senior Seminar in Crop Science and Soil Science	1
CS 312	Grassland Management for Natural Resources Conservation	3	CSSC 492	Professional Internship Experience in Crop and Soil Sciences	1-3
CS 400	Turf Cultural Systems	3	CSSC 493	Research Experience in Crop and Soil Sciences	1-3
CS 410	Community Food Systems	3	CSSC 495	Special Topics in Crop and Soil Sciences	1-6
CS 411	Crop Ecology	3	ENT 402	Forest Entomology	3
CS 413	Plant Breeding	2	ENT 470	Advanced Turfgrass Pest Management	2
CS 414	Weed Science	4	FOR 150	Critical Thinking and Data Analysis	2
CS 415	Integrated Pest Management	3	FOR 172	Forest System Mapping and Mensuration I	2
CS 418	Introduction to Regulatory Science in Agriculture	3	FOR 204	Silviculture	2
CS 424	Seed Physiology	3			
CS 430	Advanced Agroecology	4			

FOR 248	Forest History, Technology and Society	3	FOR 405	Forest Management	4
FOR 250	Professional Development II: Communications in Natural Resources	1	FOR 406	Forest Inventory, Analysis and Planning	4
FOR 252	Introduction to Forest Science	3	FOR 408	Hardwood Management	3
FOR 260	Forest Ecology	4	FOR 411	Forest Tree Genetics and Biology	3
FOR 261	Forest Communities	2	FOR 414	World Forestry	3
FOR 264	Forest Wildlife	1	FOR 415	World Forestry Study Tour	1
FOR 265	Fire Management	1	FOR 420	Watershed and Wetlands Hydrology	4
FOR 273	Forest System Mapping and Mensuration II	3	FOR 422	Consulting Forestry	3
FOR 293	Independent Study in Forest Management	1-6	FOR 430	Forest Health and Protection	3
FOR 294	Independent Study in Forest Management	1-6	FOR 434	Forest Operations and Analysis	3
FOR 295	Special Topics in Forestry	1-6	FOR 472	Forest Soils	4
FOR 303	Silvics and Forest Tree Physiology	3	FOR 491	Special Topics in Forestry and Related Natural Resources	1-4
FOR 304	Theory of Silviculture	4	FOR 493	Independent Study in Forest Management	1-6
FOR 318	Forest Pathology	3	FOR 494	Independent Study in Forest Management	1-6
FOR 319	Forest Economics	3	FOR 501	Dendrology	3
FOR 330	North Carolina Forests	3	FOR 502	Forest Measurements	1
FOR 334	Operations Research Applications in Natural Resources	1	FOR 503	Tree Physiology	1
FOR 339	Dendrology	4	FOR 504	The Practice of Silviculture	3
FOR 350	Professional Development III: Ethical Dilemmas in Natural Resource Management	1	FOR 505	Forest Management	4
FOR 353	GIS and Remote Sensing for Environmental Analysis and Assessment	3	FOR 506	Silviculture Laboratory	1
FOR 374	Forest Measurement, Modeling, and Inventory	3	FOR 507	Silviculture Mini Course	1
FOR 402	Forest Entomology	3	FOR 508	Hardwood Management	3
			FOR 509	Forest Resource Policy	1
			FOR 510	Introduction to GPS	1
			FOR 513	Silviculture for Intensively Managed Plantations	3

