Animal Nutritional Sciences

Degrees Offered

• Bachelor of Science - Animal & Nutritional Sciences Major
• Bachelor of Science in Agriculture - Animal & Nutritional Sciences Major

Bachelor of Science - Animal & Nutritional Sciences Major

The curriculum in science, with its flexible design, provides the necessary background in biochemistry, chemistry, mathematics, physics, and modern concepts of biology in preparation for professional schools of dentistry, human medicine, optometry, pharmacy, veterinary medicine or graduate study in such fields as animal breeding, animal physiology, biochemistry and nutrition.

Bachelor of Science in Agriculture - Animal & Nutritional Sciences Major

This curriculum provides the necessary background in agricultural economics, agronomy, breeding, nutrition, and physiology to prepare for careers in production and management of dairy, livestock or poultry, and in food processing and technology.

Click the link below to view the corresponding Degree Requirements and Suggested Plans of Study.

• Bachelor of Science in Agriculture - Animal & Nutritional Sciences (p. 1)
• Bachelor of Science - Animal & Nutritional Sciences (p. 3)

GENERAL EDUCATION FOUNDATIONS

Please use this link to view a list of courses that meet each GEF requirement. (http://registrar.wvu.edu/gef)

NOTE: Some major requirements will fulfill specific GEF requirements. Please see the curriculum requirements listed below for details on which GEFs you will need to select.

General Education Foundations

<table>
<thead>
<tr>
<th>General Education Foundations</th>
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<tbody>
<tr>
<td>F1 - Composition &amp; Rhetoric</td>
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<tr>
<td>ENGL 101 &amp; ENGL 102</td>
<td>Introduction to Composition and Rhetoric</td>
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<tr>
<td>or ENGL 103</td>
<td>and Composition, Rhetoric, and Research</td>
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<tr>
<td>F2A/F2B - Science &amp; Technology</td>
<td>4-6</td>
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<tr>
<td>F3 - Math &amp; Quantitative Skills</td>
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<td>F4 - Society &amp; Connections</td>
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<td>F5 - Human Inquiry &amp; the Past</td>
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<tr>
<td>F6 - The Arts &amp; Creativity</td>
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<tr>
<td>F7 - Global Studies &amp; Diversity</td>
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<tr>
<td>F8 - Focus (may be satisfied by completion of a minor, double major, or dual degree)</td>
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<tr>
<td>Total Hours</td>
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</table>

Please note that not all of the GEF courses are offered at all campuses. Students should consult with their advisor or academic department regarding the GEF course offerings available at their campus.

CURRICULUM REQUIREMENTS FOR BACHELOR OF SCIENCE IN AGRICULTURE - ANIMAL & NUTRITIONAL SCIENCES MAJOR

Select one of the following: 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ENGL 101 &amp; ENGL 102</td>
<td>Introduction to Composition and Rhetoric, and Composition, Rhetoric, and Research</td>
</tr>
<tr>
<td>ENGL 103</td>
<td>Accelerated Academic Writing</td>
</tr>
<tr>
<td>GEF2 Science &amp; Technology (may also fulfill program Science requirements)</td>
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</tr>
<tr>
<td>GEF3 Mathematics &amp; Technology (may also fulfill program Science requirements)</td>
<td></td>
</tr>
</tbody>
</table>

GEF Requirements 4 - 8 21

A&VS 191 First-Year Seminar 1

Biological and Physical Sciences Requirements (students must take 24 hours of science courses)
### Biology
A&VS 251 and/or PLSC 206 may be substituted for biology courses

### Chemistry

### College Algebra or equivalent

### Science Electives

### Courses in Agriculture

Elect a minimum of a three-credit course, excluding Assigned Topics, in each of the following categories. Elect additional courses to obtain a total of 45 hours in the college.

- Animal Science
- Plant Science
- Soil Science
- Agriculture Economics

### Capstone Experience (Choose one of the following):

- Fulfills Writing and Communication Skills requirement
- A&VS 402 Values and Ethics
- A&VS 491 Professional Field Experience
- A&VS 496 Senior Thesis

Free Electives (Number of electives may vary depending on GEF courses taken. Students must earn at least 120 credits to graduate.)

