

School of Agribusiness and Agriscience

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Stark Agribusiness and Agriscience Center 100

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Programs in the School of Agribusiness and Agriscience lead to the Bachelor of Science degree with majors in Agribusiness, Animal Science, and Plant and Soil Science. A concentration in Horse Science is available in the Animal Science major. Certification in Agricultural Education and a concentration in Agricultural Communication are available in each of the three majors. Preparatory programs are also offered for additional study in agricultural engineering, forestry, and veterinary medicine. A minor in Agriculture is available.

A major in the School of Agribusiness and Agriscience requires a minimum of 43 semester hours of courses to include

- 21 hours in the major area;
- an additional six (6) hours from ABAS as indicated under each major's requirements; and
- a general core of ABAS 1000, 1410, 1610, 2210, 3010, and 4100. (3010 not required for majors taking YOED 4110 or participating in judging teams.)

Specific course requirements for each major are listed below in the curriculum of that major.

Environmental Science and Technology is an interdisciplinary major and minor offered by Agribusiness and Agriscience, Biology, Chemistry, and Engineering Technology and Industrial Studies. A complete description of this program is found under the Department of Engineering Technology and Industrial Studies.

Curricular listings include General Education requirements in Communication, History, Humanities and/or Fine Arts, Mathematics, Natural Sciences, and Social/Behavioral Sciences categories as outlined on pages 60–63.

Major in Agribusiness

The program leading to a major in Agribusiness is designed for students who are interested primarily in the non-farm phases of agriculture. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610	7	ABAS 2130, 2210	6
ENGL 1010, 1020 (Comm)	6	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1030 (Nat Sci)	4	COMM 2200 (Comm)	3
MATH 1010 or 1710 (Math)	3	PSCI 1030 (Nat Sci)	4
Humanities and/or Fine Arts Social/Behavioral Sciences	3	Humanities and/or Fine Arts	3
Elective	3	ECON 2410 (Soc/Beh Sci)	3
	29	HIST 2010, 2020, or 2030	6
		Elective	3
			31
JUNIOR		SENIOR	
ABAS 3130, 3010*	6	ABAS 4100, 4190	6
Animal Science elective	3	Agribusiness electives**	6
Agribusiness electives	6	Minor requirements	12
Upper-division electives	6	Upper-division electives	6
Plant and Soil Science elective	3		30
Minor requirements	6		
	30		

*Students taking YOED 4110 or participating in judging teams may substitute ABAS 4480 or 4590.

**Internship courses may not be used to fulfill this requirement.

Concentration: Agricultural Communication

The program is designed to meet the needs of students who are interested in specializing in the communications phase of agriculture. A minor in Mass Communication is required. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610	7	ABAS 2130, 2210	6
ENGL 1010, 1020 (Comm)	6	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1030 (Nat Sci)	4	COMM 2200 (Comm)	3
MATH 1010 or 1710 (Math)	3	PSCI 1030 (Nat Sci)	4
Humanities and/or Fine Arts Social/Behavioral Sciences	3	Humanities and/or Fine Arts	3
Elective	3	ECON 2410 (Soc/Beh Sci)	3
	29	HIST 2010, 2020, or 2030	6
		Elective	3
			31
JUNIOR		SENIOR	
ABAS 3010*, 3130	6	ABAS 4100, 4190	6
Animal Science elective	3	Agribusiness electives**	6
Agribusiness electives	6	Mass Comm minor	9
Plant and Soil Science elective	3	P R 3400	3
Elective	3	EMC/JOUR 4250	3
Mass Comm minor	9	Elective	3
	30		30

*Students taking YOED 4110 or participating in judging teams may substitute ABAS 4480 or 4590.

**Internship courses may not be used to fulfill this requirement.

Certification in Agricultural Education

Agribusiness majors seeking certification to teach agricultural education in secondary schools (grades 7-12) must complete (1) the Agribusiness major, (2) a minor in Secondary Education, and (3) professional agricultural education courses. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610, 2230	10	ABAS 3440, 3600	6
ENGL 1010, 1020 (Comm)	6	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1030 (Nat Sci)	4	Social/Behavioral Sciences	3
MATH 1010 or 1710 (Math)	3	PSCI 1030 (Nat Sci)	4
Humanities and/or Fine Arts	3	Humanities and/or Fine Arts	3
FOED 1110§	3	ECON 2410 (Soc/Beh Sci)	3
	29	HIST 2010, 2020, or 2030	6
		FOED 2110§	3
			31
JUNIOR		SENIOR	
ABAS 2210, 3130, 3340	9	Agribusiness electives*	12
COMM 2200 (Comm)	3	Secondary Education minor§	18
ABAS 4190, 4210, 4220, 4230	12	ABAS 4250	3
Secondary Education minor§	6		33
Elective	1		
	31		

*Internship courses may not be used to fulfill this requirement.
 §The Secondary Education minor has been revised. Please see page 193 and contact the Educational Leadership Department for information.

