Programs of Study

The School of Agriculture is home to the Division of Animal and Nutritional Sciences and Division of Plant and Soil Sciences. The Division of Animal and Nutritional Sciences houses majors in Animal & Nutritional Science, Human Nutrition & Food, and Biochemistry. Biochemistry is part of the Intercollegiate Undergraduate Program in Biochemistry, a collaboration between the Davis and Eberly Colleges. The Division of Plant and Soil Sciences administers majors in Applied and Environmental Microbiology, Agroecology, Environmental Protection and Horticulture. As a student in this school, you may pursue a degree that enables you to go to graduate schools and professional programs, study basic sciences and their application, pursue a career in commercial agriculture, or work for federal or state agencies. The pre-professional programs of applied and environmental microbiology and biochemistry, among others, meet requirements for entry into professional school programs such as veterinary and human medicine, allied health professions, the pharmaceutical industry, and other graduate level programs.

Courses that you will take in the school of agriculture depend on a student's particular program. The school of agriculture offers a diverse range of course work and classes range from applied and environmental microbiology, animal and human nutrition, plant science, and soil science to environmental sciences, animal production, biochemistry, animal and plant breeding and genetics, food science, animal and plant pathology, physiology, horticulture, and agroecology. To assist in equipping yourself for one of the varied careers in agriculture, you will take supporting courses in other divisions of the Davis College and in other colleges. The programs are flexible and permit you to obtain a broad background and take sufficient courses in one area during the last two years to prepare you for your postgraduate career choice. Other programs are geared towards preparing you to tackle the applied problems found in the agriculture and green industry right out of college.

Pre-Professional Programs (Veterinary Medicine, Human Medicine, Pharmacy, Law, and Allied Health Professions)

The bachelor of science programs in Animal & Nutritional Sciences, Applied & Environmental Microbiology Biochemistry, Human Nutrition & Food, among others, provide students with the academic requirements for entry into professional schools or colleges of veterinary medicine. The West Virginia Higher Education Policy Committee has agreements for positions with the School of Veterinary Medicine at Mississippi State University and the Virginia-Maryland Regional College of Veterinary Medicine for students who have been a West Virginia resident for at least the past five years at the time of application. Students in Applied and Environmental Microbiology can pursue an accelerated environmental microbiology Master’s program that can earn students a Master of Science degree in 5 years facilitating access to professional programs. Because only a limited number of students are accepted into graduate programs and veterinary medicine each year, students are urged to have alternative goals.

FACULTY

DIVISION DIRECTORS

• Matthew A. Jenks - Ph.D. (Purdue University)
  Plant and Soil Sciences
  • Robert L. Taylor, Jr. - Ph.D. (Mississippi State University)
    Animal and Nutritional Sciences (Immunology and genetics of disease resistance)

