

# **Department of Animal Science**

# **Undergraduate Advising Guide**

# ANIMAL SCIENCE STUDENT/ADVISOR GUIDE

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# DEPARTMENT OF ANIMAL SCIENCE

## TELEPHONE LIST

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	• Fisher, A. E.....	213B Brehm ASB.....	4-8941
	• Godkin, J. D.....	201D McCord.....	4-7255
	• Grizzle, J. M.....	201F McCord.....	4-7243
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	Hopkins, F. M.....	207C Brehm ASB.....	4-3471
	• Kattesh, H. G.....	201 McCord.....	4-7250
	Kojima, C. D.....	208C Brehm ASB.....	4-5597
	Lin, J .....	213D Brehm ASB.....	4-8941
	Mitchell, J.....	114C McCord.....	4-7224
	Oliver, S. P.....	105 McCord.....	4-7260
	• Pighetti, G.M.....	114B McCord.....	4-7225
	• Richards, C. J.....	208B Brehm ASB.....	4-6390
**	• Robbins, K. R.....	201E McCord.....	4-3127
	Saxton, A. M.....	208 Brehm ASB.....	4-2887
	• Schrick, F.N.....	213D Brehm ASB.....	4-3147
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- 
- Advising Faculty
  - \* Undergraduate Coordinator
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# CONCENTRATIONS/CAREERS

Beginning in the fall semester 2002, four study options, or concentrations are available within the Animal Science curriculum: 1) production/business (PB), 2) science/technology (ST), science/technology/pre-veterinary medicine (PV) and, pre-veterinary medicine 3+1 (PV3+1). Choice of one of these concentrations depends primarily on your career goals. After talking with graduates, employers and a thorough evaluation of the College of Agricultural Science & Natural Resources' Alumni Survey, these concentrations were developed to better prepare our graduates for jobs in the future.

The following is a five-year summary of types of first jobs taken by Animal Science graduates:

- A. PRODUCTION (<5%)
  - 1. Owner/Operator
  - 2. Herdsmen/Manager
  - 3. Livestock Fitting-Grooming
  - 4. Vertically Integrated Corp.
  - 5. Zoos/Exotic Animal Reserves
  
- B. SERVICES (>48%)
  - 1. Farm Supply Coops/Stores
  - 2. Feed
  - 3. Pharmaceuticals
  - 4. Equipment
  
- C. PROCESSING (>2%)
  - 1. Food Distribution
  - 2. Packers - Buying to Selling
  - 3. Product Development/Quality Control
  
- D. EDUCATION (40%)
  - 1. Vet School - DVM
  - 2. Agricultural Extension Service/Ag Education
  - 3. Graduate School
    - a. Academia
    - b. Livestock Specialist
    - c. Research
  - 4. Other Professional
    - a. Medical
    - b. Law
  
- E. OTHER (5%)
  - 1. Armed Forces
  - 2. Computer Analyst/Programmer
  - 3. Law Enforcement
  - 4. Lending Agencies
  - 5. Insurance
  - 6. Auction Companies/Markets

At present, about 55 percent of Animal Science graduates would benefit from the Production/Business concentration (those employed in the production and/or services category). Many of those employed in the processing area and most in the education category would be best served by the Science/Technology concentration. The category named "other" comprises 5 percent of our graduates. Historically, this percentage has been lower than many other departments suggesting that the vast majority of Animal Science graduates fulfill their career goals. The general content and requirements of the four concentrations are presented in the following table:

**TABLE 1:**

<u>COURSE AREA</u>	<u>REQUIRED CREDITS</u>			
	<u>P/B</u>	<u>S/T</u>	<u>Pre-Vet</u>	<u>PV/3+1</u>
Animal Science	35	29	29	22
Business <sup>1</sup>	25	9	9	4
Biological Sci. <sup>2</sup>	11	22	22	20
Physical Sci. <sup>2</sup>	8	22	24	24
Math	6	6	6	6
ANR 290	3	3	3	3
Eng Comp & Speech	9	9	9	9
Arts & Hum & Soc Sci <sup>2</sup>	9	9	9	9
Civiliz & Cultures <sup>2</sup>	6	6	6	6
ESS 210	4			
Free Electives	<u>8</u>	<u>9</u>	<u>7</u>	<u>0</u>
	124 <sup>3</sup>	124 <sup>3</sup>	124 <sup>3</sup>	103 <sup>3,4</sup>

<sup>1</sup> P/B Students must earn a minor in business (25 hours) or agricultural economics (19 hours) plus 6 hours of business electives to be chosen from the Department approved list. S/T and Pre-vet students must have ECON 201 plus 5 hours of business electives to be chosen from the Department approved list. PV/3+1 students must have ECON 201.

<sup>2</sup> Courses may be chosen from University and Department approved lists.

<sup>3</sup> One course must be writing intensive.

<sup>4</sup> Should the 3+1 student desire to earn the B.S. before entrance into the UT College of Veterinary Medicine, the remaining 28 credits should be used to fulfill requirements of the pre-vet concentration.

## **PRODUCTION/BUSINESS CONCENTRATION**

This option utilizes more Animal Science and business electives. Consequently, this means fewer biological and physical sciences courses. Students who intend to work for any of the major Agricultural companies should choose this option. Also, students desiring employment with the Agricultural Extension Service or careers with zoo or companion animals will find this concentration the best study option.

## **SCIENCE/TECHNOLOGY CONCENTRATION**

The most obvious reason to choose this concentration is one's desire to pursue a graduate or professional degree. However, it is predicted that with the advances of biotechnology, more companies will be seeking employees with greater knowledge of the sciences. Jobs of this type would include quality control, laboratory technicians, research and development, zoo or companion animals and other careers that may not yet even be identified.

## **PRE-VETERINARY MEDICINE CONCENTRATION**

This concentration is designed for admittance to the University of Tennessee College of Veterinary Medicine (UTCVM). Students seeking admission to other veterinary colleges should make their advisors aware of any small differences in those colleges' requirements. For example, The Ohio State University's veterinary college requires microbiology in place of cell biology.

## **PRE-VETERINARY MEDICINE CONCENTRATION, 3+1**

The UTCVM requires only 68 hours; 6 hours of English (ENGL 101, 102), 18 hours of Cultures and Civilization, Arts and Humanities, and Social Sciences, 28 hours of physical sciences (CHEM 120, 130, 350, 360, 369; PHYS 221, 222; BCMB 401 (The Animal Science Department will designate BCMB 401 as a biological science in the 4-year pre-veterinary concentration)), and 16 hours of biological sciences (BIOL 130, 140, 240, and 4 hours of general biology. A general biology is any EEB, Microbiology and Botany that is equal to or greater than 200. If a student is accepted to the UTCVM after completing these courses and an additional 35 hours required by the Animal Science Department, they will be awarded the B. S. in Animal Science upon successful completion of their first year of vet school. The UTCVM will accept ANSC 340, Principles of Breeding and Genetics (3 hours), as meeting its genetics requirement. However, BCMB 401 requires BIOL 240, Genetics. **BIOL 240 is qualitative genetics and ANSC 340 is quantitative genetics and these courses cannot be substituted for each other.**

# REQUIREMENTS

The general content of the concentrations and the pre-veterinary medicine programs was shown in table 1, page 5. The following showcases these concentrations, the minor in Animal Science, and the University and Departmental approved course lists. Generally speaking, substitutions will not be allowed due to the variety of courses on the approved lists. The department will, however, make every effort to accommodate transfers and students changing majors. It should also be noted that the University's General Education Requirements must be completed. These requirements are listed below.

## **COURSES TO MEET UT GENERAL EDUCATION REQUIREMENTS (Effective Fall 2004)**

English Composition	English 101-102
Mathematical Sciences	Math 123-125 or 141-42 or 151-52
Arts and Humanities	Two courses chosen from approved University list
Cultures and Civilizations	Two courses chosen from approved University list
Social Sciences	Economics 201 plus one course from approved University list
Natural Sciences	Biology 101,102 or 130,140
Oral Communication	Communication Studies 210 or 240
Writing Communication	One course chosen from approved University list

## ANIMAL SCIENCE WITH CONCENTRATION IN PRODUCTION/BUSINESS

<b><u>Freshman</u></b>	<b><u>Hours/Credit</u></b>
Animal Science 160	3
Biology 130-140 or 101-102	8
English 101-102	6
Math 123-125, 141-142 or 151-152	6
Chemistry 100-110 or 120-130	<u>8</u>
Total	31
<b><u>Sophomore</u></b>	
Animal Science 220, 280	6
Agriculture and Natural Resources 290	3
ESS 210	4
Communication Studies 210 or 240	3
Economics 201	4
Arts and Humanities Elective <sup>1</sup>	6
Business Elective <sup>2</sup>	3
Social Science Elective <sup>1</sup>	<u>3</u>
Total	32
<b><u>Junior</u></b>	
Animal Science 320, 330, 340, 380, 395	13
Biological Science Elective <sup>3</sup>	3
Cultures and Civilizations Elective <sup>1</sup>	6
Animal Science 360	3
Business Elective <sup>2</sup>	<u>6</u>
Total	31
<b><u>Senior</u></b>	
Animal Science 430, 495	4
Animal Science 481 or 482, 483 or 484, 485 or 489 (select two courses)	6
Business Electives <sup>2</sup>	12
Free Electives	<u>8</u>
Total	<u>30</u>
Grand Total	124 <sup>4</sup>

<sup>1</sup> Must be chosen from approved list of courses meeting University requirements

<sup>2</sup> Business minor or Agricultural Economics minor plus six hours of Departmental approved business electives

<sup>3</sup> Must be chosen from approved list of courses meeting Departmental requirements

<sup>4</sup> One of the above courses must be writing intensive as described in the University catalog course listings

## ANIMAL SCIENCE WITH CONCENTRATION IN SCIENCE/TECHNOLOGY

### FRESHMAN

	<u>HOURS/CREDIT</u>
Animal Science 160	3
Biology 130-140	8
English 101-102	6
Math 123-125, 141-142 or 151-152	6
Chemistry 120-130	<u>8</u>
Total	31

### SOPHOMORE

Animal Science 220, 280	6
Agriculture and Natural Resources 290	3
Communication Studies 210 or 240	3
Arts and Humanities Elective <sup>1</sup>	3
Economics 201	4
Physical Science Elective <sup>2</sup>	8
Biological Science Elective <sup>2</sup>	<u>3</u>
Total	30

### JUNIOR

Animal Science 320, 330, 340, 380, & 395	13
Biological Science Elective <sup>2</sup>	8
Physical Science Elective <sup>1</sup>	6
Cultures and Civilizations Elective <sup>1</sup>	<u>3</u>
Total	30

### SENIOR

Animal Science 495	1
Animal Science 481 or 482, 483 or 484, 485 or 489 (select two courses)	6
Arts and Humanities Elective <sup>1</sup>	3
Biological Science Elective <sup>2</sup>	3
Cultures and Civilizations Elective <sup>1</sup>	3
Social Science Elective <sup>1</sup>	3
Business Elective <sup>2</sup>	5
Free Electives	<u>9</u>
Total	<u>33</u>
Grand Total	124 <sup>3</sup>

<sup>1</sup> Must be chosen from approved list of courses meeting University requirements

<sup>2</sup> Must be chosen from approved list of courses meeting Departmental requirements

<sup>3</sup> One of the above courses must be writing intensive as described in the University catalog course listings

**ANIMAL SCIENCE PRE-VETERINARY PROGRAM  
(4-YEAR PROGRAM)**

<b><u>FRESHMAN</u></b>	<b><u>HOURS/CREDIT</u></b>
Animal Science 160	3
Biology 130-140	8
English 101-102	6
Math 123-125, 141-142 or 151-152	6
Chemistry 120-130	<u>8</u>
Total	31
<b><u>SOPHOMORE</u></b>	
Animal Science 220, 280	6
Agriculture and Natural Resources 290	3
Communication Studies 210 or 240	3
Arts and Humanities Elective <sup>1</sup>	3
Economics 201	4
Chemistry 350, 360 & 369	8
Biology 240	<u>4</u>
Total	31
<b><u>JUNIOR</u></b>	
Animal Science 320, 330, 340, 380, & 395	13
Biological Science Elective <sup>2</sup>	3
Physics 221-222	8
Arts and Humanities Elective <sup>1</sup>	3
Cultures and Civilizations Elective <sup>1</sup>	<u>3</u>
Total	30
<b><u>SENIOR</u></b>	
Animal Science 495	1
Animal Science 481 or 482, 483 or 484, 485 or 489 (select two courses)	6
Biological Science Elective <sup>2</sup>	3
BCMB 401	4
Cultures and Civilizations Elective <sup>1</sup>	3
Social Science Elective <sup>1</sup>	3
Business Elective <sup>2</sup>	5
Free Electives	<u>7</u>
Total	32 <sup>3</sup>

<sup>1</sup> Must be chosen from approved list of courses meeting University requirements

<sup>2</sup> Must be chosen from approved list of courses meeting Departmental requirements

<sup>3</sup> One of the above courses must be writing intensive as described in the University catalog course listings

## ANIMAL SCIENCE PRE-VETERINARY PROGRAM (3-YEAR PROGRAM)

<u>FRESHMAN</u>	<u>HOURS/CREDIT</u>
Animal Science 160	3
Biology 130-140	8
English 101-102	6
Math 123-125, 141-142 or 151-152	6
Chemistry 120-130	<u>8</u>
Total	31
<u>SOPHOMORE</u>	
Animal Science 220, 280	6
Biology 240	4
Agriculture and Natural Resources 290	3
Communication Studies 210 or 240	3
Chemistry 350, 360 & 369	8
Physics 221-222	<u>8</u>
Total	32
<u>JUNIOR</u>	
Animal Science 320, 330, 340, 380, 395	13
BCMB 401	4
Arts and Humanities Electives <sup>1</sup>	6
Economics 201	4
Cultures and Civilizations Elective <sup>1</sup>	6
Social Science Elective <sup>1</sup>	<u>3</u>
Total	<u>36</u>
Grand Total	99 <sup>2</sup>

In addition:

1. The last 30 hours of the 3-year pre-veterinary curriculum must have been taken at UTK.
2. At least 12 hours of upper division (300 and 400 level courses) technical agriculture courses must be taken at UT, Knoxville.
3. The student must satisfactorily complete the first two semesters in the UTCVM professional program.
4. The student should contact the Office of the Registrar and the Coordinator of Undergraduate Studies for the Animal Science Department no later than the first day of the student's first year in the UTCVM to inform them of their intention to graduate with a B.S. in Animal Science the following spring and to check on graduation procedures for this program.
5. Should the student not gain admittance to the CVM after the Junior year, the student could complete the requirements for a major in Animal Science during the Senior year.
6. **Note that this will only work if the UTCVM accepts ANSC 340 as the genetic elective and BIOL 240 as a biological science elective. In addition, all students in this concentration should enroll in ANSC 320 as BCMB 320. These courses cross-list and the Animal Science Department will accept BCMB 320 as meeting the core requirement and the UTCVM will accept it a biological science elective.**

<sup>1</sup> Must be chosen from approved list of courses meeting University requirements

<sup>2</sup> One of the above courses must be writing intensive as described in the University catalog course listings

## MINOR IN ANIMAL SCIENCE

A minor in Animal Science consists of three credits from 220 (Animal Anatomy and Physiology), 3 credits from 280 (Biotechnology and Management Practices in Animal Production), 3 credits from 381 (Animal Nutrition and Production Systems), 3 credits from the 480 series plus 9 credits from 320, 330, 340, 360, 380, 420, 430, and the 480 series. The core courses give the minor student a broad background in physiology, nutrition, and management. Careful selection of the directed electives allows the minor student to emphasize physiology, reproduction and breeding, nutrition, or management.