Major in Animal Science

The program leading to a major in Animal Science is designed to offer preparation for leadership careers in livestock and related industries. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610	7	ABAS 2210	3
ENGL 1010, 1020 (Comm)	6	COMM 2200 (Comm)	3
BIOL 1110 (Nat Sci)	4	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1120	4	CHEM 1010 (Nat Sci)	4
MATH 1010 or 1710 (Math)	3	CHEM 1020	4
Humanities and/or Fine Arts	3	Social/Behavioral Sciences	3
Social/Behavioral Sciences	3	Humanities and/or Fine Arts	3
	30	HIST 2010, 2020, or 2030	6
			29
JUNIOR		SENIOR	
ABAS 3130; 3340 or 4310	6	ABAS 4410, 4510	6
ABAS 3010*	3	Animal Science electives**	6
ABAS 4100, 3440, 3420	9	Minor requirements	6
Minor requirements	12	Upper-division electives	10
	30	Animal Science/Agribusiness elective	3
			31

*Students taking YOED 4110 or participating in judging teams may substitute ABAS 4480 or 4590.
 **Electives must come from the following courses: ABAS 3430, 3470, 3480, 3490, 3500, 3540, 4090, 4470, 4520, 4860.

Concentration: Agricultural Communication

The program is designed to meet the needs of students who are interested in specializing in the communications phase of agriculture. A minor in Mass Communication is required. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610	7	ABAS 2210	3
ENGL 1010, 1020 (Comm)	6	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1110 (Nat Sci)	4	COMM 2200 (Comm)	3
BIOL 1120	4	CHEM 1010 (Nat Sci)	4
MATH 1010 or 1710 (Math)	3	CHEM 1020	4
Humanities and/or Fine Arts	3	Humanities and/or Fine Arts	3
Social/Behavioral Sciences	3	HIST 2010, 2020, or 2030	6
	30	Social/Behavioral Sciences	3
			29
JUNIOR		SENIOR	
ABAS 3130; 3340 or 4310	6	ABAS 4410, 4510	6
ABAS 3010*, 4100, 3440, 3420	12	Agribusiness electives**	6
Mass Comm minor	12	Mass Comm minor	6
	30	P R 3400	3
		EMC/JOUR 4250	3
		Electives	4
		Animal Science/Agribusiness elective	3
			31

*Students taking YOED 4110 or participating in judging teams may substitute ABAS 4480 or 4590.
 **Electives must come from the following courses: ABAS 3430, 3470, 3480, 3490, 3500, 3540, 4090, 4470, 4520, 4860.

Certification in Agricultural Education

Animal Science majors seeking certification to teach agricultural education in secondary schools (grades 7-12) must complete (1) the Animal Science major, (2) a minor in Secondary Education, and (3) professional agricultural education courses. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610, 2230	10	ABAS 2210, 3130, 3440	9
ENGL 1010, 1020 (Comm)	6	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1030 (Nat Sci)	4	ECON 2410 (Soc/Beh Sci)	3
MATH 1010 or 1710 (Math)	3	PSCI 1030 (Nat Sci)	4
Humanities and/or Fine Arts	3	Humanities and/or Fine Arts	3
Social/Behavioral Sciences	3	HIST 2010, 2020, or 2030	6
FOED 1110§	3	FOED 2110§	3
	32		31
JUNIOR		SENIOR	
ABAS 3340, 3420, 4410, 4510	12	ABAS 4250, 3600	6
COMM 2200	3	Animal Science electives*	6
ABAS 4210, 4220, 4230	9	Secondary Education minor§	18
Secondary Education minor§	6		30
Elective	1		
	31		

*Electives must come from the following courses: ABAS 3430, 3470, 3480, 3490, 3500, 3540, 4090, 4470, 4520, 4860.
 §The Secondary Education minor has been revised. Please see page 193 and contact the Educational Leadership Department for information.

Concentration: Horse Science

The Horse Science concentration is designed to meet the needs of persons majoring in Animal Science who wish to emphasize horse science and related courses. Specific requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610	7	ABAS 2210	3
ENGL 1010, 1020 (Comm)	6	COMM 2200 (Comm)	3
BIOL 1110 (Nat Sci)	4	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1120	4	CHEM 1010 (Nat Sci)	4
MATH 1010 or 1710 (Math)	3	CHEM 1020	4
Humanities and/or Fine Arts	3	Humanities and/or Fine Arts	3
Social/Behavioral Sciences	3	Social/Behavioral Sciences	3
	30	HIST 2010, 2020, or 2030	6
			29
JUNIOR		SENIOR	
ABAS 3010*, 3130, 3340	9	ABAS 3040, 3410, 4090, 4460	12
ABAS 4100, 3440, 2400	9	Animal Science/Agribusiness elective	3
Minor requirements	12	Minor requirements	6
	30	Upper-division electives	10
			31

*Students taking YOED 4110 or participating in judging teams may substitute ABAS 4480 or 4590.