PROFESSORS

• Alan R. Biggs - Ph.D. (Pennsylvania State University)
  Plant Pathology, Tree Fruits
• Kenneth P. Blemings - Ph.D. (University of Wisconsin)
  Nutritional biochemistry
• Mirjana Butalovic-Danilovich - Ph.D. (University of Ljubljana, Slovenia)
  Extension Specialist, Consumer Horticulture, Master Gardener Program Coordinator
• Rakesh Chandran - Ph.D. (Virginia Tech)
  Weed management in horticultural systems, IPM, Innovative strategies for week control
• Robert A. Dailey - Ph.D. (University of Wisconsin)
  Reproductive physiology
• Jason Hubbart - Ph.D. (University of Idaho-Moscow)
  Fresh water supply regimes, Biogeochemical cycling, ecohydrology
• Jacek Jaczynski - Ph.D. (Oregon State University)
  Food science and technology
• Matthew A. Jenks - Ph.D. (Purdue University)
  Plant genetics, specialty crops
• P. Brett Kenney - Ph.D. (Kansas State University)
Meat science
- Hillar Klandorf - Ph.D. (British Council for National Academic Awards)
  Physiology
- William L. MacDonald - Ph.D. (Iowa State University)
  Plant Pathology, Forest and Shade Tree Diseases
- Kristen Matak - Ph.D. (Virginia Tech)
  Food science and human nutrition
- Louis M. McDonald - Ph.D. (University of Kentucky)
  Soil Science, Soil Chemistry
- Joseph S. Moritz - Ph.D. (Kansas State University)
  Nutrition and feed manufacture
- Joseph B. Morton - Ph.D. (Montana State University)
  Plant Pathology, Mycorrhizal Interactions, Field Crop Diseases
- Daniel Panaccione - Ph.D. (Purdue State University)
  Plant Pathology, Mycology, Mycotoxins, Molecular Biology
- Jeffrey Skousen - Ph.D. (Texas A&M University)
  Soil Science, Land Reclamation, Soil and Water Conservation, Watershed Restoration
- James A. Thompson - Ph.D. (University of Minnesota)
  Soil science, Pedology, Land use
- Janet C. L. Tou - Ph.D. (University of Toronto)
  Nutrition in bone health and chronic diseases
- Matthew E. Wilson - Ph.D. (Iowa State University)
  Reproductive Physiology
- Jianbo Yao - Ph.D. (McGill University)
  Functional genomics

ASSOCIATE PROFESSORS
- Kimberly M. Barnes - Ph.D. (University of Nebraska)
  Lipid metabolism
- Vagner Benedito - Ph.D. (Wageningen University, The Netherlands)
  Genetics and developmental biology, Plant genomics, Functional genetics and plant physiology
- Scott A. Bowbridge - Ph.D. (Virginia Tech)
  Food animal production, parasite immunology
- Eugene E. Felton - Ph.D. (University of Missouri)
  Animal science and ruminant nutrition
- Marlon Knights - Ph.D. (West Virginia University)
  Reproductive physiology and animal production
- James B. Kotcon - Ph.D. (University of Wisconsin)
  Plant Pathology, Agroecology, Nematology, Organic Farming Practices
- K. Marie Krause - Ph.D. (University of Wisconsin-Madison)
  Ruminant nutrition
- Melissa Olfert - Dr.P.H., M.S.,R.D. (Loma Linda University)
  Human nutrition and foods
- Yong-Lak Park - Ph.D. (Iowa State University)
  Entomology, Geospatial Ecology of Insects, Integrated Pest Management, Spatial Interaction between Insect and Plant Diseases
- Eugenia M. Pena-Yewtuhiw - Ph.D. (University of Kentucky)
  Soil Science
- Sven Verlinden - Ph.D. (Purdue University)
  Horticulture, Post Harvest Physiology, Molecular Biology

ASSISTANT PROFESSORS
- Daniel L. Frank - Ph.D. (Virginia Tech)
  Extension specialist, horticulture
- Michael Gutensohn - Ph.D. (University of Cologne, Germany)
  Plant biochemistry and genetics, Metabolic engineering, Plant-insect interactions
- Matthew Kasson - Ph.D. (Pennsylvania State University)
  Forest pathology, fungal-insect interactions, fungal phylogenetics
• Teiya Kijimoto - Ph.D. (Tokyo Institute of Technology)
  Evolutionary developmental biology of morphological diversification
• Nik Kevinich - Ph.D. (Carleton University)
  Metabolic engineering, Metabolite transport, Plant metabolic response to stress
• Kang Mo Ku - Ph.D. (University of Illinois Urbana-Champaign)
  Food crops physiology and quality, Plant metabolomics
• Melissa D. Ventura-Marra - Ph.D., R.D. (Florida International University)
  Diet related health disparities
• Daniel J. Mathew - Ph.D. (University of Missouri)
  Reproductive Physiology
• Cangliang Shen - Ph.D. (Colorado State University)
  Safety of meat and fresh produce
• Nicole Waterland - Ph.D. (Ohio State University)
  Horticulture, Flower Senescence
• Amy Welsh - Ph.D. (University of California-Davis)
  Conservation genetics