**3** credits from 220 (Anatomy & Physiology of Domestic Animals)

**3** credits from 280 (Biotechnology and Management Practices in Animal Agriculture)

**3** credits from 381 (Animal Production Systems)

**3** credits from the 480 series

**12**

**9** credits from 320, 330, 360, 380, 420, 430, and the 480 series

**21**

- 220 Anatomy & Physiology of Domestic Animals (3)
- 280 Biotechnology and Management Practices in Animal Agriculture (3)
- 285 Horse Handling and Care (3)
- 320 Reproduction and Lactation (3)
- 330 Comparative Animal Nutrition (3)
- 340 Principles Animal Breeding (3)
- 360 Horse, Dairy and Meat Animal Evaluation (3)
- 380 Animal Health Management (3)
- 381 Animal Nutrition and Production Systems (3)
- 420 Advanced Reproduction (3)
- 430 Nutrient Evaluation and Ration Formulation (3)
- 481 Beef Production & Management (3)
- 482 Dairy Production & Management (3)
- 483 Pork Production & Management (3)
- 484 Poultry Production & Management (3)
- 485 Horse Production & Management (3)
- 489 Companion, Zoo and Lab Animal Management (3)
- 493 Independent Study (1-3)

## MINORS FOR ANIMAL SCIENCE MAJORS

While students in the Production and Business concentration are required to get a minor in either Business Administration or Agricultural Economics and Business, all students are encouraged to complete minors. Choosing the appropriate the proper minor that complements your long-term career goals will make the student more marketable and increase the student's chances of being at a higher entrance salary. In addition to the most popular minors described below, some our students have also opted for minors in the seemingly unrelated fields of Dance, Music, Art, Spanish and French. Minors are truly a personal decision based on interests as well as careers.

### Business

A minor in Business (or Agricultural Economics and Business plus 6 additional hours of business electives) is required for students in the Production and Business concentration. It would also be important for any student planning to be an entrepreneur and starting their own business, *e.g.*, consultants, kennel owners, feedlot owners, groomers, trainers, *etc.* It would also be an asset to pre-veterinary students who plan to some day have their own private practice. The business minor can be quite complicated and strict adherence to a timetable and taking courses in their proper sequence is required.

<u>Course</u>	<u>Prerequisites</u>
ECON 201 (4)	none
ACCT 201 (3)	none
ACCT 202 (2)	ACCT 201
STAT 201 (3)	MATH 125 or 141
BUAD 201 (4)	BUAD 101 or equivalent, <i>i.e.</i> , ANR 290, or test out; ECON 201; ACCT 201; STAT 201 (coreq)
FINA 301 (3)	ACCT 202 (coreq)
MGMT 300 (3)	BUAD 201
MAK 300 (3)	BUAD 201

It is important that students minoring in business have MATH 125 or 141, ANR 290, ECON 201, and ACCT 201 at least by the end of their 5th semester. In their 6th semester they can take BUAD 201 and STAT 201. In their 7th semester they can take FINA 301 and ACCT 202. In their 8th semester they can take MGMT 300 and MARK 300. Waiting until the last 2 years of the student's academic career to get the business minor started could very likely lead to conflicts.

## Minors for Animal Science Majors cont'd

### **Agricultural Economics and Business**

A minor in Agricultural Economics and Business plus additional 6 hours of business electives (or Business) is required for students in the Production and Business concentration. Students planning careers in directly relating to agri-industry may opt for the minor in Agricultural Economics and Business.

<u>Course</u>	<u>Prerequisites</u>
ECON 201 (4)	none
AGEC 212 (3)	none
AGEC 342 (3)	AGEC 212, ECON 201
AGEC 350 (3)	AGEC 212, ECON 201
AGEC 412 (3)	AGEC 212, ECON 201
AGEC Elective (3)	

### **Biology**

Receiving a minor in Biology for students in the Pre-Vet (PV) or Science and Technology (ST) concentrations is extremely easy and all students in these concentrations are urged to consider doing so. It requires that no additional hours be taken. The biology minor requires BIOL 130 and 140 (and so do the PV and ST concentrations), BIOL 240 and 250. The PV concentration requires BCMB 401 (which requires BIOL 240) and 4 more hours of general biology and 250 qualifies. The ST student can use the 8 hours of 240 and 250 towards their 14 hours of directed biological science electives. The Biology minor requires 8 more hours of 300 or 400 level courses either in BCMB, EEB, Microbiology, or Botany but no more than 6 hours from any one department. There are several CASNR courses that cross-list with these departments. ANSC 320 is required of all Animal Science students and cross-lists with BCMB 320 and will count towards the Biology minor (but not as a biological science directed elective since it is an Animal Science core course). Now there are only 5 hours left to get the Biology minor and also 6 hours of biological science directed electives for both the PV and ST concentrations. There is no extra time and no extra effort involved.

<u>Course</u>	<u>Prerequisites</u>
BIOL 130 (4)	none
BIOL 140 (4)	BIOL 130, CHEM 120
BIOL 240 (4)	BIOL 140, CHEM 130
BIOL 250 (4)	BIOL 140, CHEM 130

Eight more hours of 300 or 400 level courses either in BCMB, EEB, Microbiology, or Botany but no more than 6 hours from any one department.

## Minors for Animal Science Majors cont'd

### **Communication and Information**

There are many careers writing for professional societies such as the American Society of Animal Science, American Dairy Science Association and the Poultry Science Association for the agricultural popular press such as Hoard's Dairyman, Feedstuff and Drovers Journal, as well as science and agriculture writers for national news magazines such as Time, and Newsweek. Some Animal Science Departments in The United States actually have a communications concentration. The requirements for the minor are:

Communication and Information 150 (3)

6 hours from Advertising 250, Communication Studies 201, Information Science 102, Journalism and Electronic Media 200 or 275, or Public Relations 270

9 hours of 300-level or above from one or more of the above areas

### **Food Science and Technology**

This minor is an extremely powerful minor along with the Animal Science major since it combines food processing and packaging, chemistry and microbiology with food-animal production. There are many career opportunities with this combination due to current concerns with food safety and bio-terrorism.

<u>Course</u>	<u>Prerequisites</u>
FST 140 (3)	none
FST 340 (3)	FST 140 and 240 or consent of instructor
FST 410 (4)	CHEM 110 or equivalent; BCMB 310 (coreq)
FST 420 (2)	Microbiology 210 or equivalent (MICRO 310), FST 429 (coreq)
FST 429 (3)	Microbiology 210 or equivalent (MICRO 310), FST 420 (coreq)
FST Elective (2)	

**Note that BCMB 310 AND MICRO 310 can be used as biological science directed electives and will count towards the biology minor.**

### **Wildlife and Fisheries**

This minor is for Animal Science students interested in careers with exotic animals. The knowledge attained from Animal Science courses in domestic animal anatomy and physiology, reproduction and lactation, comparative animal nutrition, breeding, and animal health management apply to the exotic species as well. Many wildlife and fisheries students take some or all of these Animal Science courses and many minor in Animal Science.

The student getting the minor in Wildlife and Fisheries must chose 18 hours from Forestry Wildlife and Fisheries 211 or 250, 317, 410, 416 and Wildlife and Fisheries 341, 440, 442, 443, 444, or 445.

### **Chemistry**

Because of the heavy load of courses required of the Pre-Veterinary concentration (PV), some of these students have chosen to do 7 extra hours to get the Chemistry minor

In addition to CHEM 120 and 130 (required of the PV), and CHEM 310-19 (4), the student must complete one of the following 8 hour series: CHEM 350, 360, 369 or 471, 479, 481, or 473, 479 483 plus 3 hours above the 200 level.

### **COURSE SUBSTITUTIONS**

As a general rule, course substitutions will not be allowed, nor will substitutions be necessary for the student beginning their academic career at UTK. Transfer students, on the other hand, will require a transcript evaluation by their advisor and every effort will be made to substitute similar course work for requirements in this program. Another example where substitutions may be made for any student, include required courses being dropped due to departmental decisions beyond our control. Scheduling conflicts are not acceptable reasons for substitutions unless the conflict is between two or more required courses and the student can document a continuous effort to schedule the classes. If an alternate course is already on an approved list, no substitution will be allowed.

#### **There are guidelines for substitutions that must be followed.**

1. The academic advisor submits a completed substitution form to the Animal Science Undergraduate Committee.
2. The Undergraduate Committee reviews the request and if the request is denied, sends it back to the advisor. If it is approved, the request is sent to the Associate Dean of the College.
3. Upon approval by the Associate Dean, the request is forwarded to the Records office to become part of the official transcript. If denied by the Dean, the request is sent back to the advisor.
4. Substitution requests must be made as early as possible. For example, transfer students should have this process completed at the beginning of their first semester on this campus. Other students should complete the process before enrolling in an alternate course. Following these guidelines will allow the students to know if the alternate course is acceptable and possibly save them from taking unapproved courses.

## **TABLE 2: DEPARTMENT APPROVED BIOLOGICAL SCIENCE ELECTIVES**

The criteria used for these course selections is that all courses must have a recognized biological science (BCMB, Biology, Botany, EEB, or Microbiology) as a prerequisite either directly or indirectly, e.g., they require a course which itself requires a recognized biological science. In addition, the catalogue description must truly be representative of biology. Some of these courses may be used to satisfy other core or directed elective requirements, e.g., physical science, and may not be used again. These course selections should facilitate the earning of minors in biology or CASNR departments. Minors should always be considered by the student and encouraged by the advisor.

### **Animal Science**

420 - Advanced Reproduction (3)

430 - Nutrient Evaluation and Ration Formulation (3)

### **Biochemistry and Cellular and Molecular Biology**

Any course greater than 200<sup>1</sup>

### **Biology**

Any course greater than 200<sup>1</sup>

### **Botany**

Any course greater than 200

### **Ecology and Evolutionary Biology<sup>1</sup>**

Any course greater than 200

### **Entomology and Plant Pathology**

313 - Plant Pathology (3) (Same as Botany 313)<sup>2</sup>

321 - Economic Entomology (3)

325 - Veterinary Entomology (3)

410 - Diseases and insects of Ornamental Plants (3)

451 - Plant Tissue Culture (3) (same as Plant Sciences 451; Botany 451)<sup>2</sup>

### **Environmental and Soil Sciences**

355 - Environmental Soil Biology (3)

### **Exercise Science**

480 - Physiology of Exercise (3) (same as BCMB 480)<sup>2</sup>

### **Food Technology and Science**

410 - Food Chemistry (4)

420 - Food Microbiology (2)

429 - Food Microbiology Lab (3)

445 - Application of Food Chemistry and Processing Principles (4)

## Table 2 Con't

### **Forestry**

315 - Forest Ecology (3)

### **Forestry, Wildlife and Fisheries**

311 - Dendrology and Silvics of North American Trees (3)

317 - Principles of Wildlife and Fisheries Management (3)

410 - Wildlife Habitat Evaluation and Management (3)

### **Plant Sciences**

220 - Basic Landscape plants (3)

235 - Introduction to crop Science (3)

330 - Plant Propagation (3)

340 - Turfgrass Management (3)

410 - Nursery Management and Production (3)

421 - Native Plants in the Landscape (3)

431 - Physiology and Ecology of Agroecosystems (3)

433 - Agricultural Pesticides (3)

434 - Fruit and Vegetable Crops (3)

435 - Field and Forage Crops (3)

451 - Plant Tissue Culture (3) (same as Botany 451; EPP 451)<sup>2</sup>

440 - Advanced Turfgrass Management (4)

453 - Principles of Plant Breeding (3)

### **Medical Technology**

(These courses are open only to qualified students who have completed the first three years of the Science-Medical Technology Curriculum, described in the College of Arts and Sciences curricula section of the current catalog, and who have been approved by the Medical Technology Admissions Committee. This is an excellent program for motivated students who would like a double major in Medical Technology and eventual state and/or national certification as a medical technologist and should be considered by students in the pre-veterinary curricula.)

Any course greater than 400

### **Microbiology**

Any course greater than 200<sup>1</sup>

### **Nutrition**

300 - Fundamentals of Nutrition (3)

302 - Life Span Nutrition (3)

310 - Physiological Chemistry (4) (same as BCMB 310)<sup>2</sup>

312 - Chemistry of Food (4)

313 - Vitamins and Minerals (3)

314 - Energy Metabolism and Metabolic Integration (3)

415 - Clinical Nutrition I (3)

Table 2 cont'd

- 416 - Clinical Nutrition II (3)
- 420 - Food and Nutritional Analysis (4)

**Psychology**

- 370-Ethology and Sociobiology (3) (same as EEB 370)<sup>2</sup>
- 450-Comparative Animal Behavior (3) (same as EEB 450)<sup>2</sup>
- 459- Comparative Animal Behavior Laboratory (3) (same as EEB 459)<sup>2</sup>
- 461-Physiological Psychology (3)

**Wild life and Fisheries Science**

- 340 - Wildlands Ecology and Management (3)
- 350 - Wildlife Damage Management (3)
- 440 - Wildlife Techniques (3)
- 442 - Fisheries Techniques (3)
- 443 - Fisheries Sciences (3)
- 444 - Ecology and Management of Wild Mammals (3)
- 445 - Ecology and Management of Wild Birds (3)

<sup>1</sup> Accepted by the UTCVM as a general biology directed elective

<sup>2</sup> Accepted toward the minor in biology and accepted by the UTCVM as a general biology directed elective **when enrolled in as the appropriate Arts and Sciences department course.**

**TABLE 3:  
DEPARTMENT APPROVED BUSINESS ELECTIVES**

**Accounting**

Any course equal to or greater than 200

**Agricultural Economics**

212 - The Agribusiness Firm (3)

Any course equal to or greater than 320

**Business Administration**

Any course equal to or greater than 200

**Finance**

Any course equal to or greater than 300

**Economics**

Any course greater than 200

**Logistics**

Any course greater than 300

**Management**

Any course equal to or greater than 300

**Marketing**

Any course equal to or greater than 300

**TABLE 4:**  
**DEPARTMENT APPROVED PHYSICAL SCIENCE ELECTIVES**

The Criteria used for these course selections are that all courses must have a recognized physical science (Mathematics, Physics, or Chemistry) as a prerequisite either directly or indirectly, e.g., they require a course which itself requires a recognized physical science. In addition, the catalogue description must truly be representative of biology. Some of these courses may be used to satisfy other directed elective requirements, e.g., biological science, and may not be used again.

**Chemistry**

Any course equal to or greater than 100

**Math**

Any course equal to or greater than 110

**Physics**

Any course equal to or greater than 135

**Statistics**

Any course greater than 200

**Astronomy**

Any course greater than 100

**Biochemistry and Cellular and Molecular Biology**

310 - Physiological Chemistry (4) (same as Nutrition 310)

401 - Biochemistry and Molecular Biology I (3)

402 - Biochemistry and Molecular Biology II (3)

410 - Cellular and Comparative Biochemistry (4)

419 - Cellular and Comparative Biochemistry Laboratory (2)

471 - Biophysical Chemistry (3) (same as chemistry 471)

481 - Biophysical Chemistry (3) (same as chemistry 481)

**Biosystems Engineering**

Any course equal to or greater than 221

**Engineering Chemical**

Any course equal to or greater than 200

**Engineering Civil and Environmental**

Any course equal to or greater than 210

**Engineering Electrical and Computer**

Any course equal to or greater than 200

Table 4 Con't

**Engineering Fundamentals**

Any course equal to or greater than 101

**Engineering Industrial**

Any course equal to or greater than 200

**Engineering Materials Science**

Any course equal to or greater than 200

**Engineering Mechanical**

Any course equal to or greater than 200

**Engineering Nuclear**

Any course equal to or greater than 200

**Environmental and Soil Sciences**

434 - Environmental Soil Chemistry (3)

444 - Environmental Soil Physics (3)

481 - Capstone in Environmental and Soil Sciences (3)

**Exercise Science**

422 - Biomechanics in Human Movement

**Food Science Technology**

410 - Food Chemistry

445 - Application of Food Chemistry and Processing Principles

**Geology**

310 - Mineralogy (4)

330 - Igneous and Metamorphic Petrology (3)

340 - Stratigraphy and Sedimentation (3)

345 - Geology of East Tennessee (1)

370 - Structural Geology (4)

401 - Quantitative Methods in Geology (3)

410 - Mineral Science (3)

411 - Optical Mineralogy (2)

412 - Elements of X-ray Diffraction (2)

460 - Principles of Geochemistry (3)

470 - Applied Geophysics (3)

475 - Physical and Chemical Systems of the Earth (3)

480 - Principles of Economic Geology (4)

485 - Principles of Hydrogeology (4)

## Table 4 Con't

### **Medical Technology**

(These courses are open only to qualified students who have completed the first three years of the Science-Medical Technology Curriculum, as described in the College of Arts and Sciences curricula of the current catalog, and who have been approved by the Medical Technology Admissions Committee. This is an excellent program for motivated students who would like a double major in Medical Technology and eventual state and/or national certification as a medical technologist and should be considered by students in the pre-veterinary curricula.)