Major in Plant and Soil Science

The program leading to a major in Plant and Soil Science is designed for students interested in agronomy, horticulture, and/or soil sciences. Students may choose to concentrate on either one of these areas within this major. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610	7	ABAS 2210	3
ENGL 1010, 1020 (Comm)	6	COMM 2200 (Comm)	3
BIOL 1110 (Nat Sci)	4	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1120	4	CHEM 1010 (Nat Sci)	4
MATH 1010 or 1710 (Math)	3	CHEM 1020	4
Humanities and/or Fine Arts	3	Social/Behavioral Sciences	3
Social/Behavioral Sciences	3	Humanities and/or Fine Arts	3
	30	HIST 2010, 2020, or 2030	6
			29
JUNIOR		SENIOR	
ABAS 3010*, 3340	6	ABAS 3130, 4100	6
Agribusiness elective	3	Plant and Soil Science electives	9
Plant and Soil Science electives	9	Minor requirements	6
Minor requirements	12	Upper-division electives	10
	30		31

*Students taking YOED 4110 or participating in judging teams may substitute ABAS 4480 or 4590.

Concentration: Agricultural Communication

The program is designed to meet the needs of students who are interested in specializing in the communications phase of agriculture. A minor in Mass Communication is required. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610	7	ABAS 2210	3
ENGL 1010, 1020 (Comm)	6	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1110 (Nat Sci)	4	COMM 2200 (Comm)	3
BIOL 1120	4	CHEM 1010 (Nat Sci)	4
MATH 1010 or 1710 (Math)	3	CHEM 1020	4
Humanities and/or Fine Arts	3	Humanities and/or Fine Arts	3
Social/Behavioral Sciences	3	HIST 2010, 2020, or 2030	6
	30	Social/Behavioral Sciences	3
			29
JUNIOR		SENIOR	
ABAS 3010, 3340	6	ABAS 3130, 4100	6
Agribusiness elective	3	Plant and Soil Science electives	9
Plant and Soil Science electives	9	EMC/JOUR 4250	3
Mass Comm minor	9	Mass Comm minor	9
P R 3400	3	Upper-division electives	4
	30		31

*Students taking YOED 4110 or participating in judging teams may substitute ABAS 4480 or 4590.

Certification in Agricultural Education

Plant and Soil Science majors seeking certification to teach agricultural education in secondary schools (grades 7-12) must complete (1) the Plant and Soil Science major, (2) a minor in Secondary Education, and (3) professional agricultural education courses. Specific course requirements are

FRESHMAN		SOPHOMORE	
ABAS 1000, 1410, 1610, 2230	10	ABAS 2210, 3440, 3600	9
ENGL 1010, 1020 (Comm)	6	ENGL 2020 or 2030 or HUM 2610 (Hum/FA)	3
BIOL 1030 (Nat Sci)	4	Social/Behavioral Sciences	3
MATH 1010 or 1710 (Math)	3	PSCI 1030 (Nat Sci)	4
Humanities and/or Fine Arts	3	Humanities and/or Fine Arts	3
Social/Behavioral Sciences	3	HIST 2010, 2020, or 2030	6
FOED 1110§	3	FOED 2110§	3
	32		31
JUNIOR		SENIOR	
ABAS 3130, 3340, 4250	9	Plant and Soil Science electives	12
COMM 2200 (Comm)	3	Secondary Education minor§	18
ABAS 4210, 4220, 4230	9		30
Secondary Education minor§	6		
Elective	1		
Plant and Soil Science elective	3		
	31		

For certification to teach agriscience, students should see advisor.

§The Secondary Education minor has been revised. Please see page 193 and contact the Educational Leadership Department for information.

Minor

A minor in Agriculture consists of 18 semester hours, with at least 3 hours at the upper-division level, selected with the approval of the school director.

Pre-Agricultural Engineering

A two-year pre-agricultural engineering program is offered by cooperative agreement with the University of Tennessee and requires two years of study at that school to meet the requirements for a Bachelor of Science degree in agricultural engineering. These courses also may be transferred to programs at other universities.