### SUGGESTED PLAN OF STUDY FOR BACHELOR OF SCIENCE IN AGRICULTURE - ANIMAL & NUTRITIONAL SCIENCES MAJOR

#### First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
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<td>ENGL 101 (GEF)</td>
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<td>1 ARE 150 (GEF)</td>
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<td>&amp; BIOL 103</td>
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<td>CHEM 112</td>
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#### Second Year

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#### Third Year

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<td>ANPH 400</td>
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<td>ARE 382</td>
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<td>ANPR 338</td>
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### Fourth Year

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<tr>
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<td>A&amp;VS 409</td>
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<td>Total credit hours: 120</td>
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### CURRICULUM REQUIREMENTS FOR BACHELOR OF SCIENCE - ANIMAL & NUTRITIONAL SCIENCES MAJOR

Select one of the following:

- **ENGL 101** & **ENGL 102**: Introduction to Composition and Rhetoric and Composition, Rhetoric, and Research
- **ENGL 103**: Accelerated Academic Writing

- **GEF 4-8**: 21

- **A&VS 191**: First-Year Seminar 1

### Science requirements

Students must reach 40 hours of science credits
- Biology Requirement (also fulfills GEF 2 requirement) 8
- Chemistry Requirement 8
- Physics Requirement 8
- Math Requirement (also fulfills GEF 3 requirement) 6

### Calculus or Advanced Chemistry Requirement

- **CHEM 231**: Organic Chemistry: Brief Course
- **CHEM 233**: Organic Chemistry
- **CHEM 234**: Organic Chemistry
- **CHEM 235**: Organic Chemistry Laboratory
- **CHEM 236**: Organic Chemistry Laboratory
- **AGBI 410**: Introductory Biochemistry
- **MATH 150**: Applied Calculus
- **MATH 153**: Calculus 1a with Precalculus
- **MATH 154**: Calculus 1b with Precalculus
- **MATH 155**: Calculus 1
- **MATH 156**: Calculus 2

### Science Electives (as necessary to reach at least 40 hours of science credits) 2

### Courses in Agriculture 21

### Capstone Experience (Choose one of the following): 3

- Fulfills Writing and Communication Skills requirement
- **A&VS 402**: Values and Ethics
- **A&VS 491**: Professional Field Experience
- **A&VS 496**: Senior Thesis

### Free Electives (Number of electives may vary; students must earn a minimum of 120 credits to graduate) 28

### Total Hours 120
# SUGGESTED PLAN OF STUDY FOR BACHELOR OF SCIENCE - ANIMAL & NUTRITIONAL SCIENCES MAJOR

## First Year

<table>
<thead>
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<th>Fall</th>
<th>Hours</th>
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<td>3 BIOL 117</td>
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<td>CHEM 115</td>
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<td>4 MATH 128 (if needed or GEF)</td>
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<td>Depending on QRA score select one of the following (GEF 3):</td>
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<td>MATH 124</td>
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<td>MATH 155</td>
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## Second Year

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<th>Fall</th>
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<td>CHEM 233</td>
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## Third Year

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<th>Fall</th>
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<th>Spring</th>
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<td>ANPH 301</td>
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<td>3 A&amp;VS 402</td>
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<td>AGBI 410</td>
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<td>3 GEN 371</td>
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<td>AEM 341</td>
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<td>GEF 8</td>
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## Fourth Year

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<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
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<tr>
<td>Electives</td>
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<tr>
<td>Science Elective</td>
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</table>

12

Total credit hours: 120

## Major Learning Outcomes

### ANIMAL & NUTRITIONAL SCIENCES

1. Graduates will acquire a high level of competency in the basic sciences required for disciplinary competency.
2. Graduates will integrate basic knowledge and managerial skills related to the animal, nutritional and food sciences disciplines.
3. Graduates will acquire sufficient written and oral communication skills, problem solving and critical thinking skills to effectively impact lifelong societal and professional developments critical to their respective discipline of interest.
4. Graduates will attain depth of knowledge relative to the scope of subfields of the animal and nutritional sciences:
   a. Animal production, management and marketing
   b. Animal nutrition
c. Environmental stewardship

ANNU 260. Animal Nutrition. 3 Hours.
PR: Two courses in chemistry. Digestion and metabolism of food nutrients, nutrient requirements of farm animals, and nutritive values of feeds and rations.