420 - Clinical Chemistry (5)

421 - Clinical Chemistry (5)

### **Nuclear Medicine Technology**

(These courses are open only to qualified students who have completed the first three years of the Science-Medical Technology Curriculum, as described in the College of Arts and Sciences curricula section of the current catalog, and who have been approved by the Medical Technology Admissions Committee. This is an excellent program for motivated students who would like a double major in Medical Technology and eventual state and/or national certification as a medical technologist and should be considered by students in the pre-veterinary curricula.)

Any course equal to or greater than 400

### **Nutrition**

310 - Physiological Chemistry (4) (same as BCMB 310)

### **Plant Sciences**

471 - Statistics for Biological Research (3)

### **Psychology**

385 - Statistics in Psychology

**TABLE 5:  
UNIVERSITY APPROVED CULTURES AND CIVILIZATIONS**

**These courses are University, rather than Departmental, approved and no substitutions are allowed. Exceptions may be made for transfer students. Two courses are required.**

**African and African-American Studies**

235, 236 - Introduction to African Studies

**Asian Studies**

101, 102 - Asian Civilization

**Classics**

201 - Introduction to Classics

**Geography**

101, 102 - World Geography

**Global Studies**

250 - Introduction to Global Studies (same as Sociology 250)

**History**

241, 242 - Development of Western Civilization

247, 248 - Honors: Development of Western Civilization

255, 256 - Introduction to Latin American Studies (same as Latin American Studies 251, 252)

261, 262 - A History of World Civilization: Origins to 1500

**Latin-American Studies**

251, 252 - Introduction to Latin American Studies

**Medieval Studies**

201, 202 - Medieval Civilization

**Religious Studies**

101 - World Religions in History

**Sociology**

250 - Introduction to Global Studies (same as Sociology 250)

**OR**

**UNIVERSITY APPROVED INTERMEDIATE  
FOREIGN LANGUAGE COURSES**

**These courses are University, rather than Departmental, approved and no substitutions are allowed. Exceptions may be made for transfer students. Two courses are required.**

**Arabic**

221, 222 - Intermediate Modern Standard Arabic I, II (same as Asian Studies 221, 222)

**Asian Languages**

231, 232 - Intermediate Chinese (same as Chinese 231, 232)

251, 252 - Intermediate Japanese (same as Japanese 251, 252)

**Asian Studies**

221, 222 - Intermediate Modern Standard Arabic I, II (same as Arabic 221, 222)

241, 242 - Intermediate Modern Hebrew I, II (same as Hebrew 241, 242)

261, 262 - Intermediate Persian (same as Persian 261, 262)

**Chinese**

231, 232 - Intermediate Chinese (same as Asian Languages 231, 232)

**Classics**

251 - Intermediate Latin: Grammar Review and Readings  
and

252 Intermediate Latin: Vergil's Aeneid

261- Intermediate Greek: Grammar Review  
and

264 - Readings and Intermediate Readings in Greek

**French**

211, 212 - Intermediate French

217, 218 - Honors: Intermediate French

**German**

201, 202 - Intermediate German

**Hebrew**

241, 242 - Intermediate Modern Hebrew I, II (same as Asian Studies 241, 242)

**Italian**

211, 212 - Intermediate Italian

Table 5 Con't

**Japanese**

251, 252 - Intermediate Japanese (same as Asian Languages 251, 252)

**Persian**

261, 262 - Intermediate Persian (same as Asian Studies 261, 262)

**Portuguese**

211, 212 - Intermediate Portuguese

**Russian**

201, 202 - Intermediate Russian

**Spanish**

211, 212 - Intermediate Spanish

217, 218 - Honors: Intermediate Spanish

**TABLE 6**  
**UNIVERSITY APPROVED SOCIAL SCIENCES**

**These courses are University, rather than Departmental, approved and no substitutions are allowed. Exceptions may be made for transfer students. Two courses are required.**

**Anthropology**

130 - Cultural Anthropology

**Child and Family Studies**

210 - Human Development

220 - Marriage and Family: Roles and Relationships (same as Women's Studies 230)

**Economics**

201 - Introductory Economics: A Survey Course

207 - Honors: Introductory Economics: A Survey Course

**Political Science**

102 - Introduction to Political Science

**Psychology**

110 - General Psychology

117 - Honors: General Psychology

**Sociology**

110 - Social Problems and Social Change

117 - Honors: Social Problems and Social Change

120 - General Sociology

127 - Honors: General Sociology

**Women's Studies**

230 - Marriage and Family: Roles and Relationships (same as Child and Family Studies 230)

**TABLE 7:  
UNIVERSITY APPROVED ARTS AND HUMANITIES**

**These courses are University, rather than Departmental, approved and no substitutions are allowed. Exceptions may be made for transfer students. Two courses are required.**

**African and African-American Studies**

- 162 - Art of Africa, Oceania, and Pre-Columbian America (same as Art History 162)
- 233 - Major Black Writers (same as English 233)

**Architecture**

- 211, 212 - History of Architecture I, II

**Art History**

- 162 - Art of Africa, Oceania, and Pre-Columbian America (same as African and African-American Studies 162)
- 167 - Honors: Art of Africa, Oceania, and Pre-Columbian America (same as African and African-American Studies 162)
- 172, 173 - Western Art I, II
- 177,178 - Honors: Western Art I, II
- 183 - Asian Art
- 187 - Honors: Asian Art

**Classics**

- 232 - Archeology and Art of Ancient Greece and Rome
- 253 - Greek and Roman Literature in English Translation

**English**

- 201 - British Literature I: Beowulf through Johnson
- 202 - British Literature II: Wordsworth to the Present
- 207 - Honors: British Literature I: Beowulf through Johnson
- 208 - Honors: British Literature II: Wordsworth to the Present
- 221 - Literature of the Western World I: Ancient, Medieval, and Renaissance
- 222 - Literature of the Western World II: Enlightenment, Romantic, and Modern
- 231 - American Literature I: Colonial Era to Civil War
- 232 - American Literature II: Civil War to the Present
- 233 - Major Black Writers (same as African and African-American Studies 233)
- 237 - Honors: American Literature I: Colonial Era to Civil War
- 238 - Honors: American Literature II: Civil War to the Present
- 251 - Introduction to Poetry
- 252 - Introduction to Drama
- 253 - Introduction to Fiction

**Music History**

- 110 - Introduction to Music in Western Culture
- 115 - Music of the United States

Table 7 Con't

- 120 - History of Rock
- 125 - Jazz in American Culture
- 290 - Introduction to World Musics

**Philosophy**

- 110 - The Human Condition: Value and Reality
- 111 - The Human Condition: Knowledge and Reality
- 240 - Ethics
- 242 - Ethical Theory and Its Application
- 290 - Social and Political Philosophy (**also a Writing Communication**)

**Theatre**

- 100 - Introduction to Theatre

**TABLE 8:  
UNIVERSITY APPROVED COMMUNICATING  
THROUGH WRITING**

**These courses are University, rather than Departmental, approved and no substitutions are allowed. Exceptions may be made for transfer students. One course is required.**

**Architecture**

213 - History and Theory of Contemporary Architecture

**Civil Engineering**

205 - Professional Development

**English**

254 - Themes in Literature

255 - Public Writing

295 - Business and Technical Writing

355 - Rhetorical Writing

360 - Technical and Professional Writing

363 - Writing Poetry

364 - Writing Fiction

398 - Junior-Senior Honors Seminar

455 - Persuasive Writing

499 - Senior Seminar

**Hotel, Restaurant, and Tourism**

390 - Professional Development (same as Retail and Consumer Sciences 390)

**Journalism and Electronic Media**

200 - Introduction to News Writing

201 - Writing for Mass Media

**Judaic Studies**

322 - Medieval Philosophy (same as Medieval Studies 322 and Philosophy 322)

**Medieval Studies**

322 - Medieval Philosophy (same as Judaic Studies 322 and Philosophy 322)

**Music History**

210, 211 - History of Music I, II

330 - Women in Music (same as Women's Studies 330)

380 - Music in World Cultures

430 - Symphonic Literature

**Music Education**

430 - Music Methods for High School

Table 8 Con't

**Nursing**

403 - Health Promotion and Maintenance in Child Bearing Families

**Philosophy**

290 - Social and Political Philosophy (**also an Arts and Humanities**)

320 - Ancient Western Philosophy

322 - Medieval Philosophy (same as Medieval Studies 322 and Judaic Studies 322)

324 - 17<sup>th</sup>- and 18<sup>th</sup>-Century Philosophy

326 - 19<sup>th</sup>- and 20<sup>th</sup>-Century Philosophy

342 - Business Ethics

345 - Bioethics (same as Religious Studies 345)

346 - Environmental Ethics

382 - Philosophy of Feminism (same as Women's Studies 382)

390 - Philosophical Foundations of Democracy

**Religious Studies**

345 - Bioethics (same as Philosophy 345)

**Retail and Consumer Sciences**

390 - Professional Development (same as Hotel, Restaurant, and Tourism 390)

**Social Work**

314 - Human Behavior and Social Environment

**Women's Studies**

330 - Women in Music (same as Music History 330)

382 - Philosophy of Feminism (same as Philosophy 382)

**AS 160**  
**INTRODUCTION TO ANIMAL SCIENCE (3)**

**Catalog Description:** Preparation of academic plans and career discussion. Introduction to structure and production principles of the food animal and horse industries. Overview of companion and alternative livestock. Market classes and grades of cattle, poultry and poultry products, lamb and wool, and swine. 3 labs. F, Sp

**Objectives:** At the conclusion of the course students will:

- 1) Be able to plan their academic program of study.
- 2) Be informed on career choices.
- 3) Have a resume on-line and be registered with career services.
- 4) Be able to define terms associated with the food animal and horse industries.
- 5) Identify anatomical features of live animals.
- 6) Have an understanding of the principles of animal production and marketing.
- 7) Be familiar with the current status of the animal industry and recognize industry production standards.
- 8) Be exposed to and have an appreciation for the differences between individual animals within species.
- 9) Have an appreciation for the problems and opportunities that exist in the animal industry as well as future trends.

**Topic Outline**

**Sessions**

1) Class orientation	1
2) Academic Plan	2
3) Careers in animal science and veterinary medicine	1
4) Resume-building	1
5) The meat animal industry	1
6) Animal welfare and well-being, ethics	1
7) Poultry production	
A) Introduction to poultry production	1
B) Structure of the poultry industry	1
C) Commercial chicken production	1
D) Breeds and evaluation of poultry	1
E) Meat, egg products and food	1
8) Swine production	
A) Introduction to swine production	1
B) The swine industry	1
C) Swine reproductive and digestive systems	1
D) Swine breeds and breeding	1
E) Pork and pork products	1
9) Small ruminants and alternative livestock production	
A) Introduction	1
B) Evaluating market lambs	1
C) Sheep and wool industry	1

D) Goat industry	1
E) Alternative livestock	1
10) Companion animals	1
11) Laboratory animal uses	1
12) Beef cattle production	
A) Introduction to beef production	1
B) Bovine reproductive and digestive systems	1
C) Beef breeds and beef cattle breeding	1
D) Evaluation of market steers	1
E) Beef carcass evaluation	1
13) Horses	
A) Introduction to the horse industry	1
B) Horse reproductive and digestive systems	1
C) Breeds of horses	1
D) Gaits mechanisms of locomotion	1
E) Evaluation for function soundness	1
14) Dairy cattle production	
A) Introduction to the dairy industry	1
B) Evaluation of production	1
C) Dairy cattle breeds and breeding	1
D) Milk marketing and trends in the industry	

**AS 220**  
**ANATOMY & PHYSIOLOGY OF FARM ANIMALS (3)**

**Catalog Description:** Skeleton and joints; muscles; blood and microcirculation; the nervous, endocrine, cardiovascular, respiratory, and digestive systems; demonstrations of physical-chemical phenomena. Prereq: Biology 102. 2 hours and 1 lab. F.

**Objectives:** At the end of the appropriate portions of the course and at the end of the semester, each student should:

- 1) Know selected, basic working definitions, as encountered in the course associated with anatomy and physiology.
- 2) Be able to correctly apply descriptive anatomic terms to the live or dead body of an animal.
- 3) Become aware of the bearing each aspect of physiology covered in the course has upon productive function of domestic animals and the well-being of wild animals.
- 4) Through dissection, either performed by yourself or from observation, become familiar with the overall plan of the animal body and its cavities.
- 5) Develop at least a partial grasp of the sheer beauty and wonder of both physiology and the concept of physiologic integration.

**Topic Outline**

**Sessions**

- |  |   |
|--|---|
| 1) Introduction  | 2 |
| A) Course outline/objectives   |   |
| B) Tentative schedule  |   |
| C) Grading policy  |   |
| D) Anatomy   |   |
| a) definitions and related fields  |   |
| b) descriptive terms   |   |
| c) orientation for first laboratory  |   |
| E) Physiology  |   |
| a) definitions and related fields  |   |
| b) anatomic and physiology organization  |   |
| c) patterns of physiology in wild and domestic mammals                               |   |
| d) integration of body functions   |   |
| 2) Skeletal System   | 3 |
| A) Bones, cartilage and joints forming the appendicular, axial and visceral skeleton |   |
| B) Bone formation and structure  |   |

<u>Topic Outline</u>	<u>Sessions</u>
3) Muscular System	2
A) Types of muscle	
B) Muscle physiology and joint movements	
C) Muscle contraction and locomotion	
4) Nervous System	4
A) Major divisions	
B) The neuron	
C) The central nervous system	
D) The peripheral nervous system	
E) The autonomic nervous system	
F) General physiology of the nervous system	
G) Reflex action	
5) Endocrine System	2
A) General make-up and considerations	
B) Overview of the endocrine glands	
C) Hormone actions	
6) Cardiovascular System	3
A) Anatomy and physiology of the heart	
B) The cardiac cycle	
C) Arterial and venous system	
D) Lymphatic system	
E) Blood volume and pressure	
F) Fetal circulation	
7) Blood and Body Fluids	3
A) Production and distribution of formed elements	
B) Plasma	
C) Blood clotting mechanisms	
8) Respiratory System	3
A) Anatomy of the respiratory system	
B) Physiology of respiration	
C) Gaseous exchange and blood transport	
9) Digestive System	4
A) Anatomy of the oral cavity	
B) The alimentary canal	
C) Accessory structures	
D) Physiology of digestion and rumination	
E) Physiology of the stomach and the intestinal tract	
10) Urinary System	2
A) Renal anatomy and physiology	
B) Physical aspects of kidney function	
C) Urine composition	

**LABORATORY:**

<b><u>Topic Outline</u></b>	<b><u>Sessions</u></b>
1) Demonstration/Dissection of the Pig A) Shoulder girdle B) Body cavities C) Serous membranes D) Gross appearance and location of organs E) General body plan	1
2) Gross, Comparative Study of the Bones and Joints Composing the Axial and Appendicular Skeleton of the Pig, Cow, Horse, and Chicken.	1
3) Student Team Dissection of the Lower Leg of the Cow With Emphasis On: A) Bones B) Fetlock, pastern and coffin joints C) Flexor and extensor tendons D) Sesamoid bones E) Suspensory ligament	1
4) Comparative Anatomy of Muscle Types A) Gross anatomy of muscle B) Demonstrations of muscle contraction and locomotion in the live animal	1
5) Anatomical Study of the Nervous System A) Microscopic examination of the neuron B) Specimens of the brain and spinal cord C) Nerves	1
6) Demonstration/Discussion Of: A) Recording nerve impulses by EEG B) ANS and hormone action on the nerve impulse C) Reflex action	1
7) Anatomical Study of the Bovine Heart	1
8) Application of ECG and Other Diagnostic Measures For Monitoring Cardiovascular Activity in Farm Animals	1
9) An Examination of Formed Elements of Blood: A) Diagnostic methods B) Methods of blood collection C) Student determination of: a) red and white blood cell number b) packed cell volume c) sedimentation rate	2

**Topic Outline**

**Sessions**

- |  |   |
|--|---|
| 10) Anatomical Study of the Respiratory System                           | 1 |
| A) Student dissection and study of the larynx, trachea and lungs         |   |
| B) Air volumes and capacities  |   |
| 11) Anatomical Study of the Digestive System Including:                  | 2 |
| A) Oral cavity including teeth   |   |
| B) Salivary glands   |   |
| C) Pharynx   |   |
| D) Esophagus   |   |
| E) Stomach(s) of the ruminant and nonruminant                            |   |
| F) Small and large intestine   |   |
| G) Accessory organs  |   |
| 12) Anatomical Study of Kidney   | 1 |
| A) Student evaluation of urine composition from different animal species |   |

**AS 280**  
**BIOTECHNOLOGY AND MANAGEMENT PRACTICES**  
**IN ANIMAL PRODUCTION (3)**

**Catalog Description:** Exposure to current animal agriculture practices and biotechnology techniques as they affect beef, dairy, horse, poultry, sheep and swine industries. Includes animal behavior, restraint and welfare, computer applications, nutrients and nutrient utilization, waste management food safety, animal, reproduction, health and well being, and emerging technologies and opportunities in animal agriculture. 2 3-hour labs. F/Sp.