TEACHING ASSOCIATE PROFESSOR
• Megan Govindan - M.P.H., M.S., R.D. (West Virginia University)
  Human nutrition and foods
• Margaret A. Minch - D.V.M. (Ohio State University)
  Veterinary medicine
• Crystal E. Smith - Ed.D. (West Virginia University)
  Equine management

TEACHING ASSISTANT PROFESSOR
• Adam M. Burda - MS, RDN, LDN (Indiana University of Pennsylvania)
  Director of the Graduate Dietetic Internship Program
• David Davis - Ph.D. (Virginia Tech)
  Landscape, turf, specialty crops

VISITING ASSISTANT PROFESSOR
• John Hando - Ph.D. (West Virginia University)
  Environmental health and safety specialist

FACULTY EMERITI
• James W. Amrine, Jr.
• Robert E. Anderson
• John A. Balasko
• John F. Baniecki
• Bradford C. Bearce
• Gary K. Bissonnette
• James L. Brooks
• William B. Bryan
• Linda Butler
• Robert L. Cochrane
• William E. Collins
• Leslie Dozsa
• Betty J. Forbes
• Mannon E. Gallegly, Jr.
• Henry W. Hogmire
• William H. Hoover
• E. Keith Inskeep
• Robert F. Keefer
• Paul E. Lewis
• M. Zafar Alam Nomani
In this section:

- Applied and Environmental Microbiology (p. 4)
- Environmental Protection (p. 5)
- Equine Studies (p. 6)
- Food Science and Technology (p. 7)
- Food Service Production (p. 7)
- Horticulture (p. 8)
- Nutrition and Food Studies (p. 8)
- Pest Management (p. 8)
- Soil Science (p. 9)

APPLIED AND ENVIRONMENTAL MICROBIOLOGY

MINOR CODE - U082

The minor in Applied and Environmental Microbiology is designed to introduce students to the beneficial and harmful roles of microorganisms in a variety of diverse environments including plants, animals, soil, food, air, and water. Emphasis is given to the importance of microorganisms in such applied areas as public health, plant disease, pollution and pollution abatement, biological control of pests, bio-deterioration, and ecology.

A minimum GPA of 2.5 is required in all minor courses
A grade of C or higher must be earned in all minor courses

Minor Requirements
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEM 341</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>PPTH 401</td>
<td>General Plant Pathology</td>
<td>4</td>
</tr>
</tbody>
</table>

Minimum of seven hours selected from the following: **

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEM 401</td>
<td>Environmental Microbiology</td>
<td></td>
</tr>
<tr>
<td>ENVP 401</td>
<td>Environmental Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>ENVP 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>AGRN 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 445</td>
<td>Food Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 449</td>
<td>Food Microbiology Lab</td>
<td></td>
</tr>
<tr>
<td>AEM 493</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>AEM 495</td>
<td>Independent Study</td>
<td></td>
</tr>
<tr>
<td>PPTH 409</td>
<td>Nematology</td>
<td></td>
</tr>
<tr>
<td>PPTH 470</td>
<td>Forest Pest Management</td>
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</tr>
<tr>
<td>PPTH course - Research-Airborne Fungi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPTH 503</td>
<td>Mycology</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours 15

* Maximum of four hours of special topics courses (AEM 493 or PPTH 493) can be applied toward the 15-hour total and requires approval of the division director.

** Courses with the same title are equivalent to each other.

**ENVIRONMENTAL PROTECTION**

**MINOR CODE - U061**

This minor is designed to provide students the opportunity to study the science and techniques which are applied to safe-guard the quality of the environment with emphasis on water, soil and crop protection. This minor would benefit students from agronomy, horticulture, and other disciplines with significant backgrounds in chemistry and biological science, who intend to work in an area where their major is applied to environmental protection. A grade of C or higher must be earned in all minor courses.