ANNU 298. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study, or research.

ANNU 361. Applied Nutrition. 3 Hours.
PR: ANNU 260. Feedstuffs, feed processing storage and additives, nutrient requirements and ration formulation for beef and dairy cattle, sheep, and horses. (2 hr. lec., 1 hr. lab.).

ANNU 362. Applied Nutrition 2. 3 Hours.
PR: ANNU 260. Applied feeding practices, nutrient requirements and ration formulation for poultry, swine, laboratory and companion animals. (2 hr. lec., 1 hr. lab.).

ANNU 393. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANNU 490. Teaching Practicum. 1-3 Hours.
PR: Consent. Teaching practice as a tutor or assistant.

ANNU 491. Professional Field Experience. 1-18 Hours.
PR: Consent. (May be repeated up to a maximum of 18 hours.) Prearranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

ANNU 492. Directed Study. 1-3 Hours.
Directed study, reading, and/or research.

ANNU 493. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANNU 494. Seminar. 1-3 Hours.
PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

ANNU 495. Independent Study. 1-6 Hours.
Faculty supervised study of topics not available through regular course offerings.

ANNU 496. Senior Thesis. 1-3 Hours.
PR: Consent.

ANNU 497. Research. 1-6 Hours.
Independent research projects.

ANNU 498. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study or research.

ANNU 293. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANPH 293. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANPH 298. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study, or research.

ANPH 301. Introduction to Animal Physiology. 3 Hours.
PR: BIOL 102 or consent. The function and regulation of the principal systems of the animal body.

ANPH 393. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANPH 400. Growth and Lactation Physiology. 3 Hours.
PR: ANPH 301 or consent. Animal life cycles; nature of growth and lactation; effects of biological, environmental, and social-psychological variants; physiological regulation and control.

ANPH 405. Animal Physiology Laboratory. 2 Hours.
PR: ANPH 301 or consent. Laboratory study of the physiological systems of animals and the influences of environment on these systems. (4 hr. lab.).

ANPH 424. Physiology of Reproduction. 3 Hours.
PR: Course in biology. Comparative physiology of reproduction in higher animals; endocrine functions involved in reproduction; genetic and environmental variations in fertility mechanisms.

ANPH 425. Reproductive Laboratory. 1 Hour.
PR or CONC: ANPH 424 and junior standing or consent. Laboratory study of the anatomy and function of the reproductive physiology system in animals.
ANPH 426. Applied Animal Reproduction. 1 Hour.
PR or CONC: ANPH 424 and junior standing or consent. Laboratory study, including rectal pregnancy examination, of reproductive physiology system in animals.

ANPH 430. Breeding of Farm Animals. 3 Hours.
PR: Course in genetics or consent. Application of principles of quantitative genetics to the improvement of farm animals.

ANPH 440. Equine Exercise Physiology. 3 Hours.
PR: A&VS 281 and ANPH 301. Evaluation of research in equine exercise science; physiological and mental adaptation to training; performance nutrition; unsoundness during training and competition; management and training regimes.

ANPH 480. Behavioral Patterns of Animals. 3 Hours.
Examination of the bases for exhibition and control of behavioral patterns of domesticated and nondomesticated species. (2 hr. lec., 3 hr. lab.).

ANPH 490. Teaching Practicum. 1-3 Hours.
PR: Consent. Teaching practice as a tutor or assistant.

ANPH 491. Professional Field Experience. 1-18 Hours.
PR: Consent. (May be repeated up to a maximum of 18 hours.) Prearranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

ANPH 492. Directed Study. 1-3 Hours.
Directed study, reading, and/or research.

ANPH 493. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANPH 494. Seminar. 1-3 Hours.
PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

ANPH 495. Independent Study. 1-6 Hours.
Faculty supervised study of topics not available through regular course offerings.

ANPH 496. Senior Thesis. 1-3 Hours.
PR: Consent.

ANPH 497. Research. 1-6 Hours.
Independent research projects.

ANPH 498. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study or research.