**Objectives:** At the conclusion of the course students will:

- 1) Be able to perform general and common management practices on livestock and poultry.
- 2) Be able to train, groom and show one class of livestock using accepted industry methods.
- 3) Understand and be able to explain the purpose(s) of the various practices and techniques.

<u>Topic Outline</u>	<u>Sessions</u>
1) Orientation	1
A) Course Goals/Objectives/Syllabus/Outlines	
B) Biographical survey	
C) Students' expectations	
D) Assignments	
E) Pre-Course practices survey	
2) Animal Welfare/Animal Rights	1
3) Animal Behavior & Restraint Management	2
A) Handling facilities	
B) Ropework	
C) Cutting instruments	
4) Sanitation & First Aid	2
A) Cleaning/Disinfecting	
B) Diseases	
C) Health regulations	
D) Healthy-Normal animal	
E) Unhealthy-Abnormal animal	
F) Vital signs	
5) Hoof Care	1
A) Therapeutic	
B) Cosmetic	

<u>Topic Outline</u>	<u>Sessions</u>
6) Digestive Systems A) Anatomy & Physiology/Complex & Monogastric B) Feeding/Forage/Concentrates	1
7) Species, Types, Breeds and Strains of All Farm Animals	1
8) Dairy Practices A) Life cycle B) Calf C) Milking herd	3
9) Horse Practices A) Life cycle B) Foal C) Adult	2
10) Poultry Practices A) Life cycle B) Chick C) Adult	1
11) Sheep & Goat Practices A) Life cycle B) Lambs C) Adult	2
12) Swine Practices A) Life cycle B) Early baby pig C) Late baby pig D) Adult	3
13) Beef Practices A) Life cycle B) Calf C) Adult	2
14) Identification & Record Keeping Systems	1
15) Animal Behavior/General Grooming & Showing in Preparation for Exhibition & Sale	7

**AS 285**  
**HORSE HANDLING AND CARE (3)**

**Course Description:** Proper procedures for horse-human interaction and the recommended management procedures for horse care. The basic behavioral characteristics of the horse, an understanding of his physical and mental parameters and their use in horse-human communication. Interactions include imprinting, haltering, halter training, lounging, long-line driving, bridling, biting, round pen training, saddling and teaching to guide. Basic care includes feed selection and management, post-natal care, restraint, foot care, dental care, grooming, loading and trailering, stall maintenance, internal and external parasite control, exercising, identification techniques, routine vaccinations and first aid. Safety for both horse and handler will be emphasized. 2 3-hours labs. F.

**Topic Outline:**

Overview Horse industry: Classification & Uses

Horse Industries & Careers: Trainer, Breeder, TWHBEA, Extension, Sales, Farrier, Instructor

Horse-Human Interactions: behavior, safety, handling, proper (safe) attire

Anatomy & Physiology: Conformation, horse identification (colors, markings, brands, tattoo, microchip), teeth care, floating, aging

Round Pen Basics: Catching, haltering, leading, bridling, saddling, imprinting, transport, trailering (proper wrapping legs)

Round Pen Work: lunging, long-line driving

Tack, Equipment, Biting & Restraints: tying (proper knots), twitch, ear-down, hobbles

No Foot, No Horse: foot care, lameness, farrier concepts, safe/proper method pick-up & clean front & rear hooves, trimming, what is a good shoeing job?

Facilities, Fencing & Stable Management: bedding, boarding, manure management

Feeding Horses: feed selection (pasture, hays & grains), reading feed tag, amount to feed, needs of types of horses (mature maintenance, lactation, growth, performance), feed management.

Feeding Horses: (cont'd) fescue toxicosis, forage/grain analysis, judging hay samples

Conditioning: legging up, preparation, exercise techniques, procedure (heart rate monitor), spring program, warm-up, cool down, TPR

Diseases, Toxins & First Aid

Horse Welfare and Well-being: BCS

Health Care: routine vaccination & parasite (internal & external), paste deworming

Breeding Horses: collect stallion, check semen, AI, cool & frozen semen, rectal palp/ultrasound mares, test milk for foaling

Legal Issues of Ownership & Other Current Issues

Buying or Selecting a Horse; Pre-Purchase Exam

Current Research and Technologies

**AS 320**  
**THE PHYSIOLOGY OF REPRODUCTION AND LACTATION (3)**

**Course Description:** Biology of sex and sexual differentiation, functional anatomy of male and female, reproduction and lactation, gametogenesis, neuroendocrinology and endocrinology of reproduction and lactation, sex cycles, folliculogenesis, ovulation, spermatogenesis, fertilization, embryonic development, implantation, pregnancy, parturition, initiation of lactation and maintenance of the dry period, artificial control of reproduction and lactation. Prereq: Biology 120. 2 hours and 1 lab. Sp.

**Objectives:** At the conclusion of the course students will:

- 1) Demonstrate a comprehensive vocabulary and understanding of anatomical, physiological and endocrinological terminology.
- 2) Demonstrate an understanding of the molecules that are interactive in reproductive processes, their source, target organs and functions at the whole animal, organ, cellular and molecular levels.
- 3) Demonstrate a comprehension of the inter-relationships between hormones, their source, target organs and function at the whole animal, organ, cellular and molecular levels.
- 4) Utilize knowledge gained to solve complex problems in reproductive physiology.

<u>Topic Outline</u>	<u>Sessions</u>
1) Sexual determination: What Is Sex and How Is It Established?	1
2) Early Embryonic Development: What Is A Germ Cell & How Does It Differ From The Somatic Cells?	1
3) Sexual Differentiation: How Do Females Differ From Males And What Are the Causes Of The Differences?	1
4) Reproductive endocrinology: What Are The Inter-relationships Between The Hypothalamus, Pituitary and Gonad?	1
5) Puberty: What Is It And How Is The Age At Which It Occurs Controlled?	1
6) Oogenesis: What Is It And What Are Its Consequences?	1

<u>Topic Outline</u>	<u>Sessions</u>
7) Folliculogenesis: What Is An Ovarian Follicle And How Is Its Development Controlled?	2
8) Spermatogenesis: What Is It And What Are Its Consequences?	2
9) The Testis: How Is Its Development And Function Controlled?	1
10) Ovarian, Estrus & Menstrual Cycles: What Are They And What Are Their Causes And Consequences?	2
11) Ovulation & Fertilization: How Are They Accomplished?	2
12) Implantation, Pregnancy & Placentation: What Are They And What Are Their Consequences?	2
13) Hormones of Pregnancy: What Are They And What Are Their Effects?	2
14) Embryonic & Fetal Development	2
15) Parturition	1
16) The Postpartum Interval: What Are The Factors Controlling Its Duration?	2
17) New Technologies In Reproduction	1
18) Artificial Control of Reproduction: How Can Reproductive Performance Be Either Increased or Diminished?	2
19) Gross Anatomy & Fine Structure of Mammary Glands	2
20) Initiation, Maintenance & Enhancement of Lactation	2
21) Milk Ejection	1
22) Involution of the Mammary Gland	1
23) Composition of Mammary Secretions	1
24) Diseases of the Mammary Gland	1

**LABORATORY:**

<b><u>Topic Outline</u></b>	<b><u>Sessions</u></b>
25) Reproductive Endocrinology: What Are The Hormones Of Reproduction, What Are Their Targets And How Are Their Effects Produced?	1
26) Gross Anatomy Of The Male Reproductive And Endocrine Systems	1
27) Microanatomy Of The Testis	1
28) Microanatomy Of The Ovary	1

**AS 330**  
**COMPARATIVE ANIMAL NUTRITION (3)**

**Catalog Description:** Nomenclature, structure, functions, utilization, and deficiency symptoms of essential nutrients in carnivores, omnivores and herbivores. Prereq: Animal Science 220, Chemistry 110 or Chemistry 130. 3 hours. F.

**Objectives:** The student will be able:

- 1) To interpret fundamental principles regarding nutrient utilization and function.
- 2) To describe the limitations and uses of the different categories and types of feeds that are used in animal feeding.
- 3) To apply the basic principles of ration formulation that utilize combinations of feeds to formulate diets that meet an animal's nutrient requirements.

<u>Topic Outline</u>	<u>Sessions</u>
1) Introductory Animal Nutrition	
A) Historical development of nutrition as a science	1
B) Anatomy and major functions of the digestive system	2
C) Chemical composition of plants	2
D) Chemical composition of animals	2
E) Water, its role and requirements	2
2) The Macronutrients and their Metabolism	
A) Carbohydrates; classification, chemical properties enzymatic and microbial digestion; intermediary metabolism.	3
B) Lipids; classification, chemical properties, digestion, transport and utilization. Essential fatty acids and their deficiency effect.	3
C) Proteins, amino acids and non-protein nitrogen compounds; classification, and essentiality of amino acids; protein quality, digestion, metabolism and deficiency effects; NPN utilization.	3
D) Energy utilization; interconversion of macronutrients, uses of energy in the animal body, various measures of energy.	2
3) The Micronutrients and Their Metabolism	
A) The inorganic nutrients (minerals); classification, normal functions, deficiency and toxicity symptoms; major feed and supplemental sources.	4
B) Vitamins; classification, normal functions, deficiency and toxicity symptoms; major feed and supplemental sources.	4

**AS 340**  
**PRINCIPLES OF ANIMAL BREEDING (3)**

**Catalog Description:** Genetic and environmental bases of animal variation. Selection and mating systems as mechanisms of genetic change. Planning breeding programs for economically important domestic species. 2 hours and 1 lab. F.

**Objectives:** At the end of this course the student will be able to:

- 1) Evaluate differences in animal performance utilizing genetic principles.
- 2) Interpret genetic parameters and use them in determination of appropriate selection strategies.
- 3) Know what methods are currently available to predict genetic merit of farm animals for individual traits and overall economic merit and utilize these estimates in herd breeding programs.
- 4) Recognize limitation of these methods.
- 5) Utilize this knowledge to develop and evaluate genetic improvement programs for various classes of livestock.
- 6) Comprehend, evaluate and utilize animal breeding articles and information from popular magazines and breed journals.

**Topic Outline**

**Sessions**

- 1) Introduction
  - A) Course objectives
  - B) Distribution of activities
  - C) Grading policy
  - D) Instructor and student expectations
  - E) Overview of class
  
- 2) Basic Biology and Mendelian Genetics
  - A) Mendelian Genetics
    - a) law of segregation
    - b) law of independent assortment
    - c) terminology
  
  - B) Chromosomes and their behavior
    - a) meiosis
    - b) mitosis
    - c) linkage
    - d) crossing over
    - e) mapping and distance
    - f) sex-linkage

**Topic Outline****Sessions**

- C) Biochemistry of inheritance
  - a) DNA
  - b) genetic code
  - c) protein synthesis
  - d) genetic disorder
  
- D) Biotechnology and animal breeding
  - a) recombinant DNA
  - b) DNA screening
  - c) DNA fingerprinting
  - d) transgenics
  - e) gene therapy
  - f) marker-assisted selection
  
- E) Types of gene action
  - a) additive vs. non-additive
  - b) dominance and recessiveness
  - c) epistasis
  - d) co-dominance
  - e) pleiotropy
  
- 3) Population Genetics and Animal Performance
  - A) Probability
    - a) rules and definitions
    - b) conditional probabilities
    - c) testing of genetics hypothesis
  
  - B) Detection of carriers of recessive genes
    - a) mating to heterozygotes
    - b) mating to homozygotes
    - c) others
  
  - C) Population genetics
    - a) gene and genotypic frequencies
    - b) random mating
    - c) Hardy-Weinberg Law
    - d) extensions of Hardy-Weinberg
  
  - D) Factors affecting gene frequency
    - a) selection
    - b) migration
    - c) mutation
    - d) random drift in small populations
  
  - E) Variation in animal performance
    - a) quantitative traits
    - b) sources of variation
    - c) methods to remove environmental effects
    - d) genotype and environment interactions

**Topic Outline****Sessions**

- 4) Selection Programs and Mating Systems
  - A) Selection goals
    - a) setting goals
    - b) requirements
  - B) Prediction of breeding values
    - a) phenotype
    - b) multiple records
    - c) progeny Test
    - d) parental records
    - e) selection index-use of different sources
    - f) best linear unbiased prediction (BLUP)
    - g) use of EPD's and PTA's
  - C) Prediction of genetic progress and comparison of selection strategies
    - a) intensity
    - b) accuracy
    - c) generation interval
    - d) optimizing progress
  - D) Selection for multiple traits
    - a) correlated response
    - b) tandem
    - c) independent culling methods
    - d) selection index
    - e) advantages and disadvantages of multi-trait selection procedures
  - E) Inbreeding
    - a) relationship
    - b) calculation of inbreeding coefficients
    - c) inbreeding depression
    - d) application of inbreeding in genetic improvement programs
  - F) Crossbreeding
    - a) heterosis - definition and calculation
    - b) genetic explanation
    - c) maternal vs. individual heterosis
    - d) implications to breeding programs
  - G) Crossing programs
    - a) two-breed
    - b) rotational
    - c) three-breed terminal
    - d) "criss-out-cross" system

**Topic Outline**

**Sessions**

- H) Industry programs - current and future considerations
  - a) incorporation of molecular biology with traditional breeding schemes
  - b) physiological indicators of economically important traits
  
- 5) Summary of class

**AS 360**  
**HORSE, DAIRY AND MEAT ANIMAL EVALUATION (3)**

**Catalog Description:** Visual and objective appraisal and evaluation of beef cattle, swine and sheep for functional efficiency. Comparative dairy judging, oral reasons, breed classification programs, economic value of conformation traits. Evaluation of horses for soundness and functional efficiency and the relationship of form to function in various breeds. F.