FRESHMAN		SOPHOMORE	
English 1010, 1020	6	MATH 3110, 3120	7
CHEM 1110, 1120	8	PHYS 2110, 2111	4
MATH 1910, 1920	8	ET 3830, 3840	6
ET 2310, 3360	8	ET 3860, 4970	6
ET 1840	3	ABAS 1610, 3340	6
	33	COMM 2200	3
			32

JUNIOR

Other courses that could be taken at MTSU and transferred include

HIST 2010, 2020	6	MATH 2010	3
Sociology or Psychology	3	ECON 2410	3

Pre-Forestry

A two-year pre-forestry program is offered by cooperative agreement with the University of Tennessee which offers two curricula in forestry:

1. Forest Resource Management
2. Wildlife and Fisheries Science

Two years of additional study are necessary to meet the requirements for a Bachelor of Science degree in forestry. These courses also may be transferred to programs in other universities.

FRESHMAN		SOPHOMORE	
BIOL 1110, 1120	8	CHEM 1010, 1020	8
ENGL 1010, 1020	6	GEOL 1040	4
ABAS 1610	3	ECON 2410, 2420	6
ABAS 3630	3	Literature	3
MATH 1710, 1720	6	MATH 1530	3
PHYS 1300	3	ABAS 3340	3
COMM 2200	3	CSCI 1150	3
	32		30

Preparation for Studying Veterinary Medicine

Students who wish to pursue studies in veterinary medicine should follow the appropriate catalog requirements at institutions offering advanced degrees in the field. The following curriculum will enable a student to continue in a standard veterinary curriculum to complete work for a degree in veterinary medicine:

ENGL 1010, 1020	6
CHEM 1110, 1120	8
BIOL 1110, 1120	8
Humanities and Social Science*	18
PHYS 2010, 2011, 2020, 2021	8
CHEM 3010, 3020	8
BIOL 2120, 4210**	8
CHEM 3530	4
Math***	0-6
	68-74

*May include English literature, speech, music, art, philosophy, religion, language, history, economics, anthropology, medical vocabulary, political science, psychology, sociology, and geography.

**Should have had organic chemistry plus BIOL 1110, 1120, and 2120 prior.

***MATH 1710 and/or 1720 should be taken if student needs background for Physics.

The above requirements represent the very minimum, and those students without an adequate farm background could benefit by taking such agriculture courses as feeds and feeding, elements of animal science, livestock management, livestock production courses, and animal nutrition. An introduction to physiology would also be helpful. Many students who are accepted to a professional veterinary program first complete the four-year Animal Science major at MTSU and earn the B.S. degree.

Courses in Agribusiness and Agriscience [ABAS]

Agribusiness

2130 Introduction to Agribusiness. Three credits. Nature, scope, importance, and relationship to the general economy.

3130 Principles of Agricultural Economics. Three credits. Applying the principles of economics to agricultural problems.

3490 Poultry Production and Marketing. Three credits. (Also listed under Animal Science.) Prerequisites: ABAS 1410; PSCI 1030 or CHEM 1010, 1011, 1020, 1021; junior standing. The practices, techniques, and demands of further processed poultry production in the U.S., including chickens, ostriches, and emus and egg production. Both domestic and international marketing of poultry products discussed. Examines the economic impact of the poultry industry on both local and national economies.

3810 Milk Processing and Marketing. Three credits. (Also listed under Animal Science.) Prerequisite: PSCI 1030 or CHEM 1010, 1011, 1020, 1021. Biological, chemical, and physical properties of cow's milk and its value as an animal food source; techniques of processing and marketing; governmental regulations; dairy arithmetic and laboratory testing.