ANPR 293. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANPR 298. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study, or research.

ANPR 308. Animal Production Experience. 1-4 Hours.
Experience in operating a dairy or livestock farm, including layers or broilers, calving, lambing, or farrowing of hogs. (Can be repeated up to a maximum of 4 credits. 3 hr. lab./ per hr. of credit.).

ANPR 336. Dairy Cattle History and Selection. 3 Hours.
To familiarize the student with the breeds of dairy cattle as well as modern concepts in phenotype and performance record evaluation. (2 labs.).

ANPR 338. Horse/Livestock/Poultry Evaluation. 3 Hours.
Appraisal of horses, cattle, sheep, poultry, and swine. Evaluation of scientific techniques used in selecting those species. Tours of representative flocks, herds and stables will be required. (Two 3 hr. labs.).

PR: FDSC 334 or ANPR 336 or ANPR 338 or consent. Advanced selection, evaluation and grading of domestic livestock species and animal products. Tours of representative flocks, herds and processing plants will be required. (Can be repeated up to a maximum of 4 credits. 3 hr. lab./ per hr. credit.).

ANPR 341. Beef Production. 3 Hours.
PR: ANNU 260. Applying the principles of breeding, nutrition, physiology, and economics for the production of beef cattle.

ANPR 343. Beef Production Laboratory. 1 Hour.
CoReq: ANPR 341. Experiences in beef cattle management, including feeding, handling, health programs and farm visits. (3 hr. lab.).

ANPR 344. Light Horse Science. 4 Hours.
PR: ANNU 260. Application of breeding, nutrition, physiology, and pathology to production and management of light horses.

ANPR 350. Milk Production. 3 Hours.
PR: ANNU 260. Feeding and management of dairy cattle. (2 hr. lec., 3 hr. lab.)(Regional campus course requires 30 hours of work on the campus farm.).
ANPR 353. Pork Production. 3 Hours.
PR: ANNU 260. Physiological and economical bases of pork production. (2 hr. lec., 3 hr. lab.).

ANPR 356. Small Ruminants. 3 Hours.
PR: ANNU 260. Genetics, nutrition, physiology, health and management of small ruminants in production of fiber, meat and milk, in local, regional and global contexts.

ANPR 367. Poultry Production. 3 Hours.
PR: ANNU 260. Special phases of broiler and egg production, disease control, labor-saving studies, and recent designs in housing and equipment for all types of poultry.

ANPR 369. Poultry Production Laboratory. 1 Hour.
CoReq: ANPR 367. Laboratory study of poultry production systems, related feed manufacturing and product processing practices. (3 hr. lab.).

ANPR 393. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANPR 490. Teaching Practicum. 1-3 Hours.
PR: Consent. Teaching practice as a tutor or assistant.

ANPR 491. Professional Field Experience. 1-18 Hours.
PR: Consent. (May be repeated up to a maximum of 18 hours.) Prearranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

ANPR 492. Directed Study. 1-3 Hours.
Directed study, reading, and/or research.

ANPR 493. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

ANPR 494. Seminar. 1-3 Hours.
PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

ANPR 495. Independent Study. 1-6 Hours.
Faculty supervised study of topics not available through regular course offerings.

ANPR 496. Senior Thesis. 1-3 Hours.
PR: Consent.

ANPR 497. Research. 1-6 Hours.
Independent research projects.

A&VS 105. Professional Orientation. 2 Hours.
PR: Freshman standing or consent. Orientation to WVU and the academic programs in the Division of Animal and Veterinary Sciences; related career and professional opportunities. Field trips required.

A&VS 150. Introduction to Animal Science. 2 Hours.
Survey of major disciplines in animal and veterinary sciences with emphasis on related terminology; study of the development of breeds of livestock and their identification.

A&VS 199. Orientation to Biochemistry. 1,2 Hour.
Orientation to degree programs and requirements, departmental resources, curriculum options, student responsibilities and opportunities.

A comparative study of the production of meat, milk, eggs and wool. Nutrition, physiology genetics, hygiene and physical environment, and economics are discussed as bases for sound managerial decisions. (1 hr. lab.).