**Lecture Schedule:** Dairy - 8 sessions; Beef, Sheep, Swine - 4 sessions each; Horse - 8 sessions

**Introduction to Dairy Breeds and Conformation**

Different Dairy Breeds; Parts and Terminology  
Relationship Between conformation, Production, Longevity, and Profit

**Linear Type Evaluation**

Frame; Mammary System

**Linear Type Evaluation**

Feet and Legs; Dairy Character; Body Capacity

**Breed Classification and Unified Dairy Scorecard**

**Comparative Judging of Classes of Cows**

**Comparative Judging of Classes of Cows**

**Dairy Oral Reasons and Judging**

**Dairy Oral Reasons and Judging**

**Swine Evaluation**

Begin market hog evaluation

**Swine Evaluation**

Breeding swine selection criteria and Reasons

**Swine Evaluation**

Continue criteria and reasons

**Swine Evaluation**

Swine section wrap-up and Reasons

**Sheep Evaluation**

Begin sheep evaluation

**Sheep Evaluation**

Selection criteria and Reasons

**Sheep Evaluation**

Continue criteria and Reasons

**Sheep Evaluation**

Sheep section wrap-up and Reasons

**Beef Cattle Evaluation**

Begin beef cattle evaluation

**Beef Cattle Evaluation**

Selection criteria and Reasons

**Beef Cattle Evaluation**

Continue criteria and reasons

**Beef Cattle Evaluation**

Beef section wrap-up and Reasons

**Introduction to Horse Evaluation**

Oral Reasons and Terminology

Overview of Industry and Colors

**Conformation and Relationship of Form to Function**

Analyzing and Evaluating Conformation

The Ideal Horse - Deviations from Ideal

**Conformation and Relationship of Form to Function (continued)**

Breed Types and Differences (Breed Specific Terminology)

**Quarter Horses & Other Stock Type Breeds**

Characteristics of Breed Ideal; Breed Specific Terminology

**Quarter Horses & Other Stock Type Breeds; Western (stock type) Performance Classes**

Explanation of Class Rules and Requirements

Class Specific Terminology; Review, Critique and Reasons

**Quarter Horses & Other Stock Type Breeds; Western (stock type) Performance Classes**

Explanation of Class Rules and Requirements; Class Specific Terminology

**Hunter/English Performance (stock type) Classes**

Explanation of Class Rules and Requirements; Class Specific Terminology

**Walking/Racking Horse Conformation and Performance Classes**

Characteristics of Breed Ideal

Breed Specific Terminology

Halter Classes

Mares, Geldings, Stallions (Different Age Groups)

Performance Classes

Explanation of Class Rules and Requirements

Class Specific Terminology

**AS 380**  
**ANIMAL HEALTH MANAGEMENT (3)**

**Course Description:** Characteristics, symptoms, prevention, and treatment of major diseases and parasites. Immunization, health regulations and herd health programs for all farm livestock species and poultry. Prereq. AS 220, 2 hours and 1 lab. Sp.

**Objectives:** At the conclusion of the course students will:

- 1) Identify and characterize the common diseases and health problems associated with livestock and poultry.
- 2) Be able to demonstrate proper use of pharmaceuticals and biologics in preventing and controlling animal disease.
- 3) Be able to design effective herd and flock health programs.

<u>Topic Outline</u>	<u>Sessions</u>
1) Class Objectives, Grading, Class Attendance Policy, References and Texts, The Concept of Health in Animals	1
2) Disease Defined, History of Disease, Classification of Diseases and Examples, Location of Diseases Within the Body, Significance of Animal Disease to Humans	1
3) How Disease Causing Organisms Get Into The Body, How the Body Responds to Disease, Immunity, the Types of Immunity, Vaccines, Types of Vaccines	1
4) Control of Disease: Sanitation, Feeding, Housing, Disinfection, Isolation, Observation, Prompt Treatment	1
5) The Diagnosis of Animal Disease: Importance of History, Physical Examination, Laboratory Diagnosis, Necropsy	1
6) Government Regulation of Disease Control: Accredited Veterinarians, Federal Area Veterinarians, State Veterinarians, State and Federal Diagnostic Labs	1
7) The Science of Drugs: History of Drugs, Naming of Drugs, Sources of Drugs, Federal Approval of Drugs, Safe and Effective Drug Use	1

<u>Topic Outline</u>	<u>Sessions</u>
8) Principles of Herd Health Management: Goals of Herd Health, Records and Herd Health, Animal Testing, Role of the Vet in Herd Health	1
9) The Economic and Social Impact of Diseases of Cattle, Herd Health of Dairy Cattle: Husbandry, Vaccination, Goals	1
10) Diseases of Dairy Cattle: Mastitis, Calf Scours, Left Displaced Abomasum	1
11) Diseases of Dairy Cattle: Abortion, Other Important Reproductive Diseases	1
12) Economic and Social Impact of Beef Cattle Disease, Herd Health Management of Beef Cattle, Goals, Husbandry, Vaccination	1
13) Diseases of Beef Cattle: Pneumonia, Pink Eye, Black Leg, Intestinal Parasites	1
14) Diseases of Beef Cattle: Anoestrous, Difficult Birth, Retained Fetal Membranes	1
15) Exam	1
16) The Impact of Equine Diseases, Health Management of Horses: Vaccinations, Husbandry	1
17) Important Diseases of the Horse: Lameness, Colic	1
18) Important Diseases of the Horse: Internal Parasites, Lacerations	1
19) Economic Importance of Swine to Pigs and Animals Health Management of Swine: Goals, Husbandry, Vaccinations	1
20) Diseases of Swine: Pneumonia, Swine Dysentery, Atrophic Rhinitis	1
21) The Importance of Sheep and Goat Diseases. Health Management of Sheep and Goats: Goals, Husbandry, Management	1
22) Diseases of Sheep: Perinatal Death, Foot Rot ORF, Coccidia	1

<u>Topic Outline</u>	<u>Sessions</u>
23) Diseases of the Goat: Abscesses, Internal Parasites, Pneumonia	1
24) The Economic Importance of Poultry Diseases to Humans and Poultry. Poultry Flock Health Management: Goals, Husbandry, Management	1
25) Diseases of Poultry: Mycoplasma, Salmonella, Newcastle, Coccidia	1
26) The Importance of Diseases of Companion Animals to Humans and Pets. Health Management of Dogs. Health Management of Cats	1
27) Diseases of Companion Animals: Overpopulation, Parvo Virus, Trauma, Skin Disease	1
28) Diseases of Companion Animals: Feline Leukemia FIV, Renal Disease	1
29) Important Foreign Animal Diseases: Foot and Mouth Disease, African Swine Fever, Nagana	1
30) Diseases of Animals Transmitted to Humans: Brucellosis, Tuberculosis	1

**LABORATORY:**

<u>Topic Outline</u>	<u>Sessions</u>
1) Drugs--Reading Package Labels and Inserts, Calculating Doses, Videotape on Drug Development	1
2) Parasites of Animals--Demonstration of Specimens, Microscopic Identification of Worm Eggs, Planning A Parasite Control Program	1
3) Hematology, The Study of Blood--Slides of Blood, Making Blood Smears, Measuring PCV, Microscopic Exam of Blood Smears	1
4) Disease Recognition in Cattle, Physical Exam of the Cow	1
5) Drug Delivery Methods In Cattle--Injections, Balling Guns, Stomach Tubes	1

**LABORATORY (cont.):**

<b><u>Topic Outline</u></b>	<b><u>Sessions</u></b>
6) Drug Delivery Methods in Cattle	1
7) Recognition and Treatment of Diseases of the Horse--Physical Examination, Treatment Methods, Bandaging the Horse	1
8) Recognition and Treatment of Diseases of Sheep and Goats--Physical Examination, Treatment Methods, Foot Trimming	1
9) Recognition and Treatment of Swine Disease--Physical Examination, Treatment, Restraint of Swine	1
10) Recognition and Treatment of Poultry Disease--Observation, Necropsy	1
11) Recognition and Treatment of Companion Animal Disease--Physical Examination and Giving Pills	1
12) Epidemiology	1
13) Laboratory Animals in Health and Disease--Facilities Tour, Handling Lab Animals, Normal Behavior	1
14) Laboratory Exam	1

**AS 381**  
**ANIMAL NUTRITION AND PRODUCTION SYSTEMS (3)**

**Course Description:** Fundamentals of production and management systems with an emphasis on nutrition in beef, dairy, pork, and poultry programs. Application of principles of nutrition, breeding, physiology, and marketing into enterprise systems. Decision making management practices and information resources, enterprise evaluation, and comparison of production systems. 2 hours and 1 lab. **No credit for majors. F.**

**Objectives:** At the conclusion of the course students will be able to:

- 1) Determine on a comparative basis the parameters governing profitable production systems in Beef, Dairy, Poultry and Swine.
- 2) Obtain and organize resources essential to train others in production practices needed in Beef, Dairy, Poultry, and Swine production and management.
- 3) Develop linkages with animal science professionals within the University and in private industry to strengthen life-long education in animal production systems.
- 4) Recognize problem areas in animal production and management that need attention.

<u>Topic Outline</u>	<u>Sessions</u>
1) Introduction	1
A) Course objectives	
B) Distribution of activities	
C) Grading policies	
D) Student information sheet	
E) Evaluation of student experience base	
2) Overview of Livestock Production Systems in US	2
A) Goals, products produced, and value of each:	
a) beef cattle industry	
b) dairy industry	
c) poultry industry	
d) swine industry	
B) Production in Tennessee	

**Topic Outline****Sessions**

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>3) Nutrition of Livestock and Poultry</li> <li style="padding-left: 20px;">A) Nutrients           <ul style="list-style-type: none"> <li>a) water</li> <li>b) carbohydrates</li> <li>c) fats</li> <li>d) protein</li> <li>e) minerals</li> <li>f) vitamins</li> </ul> </li> <li style="padding-left: 20px;">B) Digestive systems           <ul style="list-style-type: none"> <li>a) ruminants</li> <li>b) nonruminants</li> </ul> </li> <li style="padding-left: 20px;">C) Feeds and feed composition           <ul style="list-style-type: none"> <li>a) feeds identification</li> <li>b) diet formulation</li> <li>c) feed additives</li> <li>d) specialty feeds</li> </ul> </li> </ul> | 5 |
| <ul style="list-style-type: none"> <li>4) Reproductive Physiology</li> <li style="padding-left: 20px;">A) Anatomy of reproductive organs and function           <ul style="list-style-type: none"> <li>a) female</li> <li>b) male</li> </ul> </li> <li style="padding-left: 20px;">B) Pregnancy           <ul style="list-style-type: none"> <li>a) natural service</li> <li>b) artificial insemination</li> <li>c) embryo transfer</li> </ul> </li> <li style="padding-left: 20px;">C) Parturition</li> </ul>  | 3 |
| <ul style="list-style-type: none"> <li>5) Genetics and Breeding</li> <li style="padding-left: 20px;">A) Genes and expression of genes</li> <li style="padding-left: 20px;">B) Principles of selection</li> <li style="padding-left: 20px;">C) Systems of breeding and selection           <ul style="list-style-type: none"> <li>a) traits of economic importance</li> <li>b) genetic correlations among traits</li> <li>c) inbreeding</li> <li>d) crossbreeding</li> </ul> </li> <li style="padding-left: 20px;">D) Evaluation of genetic progress</li> </ul>  | 3 |
| <ul style="list-style-type: none"> <li>6) Management of Animals by Production Class</li> <li style="padding-left: 20px;">A) New born animals and newly hatched birds</li> <li style="padding-left: 20px;">B) Preweaning animals</li> <li style="padding-left: 20px;">C) Weaned animals</li> <li style="padding-left: 20px;">D) Replacement breeding stock</li> <li style="padding-left: 20px;">E) Productive growing and finishing</li> <li style="padding-left: 20px;">F) Mature genetic base stock</li> <li style="padding-left: 20px;">G) Cull mature genetic base stock</li> </ul>  | 6 |
| <ul style="list-style-type: none"> <li>7) Midterm</li> </ul>  | 1 |

<u>Topic Outline</u>	<u>Sessions</u>
8) Animal Production Systems	12
A) Case studies of normal production systems	
a) beef	
1) cow-calf	
2) stocker	
3) feedlot	
b) dairy	
1) milking herd	
2) dry cows	
3) replacement heifers	
c) poultry	
1) broiler	
2) layers	
d) swine	
1) farrowing, breeding stock	
2) replacement gilts	
3) growing and finishing	
9) Trouble Shooting Production Systems	8
A) Collection of production data	
B) Defining problems	
C) Identifying resources needed	
D) Follow-up on resource contacts	
E) Recording outcomes of problems identified	
10) Practice Problem Cases on Each System	4

**AS 420**  
**ADVANCED REPRODUCTION (3)**

**Course Description:** Collection, evaluation, and preservation of ova, spermatozoa and embryos; application of methods of natural breeding and techniques of artificial insemination and embryo transfer; herd sire and dam evaluation; pregnancy determination; gestation and parturition; infertility; recent advances in theriogenology. Prereq: AS 320. 1 hour and 2 labs. F.

**Objectives:** Specific objectives for the course include the following:

- 1) Species Comparison
- 2) Management for Optimum Fertility
- 3) Estrus Detection/Control
- 4) Natural Mating
- 5) Ovum Production
- 6) Fetal Development & Pregnancy Determination
- 7) Artificial Insemination
- 8) Embryo Transfer
- 9) Semen/Sperm Production, Evaluation, Preservation, Handling
- 10) Prospective Herd/Flock Sire Evaluation
- 11) Dystocia
- 12) Causes of Infertility: Genetic/Hereditary Diseases
- 13) Facilities/Equipment
- 14) Career Opportunities & Vocations
- 15) Numerical Data, History, Chronology of Events
- 16) Record Keeping

**Topic Outline**

**Sessions**

- 1) Sex Determination
  - A) Genetic
  - B) Phenotypic
  - C) Brain
  - D) Sex ratios
- 2) Sex Types
  - A) Normal
  - B) Abnormal
    - a) freemartins
    - b) intersexes
    - c) other
- 3) Hormones of Reproduction
  - A) Natural
  - B) Synthetic
  - C) Function
- 4) Puberty

**Topic Outline**

**Sessions**

- 5) Estrous Cycles
  - A) Regulation
  - B) Artificial control
- 6) Testicular Function
  - A) Spermatogenesis
  - B) Semen production
- 7) Artificial Insemination
  - A) In Vitro fertilization
  - B) Embryo manipulation
  - C) Cryopreservation
- 8) Pregnancy Diagnosis
  - A) Ultrasound
  - B) P<sub>4</sub> assays
  - C) Palpation
  - D) PSPB
- 9) Parturition
  - A) Induction
  - B) Dystocia
  - C) Retained placenta
  - D) Postpartum reproductive management
- 10) Seasonality
- 11) Reproductive Behavior
- 12) Environment and Nutrition Management
- 13) Reproductive Disease Control

**LABORATORY:**

- 1) Female Reproductive Macro and Microanatomy
- 2) Male Reproductive Macro and Microanatomy
- 3) Hormone Assays: RIA vs ELISA, P<sub>4</sub>, hCG
- 4) Breeding Soundness Evaluation and Semen Collection
- 5) Heat Detection, Estrous Synchronization and AI
- 6) Semen Evaluation (motility, number, live-dead), processing and handling
- 7) LAB PRACTICAL

**LABORATORY (cont.):**

**Topic Outline**

**Sessions**

- 8) Embryo Collection, Evaluation and Transfer
- 9) Pregnancy Diagnosis: Ultrasound, Palpation
- 10) Pregnancy and Embryonic Development
- 11) Parturition, Dystocia
- 12) Behavior

**OTHER SUGGESTED LABORATORY TOPICS:**

- 13) Mammary Gland Anatomy and Function
- 14) Sheep Reproductive Management
- 15) Horse Reproductive Management
- 16) Swine Reproductive Management

**AS 430**  
**NUTRIENT EVALUATION AND RATION FORMULATION (3)**

**Course Description:** Ration nutrient analysis and formulation for beef and dairy cattle, sheep, horses, swine, poultry, laboratory, zoo, and companion animals. Mathematical and computer solutions and applications to formulating complex rations with constraints. Prereq: AS 330 and an introductory computer science course. 2 hours and 1 lab. Sp.

**Objectives:** Upon completion of the course students will be able to:

- 1) Integrate concepts of growth, production and reproduction into ration formulations that meet the nutrient needs of animals.
- 2) Formulate complex rations utilizing advanced formulation software and linear programming techniques.
- 3) Utilize advanced alternative programming options that will compliment instruction provided in the management course offerings.