FOR 514	Woodland Stewardship	3	HS 201	The World of Horticulture: Principles and Practices	3
FOR 519	Forest Economics	3	HS 202	Home Plant Identification	3
FOR 520	Watershed and Wetlands Hydrology	4	HS 203	Home Plant Propagation	3
FOR 522	Consulting Forestry	3	HS 204	Home Landscape Maintenance	3
FOR 531	Wildland Fire Science	3	HS 205	Home Food Production	3
FOR 532	Wildland Firefighter	3	HS 215	Agricultural Genetics	3
FOR 534	Forest Operations and Analysis	3	HS 242	Introduction to Small Scale Landscape Design	3
FOR 540	Advanced Dendrology	3	HS 250	Home Landscape Design: Creating Garden Spaces	3
FOR 561	Forest Communities of the Southeastern Coastal Plain	1	HS 252	Landscape Graphic Communication	2
FOR 562	Forest Communities of the Southern Appalachians	1	HS 272	Landscape Design/Build	6
FOR 565	Plant Community Ecology	4	HS 280	Hands-On-Horticulture	3
FOR 574	Forest Mensuration and Modeling	3	HS 290	Horticulture: Careers and Opportunities	1
FOR 575	Advanced Terrestrial Ecosystem Ecology	3	HS 301	Plant Propagation	4
FOR 583	Tropical Forestry	3	HS 302	Gardening with Herbaceous Perennials	3
FOR 595	Special Topics	1-6	HS 303	Ornamental Plant Identification I	3
FS 462	Postharvest Physiology	3	HS 304	Ornamental Plant Identification II	3
FS 562	Postharvest Physiology	3	HS 357	Landscape Grading and Drainage	4
FW 221	Conservation of Natural Resources	3	HS 400	Residential Landscaping	6
FW 404	Wildlife Habitat Management	3	HS 410	Community Food Systems	3
GIS 512	Introduction to Environmental Remote Sensing	3	HS 411	Nursery Management	3
HS 131	Fruit & Vegetable Production	3	HS 416	Planting Design	4
HS 144	Weeds & Diseases of Ornamentals	3	HS 418	Digital Media Graphic for Landscape Designers	3
HS 200	Home Horticulture	3	HS 420	Green Infrastructure	3

HS 421	Temperate- Zone Tree Fruits: Physiology and Culture	3	HS 520	Green Infrastructure	3
HS 422	Small Fruit Production	3	HS 521	Temperate- Zone Tree Fruits: Physiology and Culture	3
HS 423	Viticulture	3	HS 523	Viticulture	3
HS 428	Service-Learning in Urban Agriculture Systems	1	HS 532	Introduction to Permaculture	3
HS 431	Vegetable Production	4	HS 533	Public Garden Administration	3
HS 432	Introduction to Permaculture	3	HS 541	Plant Breeding Methods	3
HS 433	Public Garden Administration	3	HS 550	Environmental Nursery Production	3
HS 440	Greenhouse Management	3	HS 551	Plant Nutrition	3
HS 442	Floriculture Crop Production	3	HS 562	Postharvest Physiology	3
HS 451	Plant Nutrition	3	HS 576	Crop Physiology and Production in Controlled Environments	3
HS 462	Postharvest Physiology	3	HS 583	Advanced Floral Crop Production and Handling	3
HS 471	Landscape Ecosystem Management	4	HS 590	Special Problems in Horticultural Science	1-6
HS 475	Horticulture Entrepreneurship	3	NR 420	Watershed and Wetlands Hydrology	4
HS 476	Crop Physiology and Production in Controlled Environments	3	NR 460	Renewable Natural Resource Management and Policy	3
HS 480	Sustainable Food Production (capstone)	1	NR 491	Special Topics in Forestry and Related Natural Resources	1-4
HS 491	Sustainable Agriculture Entrepreneurship Study Abroad	3	NR 520	Watershed and Wetlands Hydrology	4
HS 492	Horticulture Internship	1-3	NR 560	Renewable Natural Resource Management and Policy	3
HS 493	Research Experience in Horticultural Science	1-3	PP 144	Weeds & Diseases of Ornamentals	3
HS 494	Teaching Experience in Horticultural Science	1-3	PP 318	Forest Pathology	3
HS 495	Experimental Courses in Horticultural Science	1-6	PP 470	Advanced Turfgrass Pest Management	2
HS 502	Plant Disease: Methods & Diagnosis	2	PP 502	Plant Disease: Methods & Diagnosis	2
HS 516	Planting Design	4			

SMT 202	Anatomy and Properties of Renewable Materials	3
SSC 428	Service-Learning in Urban Agriculture Systems	1
SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 462	Soil-Crop Management Systems	3
SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3