**REQUIRED COURSES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVP 155</td>
<td>Elements of Environmental Protection</td>
<td>3</td>
</tr>
<tr>
<td>ENVP 460</td>
<td>Environmental Impact Assessment</td>
<td>3</td>
</tr>
</tbody>
</table>

Select three of the following: *

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVP 355</td>
<td>Environmental Sampling and Analysis</td>
<td></td>
</tr>
<tr>
<td>ENVP 401</td>
<td>Environmental Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 401</td>
<td>Environmental Microbiology</td>
<td></td>
</tr>
<tr>
<td>ENVP 412</td>
<td>Pest Management</td>
<td></td>
</tr>
<tr>
<td>ENTO 412</td>
<td>Pest Management</td>
<td></td>
</tr>
<tr>
<td>ENVP 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>AGRN 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>ENVP 425</td>
<td>Environmental Soil Management</td>
<td></td>
</tr>
<tr>
<td>AGRN 425</td>
<td>Environmental Soil Management</td>
<td></td>
</tr>
<tr>
<td>ENVP 451</td>
<td>Principles of Weed Science</td>
<td></td>
</tr>
<tr>
<td>AGRN 451</td>
<td>Principles of Weed Science</td>
<td></td>
</tr>
<tr>
<td>ENVP 455</td>
<td>Reclamation of Disturbed Soils</td>
<td></td>
</tr>
<tr>
<td>AGRN 455</td>
<td>Reclamation of Disturbed Soils</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours 15

* Courses with the same title are equivalent to each other.
# EQUINE STUDIES

**MINOR CODE - U130**

This minor is designed for students who wish to advance their knowledge of equine management practices or wish to find employment within the equine industry. Students will gain knowledge of equine management related to reproduction, nutrition, health, training methods, design of facilities, and economy of the industry.

## MINOR REQUIREMENTS

### Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Minimum Grade</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;VS 281</td>
<td>Introduction to Equine Care and Use (Minimum grade of C-)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>A&amp;VS 282</td>
<td>Equine Handling &amp; Ground Training Lab (Minimum grade of C-)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>ANPR 344</td>
<td>Advanced Horse Management (Minimum grade of C-)</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

### Complete one of the following tracks

- **Management Track**
  - **Required Track Course**
    - A&VS 330: Equine Facility Design and Management
  - **Select one of the following courses**
    - A&VS 463: Equine Events Management
    - ARE 422: New Venture Creation
    - ARE 482: Enterprise Operation Law
  - **Select two of the following courses**
    - A&VS 343: Equine Hoof and Limb
    - A&VS 370: Riding Theory and Techniques
    - A&VS 463: Equine Events Management
    - ANPR 338: Horse/Livestock/Poultry Evaluation

- **Science Track**
  - **Required Track Course**
    - ANNU 361: Applied Nutrition
  - **Select one of the following courses**
    - ANPH 400: Growth and Lactation Physiology
    - ANPH 424: Physiology of Reproduction
    - VETS 401: Veterinary Anatomy
  - **Select two of the following courses**
    - A&VS 343: Equine Hoof and Limb
    - A&VS 370: Riding Theory and Techniques
    - A&VS 497: Research
    - ANPR 338: Horse/Livestock/Poultry Evaluation

- **Equine Assisted Activities and Therapies Track***
  - **Required Track Courses**
    - A&VS 425: Principles of Therapeutic Horsemanship 1
    - A&VS 426: Principles of Therapeutic Horsemanship 2
  - **Select two of the following courses**
    - A&VS 330: Equine Facility Design and Management
    - A&VS 370: Riding Theory and Techniques
    - DISB 380: Disability and the Family
    - DISB 482: Disability in the Community
    - PSYC 241: Introduction to Human Development
    - PSYC 281: Introduction to Abnormal Psychology

### Total Hours

- 20

* To become a candidate for the PATH registered level riding instructor certification, a student must fulfill the minor requirements and also complete the following courses: A&VS 370, A&VS 481, and A&VS 482.
FOOD SCIENCE AND TECHNOLOGY

MINOR CODE - U057

The minor in Food Science and Technology is for students interested in pursuing careers in the food industry. The students will gain knowledge of food processing, engineering, chemistry, microbiology, and marketing. The minor will broaden career opportunities to food safety and quality assurance, food science/technology, food engineering, sensory evaluation, new food marketing research, food development, technical sales and marketing, and state or federal food inspectors. A minimum GPA of 2.0 is required in all minor courses.