<u>Topic Outline</u>	<u>Sessions</u>
1) Orientation and Introduction to the Course	1
A) Course outline	
B) Grading policies	
C) Expectations	
D) Common nomenclature	
2) Nutrient requirements and decision making	4
A) Feeding for growth, production and reproduction	
B) Consideration for beef, dairy cattle and sheep	
C) Considerations for horses, swine and poultry	
D) Considerations for zoo and companion animals	

**Topic Outline****Sessions**

- |  |    |
|--|----|
| 3) Least cost ration formulation           | 12 |
| A) Basis for use of least cost formulation |    |
| B) Capabilities and limitations            |    |
| C) Necessary inputs                        |    |
| D) Obtainable outputs                      |    |
| E) Examples and problems                   |    |
| a) beef and dairy cattle                   |    |
| b) sheep                                   |    |
| c) horses                                  |    |
| d) swine and poultry                       |    |
| e) zoo and companion animals               |    |
| 4) Advanced Microcomputer Applications     | 12 |
| A) Use of linear programming               |    |
| B) Electronic spreadsheets                 |    |
| C) Price mapping                           |    |
| D) Record keeping systems                  |    |
| E) Financial accounting systems            |    |
| F) Telecommunications technique            |    |
| a) commodity trading markets               |    |
| b) stock markets                           |    |
| c) agricultural networks                   |    |

**AS 461**  
**ADVANCED LIVESTOCK, HORSE, AND POULTRY JUDGING (1)**

**Course Description:** Specialization in judging, evaluation, selection and presentation of oral reasons for classes of beef cattle, dairy cattle, horses, poultry, sheep, and swine. Students will be participating on one of the departmentally sponsored intercollegiate judging teams that include livestock, dairy, horse, and poultry. Each team participates in local, regional and national contests. Prereq: Consent of instructor. 2 labs. Satisfactory/No credit. F, Sp.

**Objectives:** At the conclusion of the course, students will have developed a high level of proficiency in judging and evaluating a particular species.

**AS 481**  
**BEEF CATTLE PRODUCTION AND MANAGEMENT (3)**

**Course Description:** Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices, and improvement programs. Management evaluated in terms of production responses and economic returns. Comparisons made to small ruminant, forage-based production systems. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. Sp.

**Objectives:** At the conclusion of this course students will:

- 1) Be able to determine the biological and economical productivity of a beef enterprise with information obtained through visual appraisal and record systems.
- 2) Develop comprehensive plans to improve the production of beef enterprises.
- 3) Be able to make sound management decision based on information available and the experiences in decision making provided during the course.
- 4) Be employable as an assistant manager of beef enterprises reflective of the beef industry in Tennessee and be able to adapt to changing situations.

**Topic Outline**

**Sessions**

- |   |   |
|---|---|
| 1) Introduction   | 2 |
| A) Course objectives  |   |
| B) Distribution of activities   |   |
| C) Grading policies   |   |
| D) Student information sheet  |   |
| E) Examination on prerequisite courses  |   |
| 2) Overview of Beef Production in USA   | 3 |
| A) Goals, products produced, economically important traits, number involved, and dollar value of each |   |
| a) feedstock producers  |   |
| b) commercial producers   |   |
| c) stocker and backgrounders  |   |
| d) feedlots and feedyards   |   |
| e) packers  |   |
| f) retailers  |   |
| g) consumers  |   |

**Topic Outline****Sessions**

- B) Beef Industry in Tennessee
  - a) cow-Calf
  - b) stocker
  - c) feeders
  - d) packers
  - e) markets
  
- 3) Problem Solving Techniques: Manager of Day Concept      2
  - A) Defining problem
  - B) Writing assumption or limitations
  - C) Obtaining information
  - D) Calculating results
  - E) Drawing conclusions
  - F) Evaluation of alternative outcomes
  
- 4) Determining the Productivity of a Beef Herd                      4
  - A) Evaluation of data set provided
  - B) Defining productivity
    - a) percent calf crop
    - b) weaning data
    - c) adjusting weaning data
    - d) cow efficiency
    - e) sire efficiency
  - C) Determining value of herd
    - a) market reports
    - b) classes of beef animals marketed
    - c) boundaries on values
  
- 5) Managing Cows and Calves at Calving Time                      2
  - A) Expected calving dates of class herd
  - B) Prepartum care of cows
  - C) Equipment needed
  - D) Management of difficult births
  - E) Postpartum care
  - F) Herds health programs and Veterinarians
  
- 6) Nutrition Management of Herd                                      4
  - A) Defining classes of cattle and nutrient requirements
  - B) Winter feed budget
    - a) selection of potential feedstuffs
    - b) forages and forage systems
    - c) formulation of diets for each class of cattle
    - d) adjusting diets for storage and feeding waste
    - e) equipment associated with harvesting, storage and feeding of feedstuffs
    - f) evaluation of budget to reduce costs

<u>Topic Outline</u>	<u>Sessions</u>
7) Genetic Manipulation of Beef Herd	5
A) Establishing reproduction goals	
B) Cow keep/cull decisions	
C) Sire keep/cull decisions	
D) Replacement heifer selection	
a) grow-out program for selected heifers	
b) prebreeding selection	
c) postbreeding selection	
E) Sire Purchasing	
a) use of performance test station data	
b) EPD estimates and use	
c) management of purchased sire on farm	
F) 10-year beef improvement program	
a) selection of breeds	
b) establishment of production goals	
c) calculating genotypes and heterosis	
d) describing herd in 10th year	
8) Use of Land Resources in Beef Production	4
A) Soil types and limitations	
B) Matching forage production and soil types	
C) Coordination of forage production and animal requirements	
D) Fencing and equipment needed for beef farm	
a) fence types and costs	
b) handling facilities	
c) other equipment needed on farm	
9) Mid-Term Exam	1
10) Herd Health Management Calendar	2
A) Health practices within herd	
B) Contractual arrangements with veterinarian	
C) Training of farm personnel	
11) Herd Economics	4
A) Annual cow costs	
a) cow size and milk production	
B) Marketing	
a) cull cows, bulls, heifers	
b) cull heifers	
c) feeder cattle	
C) Production alternatives	

<u>Topic Outline</u>	<u>Sessions</u>
12) Stocker Enterprises	5
A) Planning stocker programs	
a) goals of program	
b) futures and Options	
B) Purchasing of stocker cattle	
a) description of cattle	
b) conditions of purchase	
c) orderbuyers and auctions	
C) Processing of stocker cattle	
a) vaccinations and implants	
b) health care of sick animals	
D) Feeding of stocker cattle	
a) forages available	
B) grazing management	
c) additives to improve performance	
E) Marketing of stocker cattle	
a) auctions, video and board sales	
b) retained ownership to finish	
c) breakeven analysis	
13) Finishing Feeder Cattle	3
A) Planning finishing program	
a) goals of program	
b) futures and options	
B) Purchasing of cattle	
C) Processing of cattle	
D) Feeding program	
E) Marketing program	
14) Packers and Retailers	2
A) Structure of packing industry	
B) Quality and yield grades	
C) Product safety	
D) Predictability of products	
E) Products and marketing programs	
15) Consumers	2
A) Consumer education	
B) Diet and health issues	
C) Competition with other foods	
D) Animal rights and welfare	

**AS 482**  
**DAIRY CATTLE PRODUCTION AND MANAGEMENT (3)**

**Course Description:** Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices, and improvement programs. Alternatives evaluated in terms of production responses and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. F.

**Objectives:** At the end of the course, the student will be able to:

- 1) Develop herd performance goals for major dairy enterprises.
- 2) Evaluate the current management of a farm relative to profitability in all areas.
- 3) Identify critical managerial and biological aspects of management in all areas.
- 4) Offer solutions to improve management in all areas.

**Topic Outline**

**Sessions**

- 1) Introduction
  - A) Organization
  - B) Course objectives
  - C) Grading policy
  - D) Student and instructors' expectations
  
- 2) Structure of Industry
  - A) History and development
  - B) Production of milk
  - C) Composition of milk
  - D) Use of milk supply
  - E) Value and role of milk and milk products in human diet
  - F) Current trends and projections
  
- 3) Dairy Record Keeping
  - A) Farm kept records
  - B) Dairy Herd Improvement Records
    - a) organization of DHI
    - b) DHI plans and options
    - c) DART
    - d) economic benefits of DHI

- C) Use of DHI in management decisions
  - a) setting performance goals
  - b) identification of strengths and weaknesses
    - 1. reproductive management
    - 2. mastitis control
    - 3. genetic improvement
    - 4. feeding programs
    - 5. other
  - c) development of prescriptive plans for improvement
  
- 4) Genetic Improvement
  - A) USDA animal model genetic evaluations
  - B) Cow evaluation and selection
    - 1. cow culling
    - 2. evaluations for real producing ability
    - 3. evaluation for transmitting ability
  - C) Bull evaluation and selection
    - 1) evaluation for transmitting ability
    - 2) young sire testing programs
    - 3) risk management
    - 4) evaluation for calving ease
    - 5) use of genetic markers
  - D) Selection for economic value and economics of selection
    - 1) total economic merit-contributing traits
    - 2) economic value of type traits
    - 3) indices for multi-trait selection
    - 4) net present value and MAXBULL
    - 5) mating systems
  
- 5) Milk Marketing and Pricing
  - A) Milk price determination
    - 1. support prices
    - 2. W price series
    - 3. Federal milk marketing orders
    - 4. Differentials
    - 5. Market-wide pooling and uniform prices
    - 6. Over-order prices
    - 7. Mailbox prices
  - B) Current debate on government regulation of milk marketing
  
- 6) Milking Systems and Management
  - A) Mammary gland anatomy
  - B) Milking procedures
  - C) Milking equipment
  - D) Types of Milking Facilities

- 7) Herd Health Management
  - A) Objective and basic principles
  - B) Diseases of calves
  - C) Diseases of cows
  - D) Methods of disease prevention and control
  - E) Outline of herd health program
- 8) Nutrition and Feeding Management
- 9) Housing and Waste Management
- 10) Heifer Replacement Programs
  - A) Neonatal calves & calf mortality
    - a) birth location
    - b) colostrum
    - c) closure
    - d) managing colostrum
  - B) Managing calves - day 4 to weaning
    - a) liquid feeding
    - b) calf starter
    - c) housing
    - d) managing housing
    - e) rates of gain
    - f) management of health care
  - C) Managing calves - weaning to 400 lb.
    - a) feeds
    - b) forages
    - c) Ionospheres and rates of gain
    - d) housing
    - e) health care
  - D) Managing calves 400 lb. to breeding
    - a) feeding
    - b) use of pasture
    - c) rates of gain
    - d) housing
  - E) Breeding
  - F) Managing heifers - breeding to calving
    - a) housing
    - b) feeding
    - c) health care
- 11) Herd Reproduction and Management
  - A) Herd performance goals
  - B) Business records
    - a) operating statement
    - b) cash flow
    - c) net worth
  - C) Calculation and interpretation of statement
    - a) operating
    - b) cash flow
    - c) net worth

- 12) Budgeting and Overall Management
  - A) Importance of reproductive management to herd efficiency
  - B) Physiological regulation of estrus
    - a) hormonal control
    - b) sequence of events
    - c) management
  - C) Factors affecting reproduction
    - a) heat stress
    - b) nutrition
    - c) housing
    - d) pregnancy
    - e) disease
  - D) Managing the reproductive program
    - a) heat detection
    - b) estrus synchronization
    - c) pregnancy checking
    - d) aids (kamars, vaginal probes, etc.)

**AS 483**  
**PORK PRODUCTION AND MANAGEMENT (3)**

**Course Description:** Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices, and improvement programs. Management evaluated in terms of production responses and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. Sp.

**Objectives:** At the conclusion of the course students will:

- 1) Understand how basic management practices and principles to the profitability of a pork production unit.
- 2) Have developed an understanding of the complex problems and opportunities that exist in the swine industry.
- 3) Be able to evaluate the efficiency of a pork production unit based on industry production standards and recognize the importance of being progressive in the adoption of new technology.
- 4) Be prepared for employment in some phase of the swine industry and be able to adapt to changing situations.
- 5) Be knowledgeable of potential sources of additional information on specific topics relating to the industry.

**Topic Outline**

**Sessions**

- |  |   |
|--|---|
| 1) Introduction to the Swine Industry                | 5 |
| A) History of swine production in the U.S.           |   |
| B) Hog population in Tennessee, U.S. and the world   |   |
| C) Present status of the industry                    |   |
| D) Future of the swine industry                      |   |
| E) Goals in swine production                         |   |
| F) National Pork Producers Council                   |   |
| G) Animal Welfare                                    |   |
| <br>   |   |
| 2) Reproduction                                      | 3 |
| A) Anatomy and physiology of the reproductive system |   |
| B) Reproductive and maternal performance             |   |
| C) Artificial insemination                           |   |
| D) Managing the gilt pool                            |   |

<u>Topic Outline</u>	<u>Sessions</u>
3) Swine Breeding and Selection	7
A) Origin of breeds and breed characteristics	
B) Structure of the seedstock industry	
C) Commercial breeding companies	
D) Genetic principles and their application	
E) Breeding programs and crossbreeding systems	
F) Performance testing and evaluation programs	
G) Genetic abnormalities	
H) Selection for feet and leg soundness	
4) Swine Nutrition and Feeding	6
A) Life cycle swine nutrition	
B) Swine rations and feeding recommendations	
C) Determining the relative value of feed alternatives	
D) Feeding systems	
E) Feed additives and antibiotics	
5) Management	6
A) Calculating production schedules	
B) Farrowing and lactation management	
C) Care of the preweaning pig	
D) Management of the growing-finishing pig	
E) Repartitioning agent	
6) Swine Health and Diseases	4
A) Major swine diseases	
B) Herd health programs	
C) Internal and external parasites	
D) SPF concept	
E) Slaughter checks	
7) Pork and Pork Quality	2
A) Porcine stress syndrome	
B) Carcass evaluation	
8) Marketing	4
A) Feeder pig production and marketing	
B) Marketing alternatives	
C) Status of the packing industry	
D) Futures and options	
E) Contract production	

<u>Topic Outline</u>	<u>Sessions</u>
9) Facilities and Waste Management	4
A) Housing and equipment alternatives	
B) Swine confinement units	
C) Ventilation	
D) Waste handling systems	
10) Enterprise Evaluation	4
A) Production costs	
B) Record keeping systems	
C) Comparison of production systems	
D) Field trip	

**AS 484**  
**POULTRY PRODUCTION AND MANAGEMENT (3)**

**Course Description:** Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices, and improvement programs. Management evaluated in terms of production responses and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. F.

**Objectives:** At the conclusion of the course students will:

- 1) Recognize the economic importance of the poultry industry in Tennessee, the U.S. and other countries and be familiar with current industry production standards.
- 2) Be familiar with the origin of poultry breeds, breeding systems, sex determination and various biological systems.
- 3) Be familiar with principles involved in broiler production and management, broiler breeder production and management, as well as layer production and management.
- 4) Recognize the importance of environmental stress factors in poultry production and be familiar with animal welfare issues.
- 5) Successfully incubate eggs and raise a group of broilers to market age.
- 6) Be prepared for employment in the poultry industry and have the ability to adapt to changing situations.

**Topic Outline**

**Sessions**

1) Introduction	1
A) Course outline	
B) Grading policies	
C) Expectations	
D) Glossary of terms	
2) The Poultry Industry in Tennessee U.S. and Other countries	1
A) Importance	
B) Present status	
C) Geographical distribution in U.S.	
D) Future of the industry	

<u>Topic Outline</u>	<u>Sessions</u>
3) Poultry Breeding	3
A) Classification	
B) Origin of breeds	
C) Breed characteristics	
D) Breeding systems	
E) Modern breeds of poultry	
F) Sex determination	
4) Poultry Biology	3
A) Surface, skeleton, muscles	
B) Digestive system	
C) Respiratory system	
D) Reproductive system	
5) Incubation and Hatching	4
A) Development of the embryo	
B) Maintaining hatching egg quality	
C) Incubation requirements	
D) Factors affecting hatchability	
E) Hatchery practices	
6) Brooding and Growing Management	4
A) Preparation for chicks	
B) Brooding poultry-broilers, layers, turkeys	
C) Growing poultry-broilers, layers, turkeys	
7) Poultry Housing and Equipment	2
A) Location	
B) Housing requirements	
C) Temperature and ventilation	
D) Housing types	
E) Equipment	
F) Litter and waste management	
8) Principles of Poultry Nutrition	2
A) Nutrient requirement and functions	
B) Carbohydrates	
C) Proteins	
D) Fats	
E) Vitamins and minerals	
F) Water	
G) Feed additives	
H) Poultry diet, feed ingredients and feed fundamentals	

<u>Topic Outline</u>	<u>Sessions</u>
9) Poultry Health	1
A) Economic impact	
B) The health model	
C) Diseases: causes, prevention and control	
D) Common avian diseases and pests	
10) Broiler Production and Management	3
A) Growing programs	
B) Housing and equipment	
C) Chick management	
D) Feed and water	
E) Light	
F) Common health problems	
G) Marketing	
11) Broiler Breeding Production and Management	3
A) Growing programs	
B) Controlling body weight	
C) Housing	
D) Male management	
E) Lighting management	
F) Hatching egg production	
12) Layer Management	3
A) Pullet management	
B) Housing and equipment	
13) Environmental Stress	1
14) The Poultry Business	1
A) The independent producer	
B) Vertical integration	
C) Contract production	
a) hatching eggs	
b) breeding stock	
c) broiler grower	
d) market eggs	
15) Animal Welfare	.5
16) Poultry Publications	.5

**AS 485**  
**HORSE PRODUCTION AND MANAGEMENT (3)**

**Course Description:** Integration of principles of nutrition, breeding, physiology, and ethology into complete production and management programs. Types of enterprises, management of feed and pasture resources, health maintenance and first aid, breeding and foaling, farm structures and equipment. Consent of instructor. 2 hours and 1 lab. F.