Animal Science Elective

Code	Title	Hours	Counts towards
AEE 208	Agricultural Biotechnology: Issues and Implications	3	
ANS 105	Introduction to Companion Animal Science	3	
ANS 110	Introduction to Equine Science	3	
ANS 150	Introduction to Animal Science	3	
ANS 151	Introduction to Animal Science Lab	1	
ANS 201	Techniques of Animal Care	2	
ANS 205	Physiology of Domestic Animals	3	
ANS 206	Anatomy of Domestic Animals Lab	1	
ANS 208	Agricultural Biotechnology: Issues and Implications	3	
ANS 215	Agricultural Genetics	3	
ANS 220	Reproductive Physiology	3	
ANS 221	Reproductive Physiology Lab	1	
ANS 225	Principles of Animal Nutrition	3	

ANS 230	Animal Nutrition	3
ANS 231	Animal Nutrition Lab	1
ANS 240	Livestock Merchandising	3
ANS 240A	Livestock Merchandising	3
ANS 260	Basic Swine Science	2
ANS 261	Swine Health and Biosecurity	1
ANS 262	Swine Breeding and Gestation Management	1
ANS 263	Farrowing Management	1
ANS 264	Swine Nursery and Finishing Management	1
ANS 265	Contemporary Issues in the Swine Industry	1
ANS 266	Swine Environment Management	1
ANS 267	Swine Manure and Nutrient Management	1
ANS 268	Employee Management for the Swine Industry	1
ANS 269	Internship in the Swine Industry	1
ANS 270	Pork Export Markets from a Swine Production Perspective	1
ANS 271	Swine Nutrition	1
ANS 281	Professional Development of PreVeterinary Track Students	1
ANS 290	Professional Development for Animal Science Careers	2
ANS 303	Principles of Equine Evaluation	2
ANS 304	Dairy Cattle Evaluation	2
ANS 309	Livestock Evaluation	3
ANS 322	Muscle Foods and Eggs	3
ANS 324	Milk and Dairy Products	3

ANS 330	Laboratory Animal Science	3	ANS 530	Advanced Applied Animal Reproduction	3
ANS 395	Animal Science Study Abroad	1-6	ANS 531	Advanced Applied Animal Reproduction Lab	1
ANS 400	Companion Animal Management	3	ANS 540	Animal Genetic Improvement	3
ANS 402	Beef Cattle Management	3	ANS 550	Applied Ruminant Nutrition	3
ANS 403	Swine Management	3	ANS 552	Comparative Reproductive Physiology and Biotechnology	3
ANS 404	Dairy Cattle Management	3	ANS 553	Physiology and Genetics of Growth and Development	3
ANS 408	Small Ruminant Management	3	ANS 554	Lactation, Milk and Nutrition	3
ANS 410	Equine Breeding Farm Management	3	ANS 561	Equine Nutrition	3
ANS 411	Management of Growing and Performance Horses	3	ANS 571	Regulation of Metabolism	3
ANS 415	Comparative Nutrition	3	ANS 575	Current Topics in Genomics and Proteomics in Animal Science	3
ANS 425	Feed Manufacturing Technology	3	ANS 590	Topical Problems in Animal Science	1-3
ANS 440	Animal Genetic Improvement	3	BCH 571	Regulation of Metabolism	3
ANS 452	Comparative Reproductive Physiology and Biotechnology	3	FM 425	Feed Manufacturing Technology	3
ANS 453	Physiology and Genetics of Growth and Development	3	FM 525	Feed Manufacturing Technology	3
ANS 454	Lactation, Milk and Nutrition	3	FS 301	Introduction to Human Nutrition	3
ANS 480	Judging Team	1	FS 322	Muscle Foods and Eggs	3
ANS 492	Professional Internship Experience in the Animal Sciences	1-3	FS 324	Milk and Dairy Products	3
ANS 493	Research Experience in the Animal Sciences	1-3	FS 435	Food Safety Management Systems	3
ANS 494	Teaching Experience in the Animal Sciences	1-3	FS 535	Food Safety Management Systems	3
ANS 495	Special Topics in Animal Science	1-3	HS 215	Agricultural Genetics	3
ANS 515	Comparative Nutrition	3	NTR 301	Introduction to Human Nutrition	3
ANS 525	Feed Manufacturing Technology	3	NTR 415	Comparative Nutrition	3