- 4130 Agricultural Marketing and Price Analysis.** Three credits. Prerequisite: ABAS 3130 or approval of instructor. Agricultural prices and their relationship to production and marketing. Agricultural marketing systems, functions, institutions, and structural changes.
- 4140 Economics of Agribusiness Management.** Three credits. Prerequisite: ABAS 3130 or approval of instructor. Application of economic concepts to agribusiness firms.
- 4150 Agricultural Policy.** Three credits. Prerequisite: ABAS 3130. Agricultural policy in a democratic society; relationship of farm groups to public policy; types of agricultural programs and appraisal of their results.
- 4160 Agricultural Cooperatives.** Three credits. Prerequisite: ABAS 3130. Role of agricultural cooperatives in collective bargaining for farmers; historical development, economic organization, and structural aspects.
- 4180 Internship in Agribusiness.** Six credits. Prerequisite: Approval of instructor. In-depth practical experience in a specific area of agribusiness. NOT OPEN TO STUDENTS WHO HAVE RECEIVED CREDIT FROM ANOTHER SCHOOL INTERNSHIP COURSE.
- 4190 International Agriculture.** Three credits. Prerequisite: ABAS 3130. The effect of international trade on the U.S. agricultural industry.
- 4200 Fruit and Vegetable Marketing.** Three credits. (Also listed under Plant and Soil Science.) Prerequisites: PSCI 1030 and BIOL 1030 or approval of instructor. Basic biochemistry of respiration, handling techniques and practices, quality assessment and marketing of fruit and vegetable crops. Both domestic and international marketing of fruit and vegetable products discussed. Examines the economic impact of improper handling on both the local producer and the end user.
- 4810 The Food Industry.** Three credits. An overview from production to processing to marketing. Covers the current status of the world's largest employer, including where and how foods are produced, distributed, and marketed and where the industry is heading in the future.
- 4820 Principles of Food Processing.** Three credits. Prerequisite: PSCI 1030 or CHEM 1010, 1011, 1020, 1021. Principles used in the modern food industry, including thermal, refrigerated, frozen, and irradiation methods. Includes coverage of the techniques used to process major food commodities such as meats, cereal grains, and fats and oils.
- 4830 Food Quality Control.** Three credits. Prerequisites: PSCI 1030 and BIOL 1030 or approval of instructor. Quality control and sensory evaluation techniques utilized in food processing. Instrumental and physical methods of quality determination of raw and processed food products, hazard analysis and critical control point (HACCP), and quality philosophies employed in the industry. Sensory evaluation techniques and statistical analysis of evaluation results covered.
- dismounting. Various gaits and proper equitation stressed. Two one-hour laboratories.
- 2400 Fundamentals of Horsemanship.** Three credits. Concepts of applications of horse handling, particularly the riding horse. Understanding, communicating with, and influencing the equine athlete; development of basic control skills; development of balance and coordination; use of equipment. (First course in a three-part series.)
- 3040 Stable Management.** Three credits. Prerequisite: ABAS 2400 or approval of instructor. Management of a teaching and training stable and the preparation of horses and riders for the show ring.
- 3400 Horsemanship-Equitation.** Three credits. Prerequisite: ABAS 2400 or approval of instructor. Proper horseback riding, handling, mounting, and dismounting. Various gaits and proper equitation stressed. One lecture and two two-hour laboratory periods.
- 3410 Light Horse Breeds.** Three credits. Historical development of the horse and the establishment of the individual light horse breeds.
- 3420 Genetics of Domestic Livestock.** Three credits. Prerequisites: ABAS 1410; BIOL 1110, 1120; junior or senior standing. Basic principles of genetics, inbreeding, quantitative traits in livestock, prediction of breeding value and genetic progress, method of selection, mating systems, methods of genetic evaluation, computer software for animal breeding and genetics, and genetic engineering.
- 3430 Light Horse Production.** Three credits. Prerequisite: ABAS 2400 or approval of instructor. Breeding, feeding, management, and disease control practices essential for economical light horse production.
- 3440 Livestock Management.** Three credits. Prerequisite: Junior or senior standing. Practical solutions to management problems including feeding and fitting of beef and dairy cattle and swine, sheep shearing, branding of cattle, castrations, and other routine practices. Designed to accompany production courses of light horses, beef cattle, swine, dairy cattle. One lecture and two two-hour laboratory periods.
- 3450 Anatomy and Physiology of Domestic Animals.** Three credits. The parts, functions, and anatomical relationships of various organs and systems of domestic animals.
- 3460 Farrier Science.** Three credits. Basic techniques in the science and art of making, fitting, and actual shoeing of horses according to proper methods. One lecture and two two-hour laboratory periods. (Offered at irregular times in conjunction with the Division of Continuing Studies.)
- 3470 Beef Cattle Production.** Three credits. Prerequisites: ABAS 1410, 3440; junior or senior standing. Breeding, feeding, and management practices essential for economical beef production. Purebred, commercial, and feedlot programs and their role in the beef industry. Beef evaluation through carcass and testing programs.
- 3480 Swine Production.** Three credits. Prerequisites: ABAS 1410, 3440; junior or senior standing. Breeding, feeding, management, and disease control practices essential for economical swine production. Types of buildings, waste disposal, and development of the pig through the nursing, growing, and finishing stages.

Animal Science

- 1410 Elements of Animal Science.** Three credits. Types and breeds of beef cattle, dairy cattle, sheep, horses, swine, and poultry. Special emphasis on breeds adapted to Tennessee and to market classifications.
- 2110 Basic Horsemanship-Equitation.** One credit. (Same as PHED 2110, activity for men and women.) Preparation for recreational horseback riding; proper riding skills, handling, mounting,