**Objectives:** At the conclusion of the course students will be able to:

- 1) Implement management practices including:
  - a) Nutrition
  - b) Reproduction
  - c) Behavior
  - d) Health and First Aid
  - e) Basic handling and training
- 2) Develop a comprehensive plan for horse facility.
- 3) Understand equine ethology and learn to utilize this information for more effective management practices.
- 4) Recognize the importance of basic equipment needed for a more effective practice.
- 5) Offer solutions to improve management practices in all areas.

<u>Topic Outline</u>	<u>Sessions</u>
1) Introduction A) Course objectives B) Basis for grade in course C) Schedule of examinations and reports	1
2) Evolution and Development of the Horse A) Evolutionary stages from Eohippus to Equus Caballus B) Other equine species of the world C) Types of horses that developed in the world in response to their environment D) Intermixture of types by man to form new types and/or breeds E) Re-introduction of the horse into the western hemisphere F) Intermixture of imported types to form the American breeds G) The heritage of the horse in Tennessee	5

<u>Topic Outline</u>	<u>Sessions</u>
3) Physical and Mental Parameters of the Horse	3
A) Sight	
B) Memory	
C) Flight reflex	
D) Hearing	
E) Sense of smell	
F) Skin sensitivity	
G) Ability to feel ground vibrations	
4) Behavior of Horses	5
A) Normal behavior	
a) agonistic behavior	
b) sexual behavior	
c) epimeletic behavior	
d) et - epimeletic	
e) ingestive behavior	
f) eliminative behavior	
g) investigative behavior	
B) Abnormal behavior	
a) conflict	
b) uncertainty	
c) restriction	
1) Vices	
5) How the Horse Learns	4
A) Imprint training	
B) Haltering and tying	
C) Training	
a) stimuli or cues	
b) reinforcement - positive and negative	
D) The Ray Hunt method of starting a young horse	
6) Biting	3
A) Kinds of bits	
B) How the bit works	
C) Choosing a bit	
D) The importance of hand position and bit pressure in concert with bit design on the individual horse's response	
MID TERM EXAM:	1
7) Dentition in the Horse	3
A) Deciduous teeth - eruption pattern and structure	
B) Permanent teeth - eruption pattern and structure	
C) Age determination by tooth eruption and wear	
D) Care of the horse's teeth	

<u>Topic Outline</u>	<u>Sessions</u>
8) Equipment and Facilities for the Horse Farm	4
A) Barns	
B) Fences	
C) Working facilities	
D) Watering systems	
E) Tack	
F) Grain and hay storage	
9) Nutrition of the Horse	4
A) The digestive system	
B) Sources of nutrients for horses	
C) Feeding systems	
D) Nutrient needs of various classes of horses	
a) the weanling	
b) the yearling	
c) the 2-yr old	
d) the horse in training	
e) the broodmare	
f) the breeding stallion	
g) the pleasure horse	
E) Pastures for horses	
a) species	
b) grazing habits	
c) pasture management	
d) problems associated with forages	
10) Reproduction in the Horse	4
A) The reproductive parameters of the horse	
B) Reproductive organs of the mare	
C) Reproductive organs of the stallion	
D) Heat detection	
E) Natural mating procedures	
F) Artificial Insemination procedures	
G) Artificial means of manipulating the mating season in the horse	
H) Breed Registry restriction on breeding systems	
I) Foaling and early post-natal care	
11) Health Maintenance and Diseases of the Horse	4
A) Hoof care	
B) Annual inoculations	
C) Internal Parasites - life cycles and control procedures	
D) Diseases and other health problems	
a) equine infections, anemia, Coggins testing and government regulations	
b) colic	
c) strangles	

**Topic Outline**

**Sessions**

- |  |   |
|--|---|
| 12) The Horse Business   | 3 |
| A) The Horse breeding farm   |   |
| B) The boarding stable   |   |
| C) The training stable   |   |
| D) The stud farm   |   |
| E) Horses for personal pleasure  |   |
| F) Miscellaneous and combination horse enterprises   |   |
| G) The economic impact of the horse in<br>agriculture and the multiplicative economic<br>factor of horse ownership |   |

**AS 489**  
**COMPANION, ZOO AND LAB ANIMAL MANAGEMENT (3)**

**Course Description:** Principles of nutrition, physiology, breeding, handling, and history of breeds of common household pets, zoo animals, and animals used in scientific research. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood metabolites commonly used to monitor health and nutritional states. 2 hours and 1 lab. Sp. even yr.

**Objectives:** At the conclusion of the course students should be prepared to apply for and attain, after successful examination by the Animal Technician Certification Board, official certification as an assistant laboratory animal technician or full laboratory technician under the auspices of the American Association for Laboratory Sciences.

<u>Topic Outline</u>	<u>Sessions</u>
1) Introduction A) Course outline, syllabus, and goals B) Grading policies	1
2) Ethics, Laws, and Agencies Governing Animal Care A) The ethics of animal exploitation B) Animal rights vs animal welfare C) Autonomy, moral agency and equal rights D) Laws and agencies concerned with animal welfare E) Protocols for animal use	6
3) Laboratory Animals A) ATCB certification B) Laboratory animal housing C) Common laboratory Animals a) mouse b) rat c) hamster d) gerbil e) guinea pig f) rabbit	12
4) Companion Animals A) Feline a) evolution and history b) genetics of color, body type and fur c) nutrition d) physiology e) diseases and health care	15

**Topic Outline**

**Sessions**

- B) Canine
  - a) evolution and history
  - b) wild and modern groups
  - c) nutrition
  - d) physiology
  - e) diseases and health care
- C) Aquatic, amphibian and reptilian Pets
  - a) aquariums
  - b) terrariums
  
- 5) Zoo and Exotic Animals 4
  - A) Psittacines
  - B) Reptiles
  
- 6) Laboratories or Field Trips 4
  - A) Walter Life Sciences - Animals in human biomedical research
  - B) College of Veterinary Medicine (VTH) - Animals in animal health research
  - C) College of Veterinary Medicine (Cherokee) - Agriculture animals in agricultural and teaching
  - D) Knoxville Zoo

**AS 492**  
**ANIMAL SCIENCE FIELD STUDY (1-6)**

**Course Description:** Off-campus work experience approved by the department. Students must submit official approval form prior to registration. The student will be evaluated on knowledge and skills and must submit a written summary after program completion. E.

**Objectives:** The objective of the course is to compliment traditional classroom activities and give the student an opportunity to gain experience in the industry.

**Topic Outline**

Students will gain experience in the animal industry through intern programs offered by the various industry groups. Actual duties of each student will be the prerogative of the employer. Periodic progress reports will be suggested for all interns, however, some employers may not participate in this form of evaluation. Upon completion, the student's academic advisor will evaluate the student on knowledge and skills as well as a written summary and set guidelines for preparation of the summary.

**AS 493**  
**INDEPENDENT STUDY IN ANIMAL SCIENCE (1-3)**

**Course Description:** Approved supervised study in areas not formally presented in a course offered in the department. Written proposal of study is approved by the Department of Animal Science Undergraduate Committee. After completion of study, a written report is required and this report is maintained on file in the reference room of the department. May be repeated for a maximum of 6 credits. Prereq: Senior standing and consent of instructor and department head. E.

**Objectives:** Students completing this course will have the ability to do the following:

- 1) Define a problem associated with animal science.
- 2) Design an approach to improving the situation or solving the problem.
- 3) Execute a study to meet objectives put forth in the approach.
- 4) Write a report on the study that meets scientific journal standards.

**Topic Outline**

After approval of the study by the Undergraduate Committee, the student works under the direction of a cooperating faculty member. Duties and report format are set forth and evaluated by the cooperating faculty member.

**AS 494**  
**ANIMAL SCIENCE TEACHING ASSISTANT (1)**

**Course Description:** Assist the primary instructor in laboratory instruction and demonstrations.  
Prereq: Senior standing and consent of the instructor and Department Head. S/NC. E.

**Objectives:** At the end of the appropriate portions of the course and at the end of the semester, each student should be able to:

- 1) Construct laboratory exercises as outlined by the instructor.
- 2) Demonstrate correct usage of a method or procedure as taught by the instructor.
- 3) Identify methods of evaluating student performance in the laboratory.

**Topic Outline**

All duties of the student are set forth by the course coordinator, and evaluation of how well the student meets the course objectives are summarized to assign a grade. Only one credit of 494 will count toward graduation.

**AS 495**  
**ETHICS IN ANIMAL AGRICULTURE (1)**

**Course Description:** Discussion and presentations on issues related to animal research and industry. Prereq: Senior standing. F, Sp.

**Course Objectives:**

- Learn to analyze, observe and interpret philosophical differences to acquire a better understanding of self and others, their viewpoints, and their actions.
- Develop critical thinking skills to deal effectively and thoughtfully with opposing views.
- Learn to create and modify understanding of a concept by organizing information from differing viewpoints.
- Learn to maintain an open mind to alternative perspectives.

An objective is **not** to learn what is and what is not ethical animal agriculture.

**Topic Outline:**

- Morality and moral standing
- Animal use: religious perspectives
- Animal use: moral philosophies and arguments

Small group discussions of case studies will comprise the majority of the course. Case studies include topics such as tail docking, confined animal production, xenotransplantation, animal cloning, and use of animals for research.

<u>Topic Outline</u>	<u>Sessions</u>
1) Introduction	1
A) Course outline, syllabus	
B) Grading policy	
C) Journal of Animal Science style and form	
2) Careers	2
A) Production/Management, Science/Technology	1
B) Graduate opportunities	1
3) Placement service	1
4) Oral presentations and critique	10

Name \_\_\_\_\_

SSN \_\_\_\_\_

Email \_\_\_\_\_

## Production/Business Check List<sup>1</sup>

### Animal Science (35 Hours)

Course	Hrs	Sem	Yr	Grade
ANSC 160	/ 3 /		/ /	
ANSC 220	/ 3 /		/ /	
ANSC 280	/ 3 /		/ /	
ANSC 320	/ 3 /		/ /	
ANSC 330	/ 3 /		/ /	
ANSC 340	/ 3 /		/ /	
ANSC 360	/ 3 /		/ /	
ANSC 380	/ 3 /		/ /	
ANSC 395	/ 1 /		/ /	
ANSC 430	/ 3 /		/ /	
ANSC 48 <sub>4</sub>	/ 3 /		/ /	
ANSC 48 <sub>4</sub>	/ 3 /		/ /	
ANSC 495	/ 1 /		/ /	

### CASNR (7 Hours)

Course	Hrs	Sem	Yr	Grade
ESS 210	/ 4 /		/ /	
ANR 290	/ 3 /		/ /	

### General Education (15 Hours)

Course	Hrs	Sem	Yr	Grade
C & C	/ 3 /		/ /	
C & C	/ 3 /		/ /	
S & S	/ 3 /		/ /	
A & H	/ 3 /		/ /	
A & H	/ 3 /		/ /	

### Math (6 Hours)

Course	Hrs	Sem	Yr	Grade
	/ 3 /		/ /	
	/ 3 /		/ /	

### English (9 hours)

Course	Hrs	Sem	Yr	Grade
ENGL 101	/ 3 /		/ /	
ENGL 102	/ 3 /		/ /	
CS 210 or 240	/ 3 /		/ /	

### Business (25 Hours)

Business Minor				
Course	Hrs	Sem	Yr	Grade
ACCT 201 <sup>2</sup>	/ 3 /		/ /	
ACCT 202 <sup>2</sup>	/ 2 /		/ /	
BUAD 201	/ 4 /		/ /	
ECON 201 <sup>3</sup>	/ 4 /		/ /	
STAT 201	/ 3 /		/ /	
FINA 301	/ 3 /		/ /	
MARK 300	/ 3 /		/ /	
MGMT 300	/ 3 /		/ /	

### OR

### Ag Econ Minor plus 6 hours<sup>2</sup>

Course	Hrs	Sem	Yr	Grade
ECON 201 <sup>3</sup>	/ 4 /		/ /	
AGEC 212	/ 3 /		/ /	
AGEC 342	/ 3 /		/ /	
AGEC 350	/ 3 /		/ /	
AGEC 412	/ 3 /		/ /	
AGEC	/ 3 /		/ /	
	/ 3 /		/ /	
	/ 3 /		/ /	

### Biological Sciences (11 Hours)

Course	Hrs	Sem	Yr	Grade
BIOL 101, 130	/ 4 /		/ /	
BIOL 102, 140	/ 4 /		/ /	
	/ 3 /		/ /	

### Physical Sciences (8 Hours)

Course	Hrs	Sem	Yr	Grade
CHEM 100, 120	/ 4 /		/ /	
CHEM 110, 130	/ 4 /		/ /	

### Free Electives (8 Hours)

Course	Hrs	Sem	Yr	Grade
	/ 3 /		/ /	
	/ 3 /		/ /	
	/ 3 /		/ /	

<sup>1</sup> One course must be a University approved WC. **This might have to be a free elective.**

<sup>2</sup> Business is currently developing ACCT 200 (3) for its minor requirement in place of ACCT 201,202. **When** this occurs, 2 hours will be taken from the business **and** agriculture economics requirements.

<sup>3</sup> ECON 201 is also a University approved Social Science.

<sup>4</sup> Select two courses from Animal Science 481 or 482, 483 or 484, 485 or 489

Name \_\_\_\_\_

SSN \_\_\_\_\_

Email \_\_\_\_\_

### Science/Technology Check List<sup>1</sup>

#### Animal Science (29 Hours)

Course	Hrs	Sem	Yr	Grade
ANSC 160	/ 3 /		/ /	
ANSC 220	/ 3 /		/ /	
ANSC 280	/ 3 /		/ /	
ANSC 320	/ 3 /		/ /	
ANSC 330	/ 3 /		/ /	
ANSC 340	/ 3 /		/ /	
ANSC 380	/ 3 /		/ /	
ANSC 395	/ 1 /		/ /	
ANSC 48 <sub>3</sub>	/ 3 /		/ /	
ANSC 48 <sub>3</sub>	/ 3 /		/ /	
ANSC 495	/ 1 /		/ /	

#### Computer Science (3 Hours)

Course	Hrs	Sem	Yr	Grade
ANR 290	/ 3 /		/ /	

#### Business (9 Hours)

Course	Hrs	Sem	Yr	Grade
ECON 201 <sup>2</sup>	/ 4 /		/ /	
	/ 3 /		/ /	
	/ 2 /		/ /	

#### General Education (15 Hours)

Course	Hrs	Sem	Yr	Grade
C & C	/ 3 /		/ /	
C & C	/ 3 /		/ /	
S & S	/ 3 /		/ /	
A & H	/ 3 /		/ /	
A & H	/ 3 /		/ /	

#### Math (6 Hours)

Course	Hrs	Sem	Yr	Grade
	/ 3 /		/ /	
	/ 3 /		/ /	

#### Physical Sciences (22 Hours)

Course	Hrs	Sem	Yr	Grade
CHEM 120	/ 4 /		/ /	
CHEM 130	/ 4 /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	

#### Biological Sciences (22 Hours)

Course	Hrs	Sem	Yr	Grade
BIOL 130	/ 4 /		/ /	
BIOL 140	/ 4 /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	

#### English (9 hours)

Course	Hrs	Sem	Yr	Grade
ENGL 101	/ 3 /		/ /	
ENGL 102	/ 3 /		/ /	
CS 210 or 240	/ 3 /		/ /	

#### Free Electives (9 Hours)

Course	Hrs	Sem	Yr	Grade
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	

<sup>1</sup> One course must be a University approved WC. **This might have to be a free elective.**

<sup>2</sup> ECON 201 is also a University approved Social Science.