A&VS 275. Companion Animal Science. 3 Hours.
Basic physiology, nutrition and genetics; economic and ethical consideration of pet ownership; benefits of companion animals in society; aspects of handling and training, behavior, and common health diseases and parasite problems of pets animals.

A&VS 276. Service Dog Training. 3 Hours.
Current principles, theory, and practices for training service dogs.

A&VS 277. Service Dog Training Laboratory. 1 Hour.
PR: A&VS 276 with a minimum grade of C-. Through hands-on training, students will apply their knowledge of animal training following programmatic procedures for training dogs to have basic obedience skills and perform advanced service dog tasks. Students will use the most modern, professional, and ethical techniques for training mobility-assistance and psychiatric service dogs.

A&VS 281. Introduction to Equine Care and Use. 3 Hours.
Survey of basic equine care, breeds, use, management, and behavior with a lab in equine safety and handling.

A&VS 282. Equine Handling & Ground Training Lab. 1 Hour.
PR: A&VS 281. This introductory course provides students with hands-on skills to safely handle and train horses from the ground. Students will learn to identify equine body language, and understand how their body language, position, and use of aids can be used to teach horses from the ground.
A&VS 293. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

A&VS 298. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study, or research.

A&VS 330. Equine Facility Design and Management. 3 Hours.

A&VS 343. Equine Hoof and Limb. 3 Hours.
Students in this course gain in-depth knowledge of the anatomy and physiology of the equine hoof and limb. Students will study tendons, ligaments, bones, soundness, hoof structure, shoeing principles, laminitis, and navicular disease.

A&VS 370. Riding Theory and Techniques. 3 Hours.
PR: A&VS 281. Advanced methods and techniques for performance in hunter and stock horse events; anatomical, physiological, and psychological implications; preparation of horses and riders.

A&VS 372. Careers in the Equine Industry. 3 Hours.
Provides an in-depth understanding of the careers available in the equine industry and prepares students to enter the job market.

A&VS 393. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

A&VS 402. Values and Ethics. 3 Hours.
PR: Senior standing or consent. Current ethical aspects in agriculture and forestry and their impact on societal values.

A&VS 404. Career Development. 1 Hour.
Identification of career opportunities and preparation of employment applications. Development of personal skills for interviewing for employment.

A&VS 409. Food Animal Diseases. 3 Hours.
PR: Junior and above or consent. General discussion of diseases, disease processes and management affecting farm animals excluding horses.

A&VS 410. Calving Management. 3 Hours.
PR: Junior standing and ANNU 260. Application of current management practices for calving beef cows for early calf management and for service sire selection.

A&VS 411. Dairy Heifer Management. 3 Hours.
PR: Junior standing and ANNU 260. Application of current management practices for raising dairy calves from birth through establishment of pregnancy.

A&VS 412. Lambing Management. 1 Hour.
PR: Junior standing and ANNU 260. Application of current management practices for lambing ewes and lamb management from birth through first months of life.

A&VS 413. Cameld Physiology & Management. 3 Hours.
PR: Junior standing and ANNU 260. Application of current management practices for alpaca management.

A&VS 425. Principles of Therapeutic Horsemanship 1. 3 Hours.
Explores the history, organization, principles, and procedures of an equine assisted activities and therapies program with the use of therapy horses for persons with disabilities.

A&VS 426. Principles of Therapeutic Horsemanship 2. 3 Hours.
PR: A&VS 425. Expand knowledge of therapeutic horsemanship based on their learning from A&VS 425. Criteria for becoming a professional in equine assisted activities and therapy fields will be emphasized.

A&VS 435. Marketing Registered Livestock. 3 Hours.
PR: Junior standing or consent. Application of strategies for marketing animals in the registered livestock industry in West Virginia and the surrounding states.

PR: ANNU 260. Evaluation of current research in animal science; its application to production and management. Note: Previously listed as ANPR 250.

A&VS 461. Racehorse Industry Tour. 3 Hours.
Travel course designed to introduce students to the Thoroughbred and Standard-bred Racing Industries, including career opportunities and current events within it.

A&VS 462. Performance Horse Industry Tour. 3 Hours.
Travel course designed to introduce students to the various aspects of the Performance Horse Industry, including career opportunities and current events within it.