- 3490 Poultry Production and Marketing.** Three credits. (Also listed under Agribusiness.) Prerequisites: ABAS 1410; PSCI 1030 or CHEM 1010, 1011, 1020, 1021; junior standing. The practices, techniques, and demands of further processed poultry production in the U.S., including chickens, ostriches, and emus and egg production. Both domestic and international marketing of poultry products discussed. Examines the economic impact of the poultry industry on both local and national economies.
- 3500 Sheep Production.** Three credits. Genetics, nutrition, reproduction, and management practices essential for profitable sheep production.
- 3540 Dairy Production.** Three credits. Prerequisite: ABAS 1410. Feeding and management, ruminant digestion, physiology of milk secretion, production testing and official records, sanitary regulations, handling and marketing of raw milk.
- 3810 Milk Processing and Marketing.** Three credits. (Also listed under Agribusiness.) Prerequisite: PSCI 1030 or CHEM 1010, 1011, 1020, 1021. Biological, chemical, and physical properties of cow's milk and its value as an animal food source; techniques of processing and marketing; governmental regulations; laboratory testing.
- 3900 Horses and Horsemanship.** Three credits. Applications of basic requirements in owning, caring for, and using the pleasure horse as a personal riding mount.
- 4090 Horse Breeding Farm Management.** Three credits. Prerequisites: ABAS 2400, 3040, and 3430 or approval of instructor. Practical as well as vocational application of the principles of horse breeding farm management stressed.
- 4260 Behavior of Domestic Animals.** Three credits. Behavior aspects of raising and managing domestic animals to include equine, swine, goats, cattle, sheep, dogs, and cats. Communication, ingestive, sexual, social, aggressive, and abnormal behaviors emphasized.
- 4400 Advanced Horsemanship-Equitation.** Three credits. Prerequisites: ABAS 2400 and 3400 or approval of instructor. Advanced techniques of horseback riding at all position seats stressing proper equitation and coordination and refinement of techniques learned in previous courses.
- 4410 Animal Nutrition and Feeding.** Three credits. Prerequisites: ABAS 1410; CHEM 1010, 1020; junior standing. Gastrointestinal tract, process of digestion, and nutrient utilization. Application of principles of animal nutrition to formulation of supplements and complete rations for livestock.
- 4430 Internship in Animal Science.** Six credits. Prerequisite: Approval of instructor. In-depth practical experience in a specific area of animal science pertinent to the individual's interest. Students work with producers and agencies that have agreed to cooperate in the program and to provide adequate salary and guidance. NOT OPEN TO STUDENTS WHO HAVE RECEIVED CREDIT FROM ANOTHER SCHOOL INTERNSHIP COURSE.
- 4450 Techniques of Teaching Horsemanship.** Three credits. Prerequisites: ABAS 2400, 3400, and 4400 or approval of instructor. Basic techniques and methods used in teaching riding discussed and applied. Two-hour lecture and one two-hour laboratory.
- 4460 Care and Training of Horses.** Three credits. Prerequisites: ABAS 2400, 3400, and 4400 or approval of instructor. Theory, fundamentals, and practices of breaking, training, fitting, showing, and using light horses for riding and driving, with special emphasis on the Tennessee Walking Horse and the needs of the local area.
- 4470 Advanced Beef Production.** Three credits. Prerequisite: ABAS 3470 or approval of instructor. In-depth look at various systems of beef production from standpoint of function, economics, and suitability to locale. Extensive field trips to commercial cow-calf, feedlot, performance testing, stocker, and purebred operations.
- 4480 Selecting and Judging Horses.** Three credits. Individual parts, conformation, and gaits of the horse as they relate to selecting and judging horses for production, recreation, and sport.
- 4490 Livestock Evaluation.** Three credits. Prerequisite: Approval of instructor. Comparative evaluation of beef cattle, swine, sheep, and horses. Develops defense of placing through an organized set of reasons involving terms describing the animal's characteristics. Importance of these characteristics to the animal function stressed.
- 4510 Domestic Animal Reproductive Physiology.** Three credits. Prerequisites: ABAS 1410; BIOL 1110, 1120; junior standing. Advanced topics in the anatomy, physiology, and endocrinology of reproduction in domestic livestock species. Topics include male and female physiology and an overview of comparative anatomy and physiology between species. Current technologies and methods in controlling reproduction in livestock species also discussed.
- 4520 Companion Animals.** Three credits. Introduces the variety of companion animals (dogs, cats, horses, rabbits, ferrets, amphibians, fish, hamsters, gerbils, and birds) and further examines issues related to dogs and cats. Breeds, behavior, breeding, training, and care and management of dogs and cats emphasized.
- 4580 Advanced Judging of Horses.** Three credits. Prerequisite: ABAS 4480. Systems of judging for current horse show disciplines and exercises for students who aspire to become professional judges. Ethics, contracts with management, and procedures for becoming a judge are part of focus.
- 4590 Dairy Cattle Judging.** Three credits. Ideal dairy cattle type and relationship to performance and longevity. Classification and evaluation according to type of the various breeds and comparative judging within the breed. Selection for genetic improvement.
- 4860 Meat Science and Technology.** Three credits. Prerequisites: ABAS 1410 and junior standing. Ideal livestock type and relationship to carcass merit, reproduction, and longevity. Characteristics of livestock carcasses, wholesale and retail cut locations and value, grading systems, and evaluation of overall carcass merit and that of component parts. The art of cutting cattle and hog carcasses into wholesale and retail cuts. One-hour lecture and one four-hour laboratory.
- 4980 Seminar in Horse Science.** Three credits. Familiarizes horse science majors with important current scientific investigation.