NTR 419	Human Nutrition and Chronic Disease	3
NTR 425	Feed Manufacturing Technology	3
NTR 454	Lactation, Milk and Nutrition	3
NTR 515	Comparative Nutrition	3
NTR 525	Feed Manufacturing Technology	3
NTR 550	Applied Ruminant Nutrition	3
NTR 561	Equine Nutrition	3
PB 208	Agricultural Biotechnology: Issues and Implications	3
PHY 452	Comparative Reproductive Physiology and Biotechnology	3
PHY 552	Comparative Reproductive Physiology and Biotechnology	3
PO 322	Muscle Foods and Eggs	3
PO 415	Comparative Nutrition	3
PO 425	Feed Manufacturing Technology	3
PO 515	Comparative Nutrition	3
PO 525	Feed Manufacturing Technology	3

ANS Restricted Elective

Code	Title	Hours	Counts towards
ANS 400	Companion Animal Management	3	
ANS 402	Beef Cattle Management	3	
ANS 403	Swine Management	3	
ANS 404	Dairy Cattle Management	3	
ANS 408	Small Ruminant Management	3	
ANS 410	Equine Breeding Farm Management	3	

ANS 411	Management of Growing and Performance Horses	3
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Semester Sequence

This is a sample.

First Year

Fall Semester		Hours
AEE 101	Introduction to Career and Technical Education ¹	1
AEE 103	Fundamentals of Agricultural and Extension Education ²	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 (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/)		3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Hours		17

Spring Semester

AEE 226	Computer Applications and Information Technology in Agricultural & Extension Ed	3
ANS 150	Introduction to Animal Science	3
ANS 151	Introduction to Animal Science Lab	1
BIO 183	Introductory Biology: Cellular and Molecular Biology	4
GEP Mathematical Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/)		3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Hours		15

Second Year

Fall Semester

AEE 206	Introduction to Teaching Agriculture ¹	3
ANS 225	Principles of Animal Nutrition	3
or ANS 230	or Animal Nutrition	
BAET 201	Shop Processes and Management	3
or TDE 110	or Materials & Processes Technology	
Economics Elective (p. 1)		3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
Hours		15

Spring Semester

CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
Animal Science Elective (p. 7)		3

GEP Additional Breadth (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) (Mathematical Sciences/Natural Sciences/Engineering) 3

Plant Science Elective (p. 2) 3

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

Hours 16

Third Year

Fall Semester

AEE 322 Experiential Learning in Agriculture ¹ 3

ANS 215 Agricultural Genetics
or GN 301 or Genetics in Human Affairs 3

EDP 304 Educational Psychology ¹ 3

SSC 200 Soil Science 3

SSC 201 Soil Science Laboratory 1

GEP Interdisciplinary Perspectives (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/>) 2

Hours 15

Spring Semester

AEE 303 Administration and Supervision of Student Organizations ¹ 3

AEE 326 Teaching Diverse Learners in AED ¹ 3

ELP 344 School and Society ¹ 3

Animal Science Management Elective (p. 7) 3

Animal Science Selection Elective (p. 9) 2

Hours 14

Fourth Year

Fall Semester

AEE 327 Conducting Summer Programs in Agricultural Education 1

AEE 426 Methods of Teaching Agriculture 3

Animal Science Management Elective (p. 7) 3

GEP Interdisciplinary Perspectives (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/>) 3

ED 311 Classroom Assessment Principles and Practices ¹ 2

ED 312 Classroom Assessment Principles and Practices Professional Learning Lab ¹ 1

Free Electives ³ 3

Hours 16

Spring Semester

AEE 424 Planning Agricultural Educational Programs 3

AEE 427 Student Teaching in Agriculture 8

AEE 491 Seminar in Agricultural Education ¹ 1

Hours 12

Total Hours 120

¹ A minimum grade of C is required for teacher licensure.

² 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.

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