<sup>3</sup> Select two courses from Animal Science 481 or 482, 483 or 484, 485 or 489

Name \_\_\_\_\_

SSN \_\_\_\_\_

Email \_\_\_\_\_

## Science/Technology/Pre-vet Check List<sup>1</sup>

### Animal Science (26 Hours)

Course	Hrs	Sem	Yr	Grade
ANSC 160	/ 3 /		/ /	
ANSC 220	/ 3 /		/ /	
ANSC 280	/ 3 /		/ /	
ANSC 320	/ 3 /		/ /	
ANSC 330	/ 3 /		/ /	
ANSC 340	/ 3 /		/ /	
ANSC 380	/ 3 /		/ /	
ANSC 395	/ 1 /		/ /	
ANSC 48 <sup>5</sup>	/ 3 /		/ /	
ANSC 48 <sup>5</sup>	/ 3 /		/ /	
ANSC 495	/ 1 /		/ /	

### Computer Science (3 Hours)

Course	Hrs	Sem	Yr	Grade
ANR 290	/ 3 /		/ /	

### Business (9 Hours)

Course	Hrs	Sem	Yr	Grade
ECON 201 <sup>4</sup>	/ 4 /		/ /	
	/ 3 /		/ /	
	/ 2 /		/ /	

### General Education (15 Hours)

Course	Hrs	Sem	Yr	Grade
C & C	/ 3 /		/ /	
C & C	/ 3 /		/ /	
S & S	/ 3 /		/ /	
A & H	/ 3 /		/ /	
A & H	/ 3 /		/ /	

### Math (6 Hours)

Course	Hrs	Sem	Yr	Grade
	/ 3 /		/ /	
	/ 3 /		/ /	

### Physical Sciences (24 Hours)

Course	Hrs	Sem	Yr	Grade
CHEM 120	/ 4 /		/ /	
CHEM 130	/ 4 /		/ /	
CHEM 350	/ 3 /		/ /	
CHEM 360	/ 3 /		/ /	
CHEM 369	/ 2 /		/ /	
PHYS 221	/ 4 /		/ /	
PHYS 222	/ 4 /		/ /	

### Biological Sciences<sup>2</sup> (22 Hours)

Course	Hrs	Sem	Yr	Grade
BIOL 130	/ 4 /		/ /	
BIOL 140	/ 4 /		/ /	
BIOL 240 <sup>3</sup>	/ 4 /		/ /	
BCMB 401 <sup>3</sup>	/ 4 /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	

### English (9 hours)

Course	Hrs	Sem	Yr	Grade
ENGL 101	/ 3 /		/ /	
ENGL 102	/ 3 /		/ /	
CS 210 or 240	/ 3 /		/ /	

### Free Electives (7 Hours)

Course	Hrs	Sem	Yr	Grade
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	
	/ /		/ /	

<sup>1</sup> One course must be a University approved WC. **This might have to be a free elective.**

<sup>2</sup> UTCVM requires 8 hrs general biology (BIOL 130 plus 4 hrs), cell biology (BIOL 140), and genetics (BIOL 240 or ANSC 340 (Animal Science will not accept ANSC 340 as a biological science)). UTCVM considers general biology to be any course greater than 200 in Biology, Microbiology, EEB, and certain BCMB courses where "physiology" or "biology" is in the title. Animal Science will also accept certain CASNR courses (see advising guide).

<sup>3</sup> UTCVM considers BCMB 401 a physical science since it has "biochemistry" in its title. Animal Science will accept it as a biological or physical science. BIOL 240 is required for BCMB 401.

<sup>4</sup> ECON 201 is also a University approved Social Science.

<sup>5</sup> Select two courses from Animal Science 481 or 482, 483 or 484, 485 or 489

Name \_\_\_\_\_

SSN \_\_\_\_\_

Email \_\_\_\_\_

## Science/Technology/Pre-vet/3+1 Check List<sup>1</sup>

### Animal Science (22 Hours)

Course	Hrs	Sem	Yr	Grade
ANSC 160	/ 3 /		/ /	
ANSC 220	/ 3 /		/ /	
ANSC 280	/ 3 /		/ /	
ANSC 320	/ 3 /		/ /	
ANSC 330	/ 3 /		/ /	
ANSC 340	/ 3 /		/ /	
ANSC 380	/ 3 /		/ /	
ANSC 395	/ 1 /		/ /	

### Computer Science (3 Hours)

Course	Hrs	Sem	Yr	Grade
ANR 290	/ 3 /		/ /	

### General Education (19 Hours)

Course	Hrs	Sem	Yr	Grade
ECON 201	/ 4 /		/ /	
S & S	/ 3 /		/ /	
C & C	/ 3 /		/ /	
C & C	/ 3 /		/ /	
A & H	/ 3 /		/ /	
A & H	/ 3 /		/ /	

### Math (6 Hours)

Course	Hrs	Sem	Yr	Grade
	/ 3 /		/ /	
	/ 3 /		/ /	

### Physical Sciences (24 Hours)

Course	Hrs	Sem	Yr	Grade
CHEM 120	/ 4 /		/ /	
CHEM 130	/ 4 /		/ /	
CHEM 350	/ 3 /		/ /	
CHEM 360	/ 3 /		/ /	
CHEM 369	/ 2 /		/ /	
PHYS 221	/ 4 /		/ /	
PHYS 222	/ 4 /		/ /	

### Biological Sciences<sup>2</sup> (16 Hours)

Course	Hrs	Sem	Yr	Grade
BIOL 130	/ 4 /		/ /	
BIOL 140	/ 4 /		/ /	
BIOL 240 <sup>3</sup>	/ 4 /		/ /	
BCMB 401 <sup>3</sup>	/ 4 /		/ /	
	/ /		/ /	
	/ /		/ /	

### English (9 hours)

Course	Hrs	Sem	Yr	Grade
ENGL 101	/ 3 /		/ /	
ENGL 102	/ 3 /		/ /	
CS 210 or 240	/ 3 /		/ /	

<sup>1</sup> One course must be a University approved WC. **This might have to be a free elective.**

<sup>2</sup> UTCVM requires 8 hrs general biology (BIOL 130 plus 4 hrs), cell biology (BIOL 140), and genetics (BIOL 240 or ANSC 340 (Animal Science will not accept ANSC 340 as a biological science)). UTCVM considers general biology to be any course greater than 200 in Biology, Microbiology, EEB, and certain BCMB courses where “physiology” or “biology” is in the title. Animal Science will also accept certain CASNR courses (see advising guide).

<sup>3</sup> UTCVM considers BCMB 401 a physical science since it has “biochemistry” in its title. Animal Science will accept it as a biological or physical science. BIOL 240 is required for BCMB 401.

## **EDUCATIONAL ENHANCEMENT EXPERIENCES**

There are many activities outside the classroom that add significantly to the overall educational experience. The majority of employers recognize that these extracurricular activities aid personal development and increase leadership skills thereby increasing the future employee's chances for a successful career with their organization.

There are a multitude of activities available to students. These include such things as fraternities and sororities, sports, clubs, ROTC, religious groups, student government and many others. The following provides some information on several activities associated with Animal Science that will add to the college experience and make our graduates stronger candidates for employment.

### **INTERN PROGRAMS**

Nothing increases employability like experience and the intern offers that opportunity. Not only does the employer benefit by first-hand evaluation of a future full-time employee, but the intern gains valuable experience which can be applied with many other prospective employers. Past experience has shown that interns who have performed adequately are usually offered full-time jobs upon graduation.

Opportunities for interning vary from year to year and opportunities can be investigated through one or more of several sources. The first place to check is with your advisor. Many times, employers will advise acquaintances or the faculty of student employment opportunities rather than put out a general announcement. Consequently, some faculty members may know of opportunities specifically for students within The University of Tennessee, Animal Science Department.

Another source of information is in the Animal Science main office, room 206 Brehm. A list of intern announcements the department receives will be compiled and available for student inspection. Also, many companies come directly to the department to interview students for both intern and full-time positions. One should be aware of Career Days on campus and general announcements about company visits.

As a student at The University of Tennessee, one should also make use of any or all services offered by the Career Planning and Placement Center. You will find employment opportunities, intern and full-time, as well as help in interviewing skills and resume' writing. The services offered by the Center are excellent and should be utilized before the senior year.

### **DEPARTMENTAL CLUBS**

The Department of Animal Science sponsors three clubs which offer opportunities for academic and personal development. It is recommended that all students become active in at least one of these and more if time and interest warrant the involvement. Aside from the personal development discussed earlier, you will become better acquainted with faculty who can help you find satisfying employment and possibly meet alumni who can help you make career decisions.

## **Block & Bridle Club**

This club has been one of the more active clubs on campus for many years providing students with many different types of learning experiences. Activities include the Annual Block & Bridle Club Round-Up held during the spring semester. This activity includes learning experiences in show organization and management, livestock judging, grooming, fitting and showing of livestock, and management of 4-H and FFA judging contests. Additional activities during the year include a spring trip, support of UT Livestock Judging Teams, regional and national B&B meetings, service projects and many educational programs during regular club meetings. All students should check bulletin boards at the beginning of fall semester for meeting times and locations.

## **Dairy Club**

This club involves students that would like to learn more about the dairy industry. Club activities include the Annual Dairy Day Sale held during the spring semester of each year. Students assist in selecting cattle, and organizing and managing all students on committees to "make it happen". Additional activities include a spring trip, ice cream social, National Participation and Regional American Dairy Science Association - Student Affiliate Division, spades tournament, picnics and many educational programs at the regular club meetings. Students should watch for the initial meeting dates at the beginning of fall semester.

## **Poultry Club**

This club is obviously one that is primarily interested in the poultry industry. Past projects have included the sale of turkeys at Thanksgiving, serving Bar-B-Que chicken before football games, and educational events included in regular meetings. Perhaps the most important event is the trip to Atlanta to attend the Southeastern Regional Poultry Association meeting where there are many opportunities to discuss job possibilities with prospective employers. All the active Poultry Club seniors should not miss the Atlanta trip. Watch the bulletin boards for Foghorn Leghorn announcing meeting dates and times for club meetings in the Fall.

There are two other student clubs that are not directly sponsored by the Animal Science Department in which many Animal Science students participate.

## **Pre-Vet Association**

The agenda of this club centers primarily around the activities pertaining to veterinary medicine and admission to the College of Veterinary Medicine. Activities include a tour of the College and a speaker program made of College faculty, practicing large and small animal veterinarians and zoo veterinarians. Meeting times and places are announced in the Daily Beacon and posted on east and west campus bulletin boards.

## **Equestrian Club**

The Equestrian Club offers boarding and feed as well as riding opportunities for those who do not own their own horse. Some members participate on the equestrian team that competes at local and regional events. The club has a full-time riding instructor who also manages the facilities and coaches the equestrian team. More information is available by contacting the barn at 933-7096 or the UT Sports Club office at 974-5168.

## **INTERCOLLEGIATE JUDGING TEAM ACTIVITIES**

Most students, regardless of career goals, should be encouraged to participate in intercollegiate judging activities. These activities offer the unique opportunity of in depth study of animal evaluation in primarily an off-campus setting. Teams participate in regional and national contests and in the process have the opportunity to visit many different farms, packing houses, and agricultural businesses throughout the southeastern United States. The work culminates with the contest(s), but the experience is lasting in that it teaches animal evaluation, confidence in decision making, and practice in oral and written communications. Employers look for judging team activity on a prospective employee's resume' because it indicates a willingness to do extra work in order to learn more and they realize that the experience broadens the student's prospective of agriculture. Team members are representatives of The University of Tennessee and develop pride in themselves and the University.

### **DAIRY JUDGING TEAM**

### **HORSE JUDGING TEAM**

### **LIVESTOCK JUDGING TEAM**

### **POULTRY JUDGING TEAM**

These teams are sponsored by the Department of Animal Science. There is a certain amount of class preparation which must take place before one would be sufficiently trained or eligible to participate and your advisor should be consulted about these activities as early as the sophomore year.

Besides classroom preparation, workouts are scheduled on some evening and weekends and participants must sacrifice some free time in order to prepare themselves for intercollegiate competition. Obviously, students involved in Intercollegiate Judging Team activities must miss some regular class meetings. Therefore, there are certain restrictions to participation that include College guidelines and common sense. Each participant is required to maintain at least a 2.00 GPA, and should not be encouraged to participate if having academic difficulties. It should be obvious that all missed assignments will be made up and that students should discuss with their instructors their involvement in these activities. Most instructors are more apt to work with a student if they are informed well in advance rather than at the last minute.

Other departments sponsor teams that compliment the Animal Science teams. Food Science and Technology sponsors the Meats Judging Team that would be an asset to the Livestock Judging activities. Also, Dairy Products judging would be a natural progression to Dairy Cattle judging.

## FINANCIAL AID

The cost of a college education continues to rise each year and all indications point to increased costs into the future. However, costs at The University of Tennessee remain one of the best buys in the Southeast. This does not mean that it is affordable by everyone and the College of Agricultural Sciences and Natural Resources realizes that. Consequently, you will find that one of the best scholarship programs in the country is right here.

Financial aid through the Department of Animal Science and/or the College of Agricultural Sciences and Natural Resources has totaled over \$700,000 for the past several years. These awards range from \$4,000 per year guaranteed for four years to \$500 awarded on an annual basis. An application is required by February 1 each year for awards made the following year. Applications can be obtained in room 206 Brehm or at the Associate Dean's office, room 125 Morgan Hall. Criteria for selection are highly variable. Naturally, excellent grades help all applicants, but some scholarships are more heavily based on need and/or activities. Still others are set up for students from certain counties or areas and may or may not require a certain type of agricultural background.

The Department of Animal Science administers the following scholarships and awards. Other scholarships are available through the College and/or The UTK financial aid office.

<u>Scholarship Name</u>	<u>Amount</u>	<u>Minimum Criteria</u>
Beville Hal Reagan	\$2,000/yr. x 4	Incoming freshmen only
Animal Science Faculty Award	Variable:\$500-\$1500	GPA & Activities
Duncan Angus Scholarship	Variable:\$500-\$1200	Need-Blount or Grainger
Henry L. Ford	Variable:\$500-\$1200	Need, GPA, Leadership
C. S. Hobbs Memorial	\$500	Meat Animal Interest, GPA, Leadership
Glenn G. Summers	Variable:\$500-\$1500	Dairy Interest, Need, Leadership
James T. Granbery	Variable:\$500-\$1500	Dairy interest
Charles S. Simms	Variable:\$500-\$1000	Activities, GPA, Need
Beverly Shrode Memorial	Variable:\$500-\$1000	Character, Need, GPA
M. Jacob Award	\$150	Senior, GPA, Animal Production Ability
Dee W. Coley Stockmans Award	Variable	Senior, Active in B&B & Meats and/or Livestock Judging Teams

Awards through the Department of Animal Science or the College of Agricultural Sciences and Natural Resources does not exclude one from receiving financial aid through the University's financial aid office. All applications for these grants or loans must be made through that office, 115 Student Services Building. This office also handles all applications for the work-study program and can often help with finding others part-time employment while enrolled at UT.

Many students find they must work while enrolled in classes. Some handle this with ease while others see their academic efforts come up short. We would not recommend working to the point of hindering academics. On the other hand, we understand that some students must work to help pay for college costs and as a faculty, we will make every effort to fairly accommodate your needs.