Plant and Soil Science

- 1610 Elements of Plant Science.** Three credits. Fundamental plant processes; plant tissues, structures, environment, growth, development, reproduction, and propagation.
- 3330 Field Crop Production.** Three credits. Economic importance, adaptation, origin, and history; botanical characteristics; cultural methods, uses, breeding, and pests of field crops.
- 3340 Soil.** Three credits. Physical, chemical, and biological properties. REQUIRED FOR ENVIRONMENTAL SCIENCE MAJORS.
- 3350 Soil Fertility and Fertilizer.** Three credits. Prerequisite: ABAS 3340. Use of fertilizer and liming materials in soil-plant relationships. Lecture/lab.

- 3370 Soil Analysis.** Three credits. Prerequisite: ABAS 3340. Analysis of soils in laboratory. REQUIRED FOR ENVIRONMENTAL SCIENCE MAJORS. Lecture/lab.
- 3630 Forestry.** Three credits. Culture, conservation, management, and utilization of forest stands.
- 3640 Woody Landscape Plants.** Three credits. Distribution, characteristics, relationships, and adaptation of native and exotic trees shrubs, and vines for landscape use. One-hour lecture and four-hour lab.
- 3660 Vegetable Gardening.** Three credits. Principles of home and commercial vegetable production; adaptation, culture, fertility, diseases, and insects of vegetables.
- 3700 Agricultural Chemicals in Soil Environments.** Three credits. Prerequisites: BIOL 1110, 1120, and CHEM 1010, 1011, 1020, 1021 or approval of instructor. Characteristics, use, mode of action, degradation, and environmental impact of fertilizers and pesticides used in agriculture; environmental safeguards imposed by federal and state regulations on chemical use.
- 4200 Fruit and Vegetable Marketing.** Three credits. (Also listed under Agribusiness.) Prerequisites: PSCI 1030 and BIOL 1030 or approval of instructor. Basic biochemistry of respiration, handling techniques and practices, quality assessment and marketing of fruit and vegetable crops. Both domestic and international marketing of fruit and vegetable products discussed. Examines the economic impact of improper handling on both the local producer and the end user.
- 4300 Plant Protection.** Three credits. Prerequisite: ABAS 1610 or 4 hours of biology. Principles of protecting crop plants from damage by weeds, insects, diseases, and other biotic factors. Pest control by chemical, cultural, and biological methods with an emphasis on integrated pest management.
- 4310 Forage Crops.** Three credits. Adaptation, distribution, establishment, management, culture, and utilization of forage legumes and grasses.
- 4330 Turf Management.** Three credits. Prerequisite: ABAS 1610 or BIOL 1120. Establishment and management of turf grasses for lawns, golf courses, and parks.
- 4340 Soil Formation.** Three credits. Prerequisite: ABAS 3340. Environmental factors affecting soil formation and utilization.
- 4350 Soil Survey and Land Use.** Three credits. Prerequisite: ABAS 3340 or approval of instructor. Soil properties used to determine suitability for land use. Lecture/lab.
- 4370 Soil and Water Conservation.** Three credits. Principles and practices of soil and water conservation in rural and urban environments. Lecture/lab.
- 4380 Interior Landscaping.** Three credits. Principles and practices of designing, installing, and maintaining landscapes in malls, public buildings, and other indoor environments.
- 4390 Urban and Sports Turf Soils.** Three credits. Prerequisites: ABAS 3340 and 4330. Describe, design, manage, and evaluate urban and sports turf soils. Lecture/lab.
- 4610 Arboriculture.** Three credits. Prerequisite: ABAS 1610 or BIOL 1120. The culture of trees, shrubs, and vines in the landscape. Planting, transplanting, fertilizing, irrigation, pruning, problem diagnosis, and damage repair included.
- 4620 Greenhouse Management.** Three credits. Prerequisite: ABAS 1610 or BIOL 1120. Analysis of soils, fertilizers, irrigation techniques, container preparation, ventilation, growth regulation, and carbon dioxide enrichment for greenhouse operation. Two-hour lecture and two-hour lab.
- 4630 (463) Floriculture.** Three credits. Prerequisite: ABAS 1610 or BIOL 1120. Propagation and other cultural practices for the production and maintenance of plants and flowers in the home. Two-hour lecture and two-hour lab.
- 4640 Landscaping.** Three credits. Application of the principles of design, the use of proportionate-sized woody landscape plants, and other practices to produce low-maintenance-cost landscapes. One-hour lecture and four-hour lab.
- 4660 Nursery Management.** Three credits. Prerequisite: ABAS 1610 or BIOL 1120. Principles and practices of nursery management as a business. Nursery administration, financial management, and marketing. Cultural management of field- and container-grown nursery plants.
- 4670 Plant Propagation.** Three credits. Prerequisite: ABAS 1610 or BIOL 1120. Anatomical features and physiological principles involved in propagating plants from seed and by division, cutting, budding, and grafting. Use of growth regulators and environmental factors. Two-hour lecture and two-hour lab.
- 4680 Internship in Plant and Soil Science.** Six credits. Prerequisite: Approval of instructor. Practical experience in a specific area of agronomy, horticulture, or soils. Classroom material related to practical application. NOT OPEN TO STUDENTS WHO HAVE RECEIVED CREDIT FROM ANOTHER SCHOOL INTERNSHIP.
- 4690 Japanese Landscaping.** Three credits. The elements of Japanese garden design.