A&VS 463. Equine Events Management. 3 Hours.
Planning, marketing, facility preparations and horse show management necessary to run a successful nationally-sanctioned equine event.

A&VS 476. Animal Assisted Activities and Therapy. 3 Hours.
PR: A&VS 276. Lecture and laboratory sessions focus on Animal Assisted Activities and Therapies. Students will learn to critically evaluate the research in this area and will learn hands-on about implementing Animal Assisted Activities with varying populations.
A&VS 480. Assigned Topics. 1-4 Hours.
To be eligible to register in A&VS 480, the student must: (1) be in good standing, (2) obtain approval of the instructor supervising the topic, and (3) obtain approval from the instructor assigned the course responsibility.

A&VS 481. Volunteerism for Equine Assisted Activities and Therapies. 3 Hours.
Discuss and demonstrate the importance of the role of the volunteer in the equine assisted activities and therapies fields.

A&VS 482. Practicum for Equine Assisted Activities and Therapies Instructor Certification. 3 Hours.
Prepares therapeutic riding instructors for certification within the guidelines to the Professional Association of Therapeutic Horsemanship (PATH).

A&VS 486. Advanced Service Dog Training. 3 Hours.
PR: A&VS 276 with a minimum grade of C-. Students will train advanced commands to psychiatric and mobility service dogs in training. Topics covered include dog selection, temperament testing, training methods, and legal issues.

A&VS 490. Teaching Practicum. 1-3 Hours.
PR: Consent. Teaching practice as a tutor or assistant.

A&VS 491. Professional Field Experience. 1-18 Hours.
PR: Consent. (May be repeated up to a maximum of 18 hours.) Prearranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

A&VS 492. Directed Study. 1-3 Hours.
Directed study, reading, and/or research.

A&VS 493. Special Topics. 0-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

A&VS 494. Seminar. 1-3 Hours.
PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

A&VS 495. Independent Study. 1-6 Hours.
Faculty-supervised study of topics not available through regular course offerings.

A&VS 496. Senior Thesis. 1-3 Hours.
PR: Consent.

A&VS 497. Research. 1-6 Hours.
Independent research projects.

A&VS 498. Honors. 1-3 Hours.
PR: Students in honors program and consent by the honors director. Independent reading, study or research.

A&VS 499. Global Service Learning. 3 Hours.
PR: Consent for undergraduates. The production, genetics, physiology, nutrition, disease and regulations of laboratory animals used in research and teaching. This course meets minimal requirements for laboratory animal technical certification programs of the American Association of Laboratory Animal Science (AALAS).

VETS 293. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

VETS 302. Animal Pathology. 3 Hours.
PR: ANPH 301 or consent. Diseases of farm animals with special emphasis on their cause, prevention, and control.

VETS 401. Veterinary Anatomy. 3 Hours.
PR: Junior standing or consent. Functional study of domestic and farm animal anatomy.

VETS 403. Veterinary Anatomy Laboratory. 1 Hour.
PR: Junior standing and PR or CONC: VETS 401. Gross dissection techniques used for the study of functional anatomy in domestic animals.

VETS 405. Parasitology. 3 Hours.
PR: (BIOL 101 and BIOL 102 and BIOL 103 and BIOL 104) or ( BIOL 115 and BIOL 116). Common parasites of farm animals, their life cycles, effects on the host, diagnosis, control, and public health importance. (3 hr. lec., 1 hr. lab.).

VETS 411. Principles of Laboratory Animal Science. 3 Hours.
PR: Consent for undergraduates. The production, genetics, physiology, nutrition, disease and regulations of laboratory animals used in research and teaching. This course meets minimal requirements for laboratory animal technical certification programs of the American Association of Laboratory Animal Science (AALAS).

VETS 490. Teaching Practicum. 1-3 Hours.
PR: Consent. Teaching practice as a tutor or assistant.

VETS 491. Professional Field Experience. 1-18 Hours.
PR: Consent. (May be repeated up to a maximum of 18 hours.) Prearranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.
VETS 493. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

VETS 494. Seminar. 1-3 Hours.
PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

VETS 496. Senior Thesis. 1-3 Hours.
PR: Consent.

VETS 498. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study or research.