Agricultural Education

- 2230 Introduction to Vocational Agricultural Education.** Three credits. Duties of the vocational agriculture teacher with special emphasis on the Future Farmers of America and Supervised Agricultural Experience Programs.
- 4210 Farm Power and Equipment.** Three credits. Gasoline engines with actual work experience in overhaul. Work also with transmissions, hydraulics, braking systems, and other farm equipment including use of shop manuals, operation manuals, and parts books.
- 4220 Methods of Teaching Agricultural Mechanics.** Three credits. Emphasis on performing shop skills such as welding, brazing, wiring, etc.
- 4230 Adult Education in Vocational-Technical Education and Program Development.** Three credits. How to teach adults and administer adult programs. Emphasis on planning, organizing, and arranging courses for adults in agriculture.
- 4240 Workshops in Agricultural Education.** One to six credits each. Prerequisite: Teaching experience or approval of instructor. Designed to provide vocational agriculture teachers with intensive training in selected areas of agriculture. A MAXIMUM OF SIX CREDIT HOURS IN EACH DIVISION.
- 4241 Production Agriculture**
- 4242 Ornamental Horticulture**
- 4243 Agricultural Mechanics**
- 4244 Farm Energy Alternatives**
- 4245 Problems of New and Established Teachers**

Agribusiness and Agriscience General

- 1000 Orientation in Agriculture.** One credit. Job opportunities in agriculture, departmental facilities, extracurricular activities at MTSU associated with specific phases of agriculture. Pass/Fail.
- 2210 Introduction to Agricultural Engineering.** Three credits. Prerequisite: MATH 1710 or 1010 or approval of instructor. Basic principles, mechanics, combustion engines, electricity, building construction, and machinery with applications of problem solving techniques.
- 3010 Agri-Media Skills.** Three credits. Applications of oral and written skills in communicating about agricultural research, shows, and sales.
- 3600 Horticulture in Our Lives.** Three credits. Emphasis on the role of horticulture in everyday living, through principles of growing plants in the home, floral design, home landscaping, and gardening.
- 4100 Microcomputer Applications in Agriculture.** Three credits. Includes use of agricultural software, agricultural communications networks, computer dairy feeding systems, and farm records.
- 4250 Leadership in Agricultural Industries.** Three credits: Prerequisite: Junior or senior standing or consent of instructor. A capstone course to enhance students' leadership and human relation skills in the workplace. Topics include leadership styles, theories, characteristics of leaders (conceptual, technical, human relations), communication styles, group dynamics, conducting successful meetings, problem solving, goal setting, attitudes, motivation, self-concept, learning styles, time management, and employability skills.
- 4700 Agriculture in Our Lives.** Three credits. National and international importance of U.S. agriculture. Emphasis on food production and marketing, land conservation, and agriculture-related recreation. Accepted as a natural science elective for education majors. NO CREDIT GIVEN TOWARD A MAJOR IN THE SCHOOL OF AGRIBUSINESS AND AGRISCIENCE.
- 4910 Problems in Agriculture.** One to six credits. Problem or problems selected from one of the major disciplines. May involve conferences with instructor, library work, field study and/or laboratory activity. Students can take from one to three credits with a maximum of three per semester.
- 4990 Seminar.** One credit. Students required to research and give an oral report on a current agricultural topic.

Graduate Study

A graduate minor is offered in Agriculture. Requirements and a list of the courses offered for graduate credit are published in the Graduate Catalog.