Minor Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDST 200</td>
<td>Food Science and Technology</td>
<td>3</td>
</tr>
<tr>
<td>FDST 308</td>
<td>Food Plant Sanitation</td>
<td>3</td>
</tr>
<tr>
<td>ARE 431</td>
<td>Marketing Agricultural Products</td>
<td>3</td>
</tr>
<tr>
<td>Electives - Select three of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AEM 341</td>
<td>General Microbiology</td>
<td></td>
</tr>
<tr>
<td>ARE 204</td>
<td>Agribusiness Management</td>
<td></td>
</tr>
<tr>
<td>ARE 406</td>
<td>Applied Quantitative Methods</td>
<td></td>
</tr>
<tr>
<td>FDST 365</td>
<td>Muscle Foods Technology</td>
<td></td>
</tr>
<tr>
<td>FDST 445</td>
<td>Food Microbiology</td>
<td></td>
</tr>
<tr>
<td>or AEM 445</td>
<td>Food Microbiology</td>
<td></td>
</tr>
<tr>
<td>FDST 491</td>
<td>Professional Field Experience</td>
<td></td>
</tr>
<tr>
<td>HN&amp;F 171</td>
<td>Introduction to Human Nutrition</td>
<td></td>
</tr>
<tr>
<td>HN&amp;F 348</td>
<td>Science of Food Preparation</td>
<td></td>
</tr>
<tr>
<td>HN&amp;F 350</td>
<td>Cross-Cultural Cuisine</td>
<td></td>
</tr>
<tr>
<td>HN&amp;F 353</td>
<td>Food Service Systems Management</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours: 18

FOOD SERVICE PRODUCTION

MINOR CODE - U104

The minor in food service production is designed to provide students educational opportunities in the areas of hospitality and/or foodservice management and/or food production management. Emphasis is given to those courses that provide expanded knowledge on management, food production, and food safety. Students must obtain a 75% or higher on the ServSafe® Food Safety and Alcohol examinations offered in order to obtain the minor. A minimum GPA of 2.0 is required in all minor courses.

A grade of C or higher must be earned in all minor courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARE 440</td>
<td>Futures Markets and Commodity Prices</td>
<td>3</td>
</tr>
<tr>
<td>FDST 200</td>
<td>Food Science and Technology</td>
<td>3</td>
</tr>
<tr>
<td>FDST 445</td>
<td>Food Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>HN&amp;F 353</td>
<td>Food Service Systems Management</td>
<td>3</td>
</tr>
<tr>
<td>Choose two of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANPR 341</td>
<td>Beef Production</td>
<td></td>
</tr>
<tr>
<td>ANPR 350</td>
<td>Milk Production</td>
<td></td>
</tr>
<tr>
<td>ANPR 353</td>
<td>Pork Production</td>
<td></td>
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<tr>
<td>ANPR 356</td>
<td>Small Ruminants</td>
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<tr>
<td>ANPR 367</td>
<td>Poultry Production</td>
<td></td>
</tr>
<tr>
<td>ARE 204</td>
<td>Agribusiness Management</td>
<td></td>
</tr>
<tr>
<td>FDST 308</td>
<td>Food Plant Sanitation</td>
<td></td>
</tr>
<tr>
<td>FDST 365</td>
<td>Muscle Foods Technology</td>
<td></td>
</tr>
<tr>
<td>HN&amp;F 348</td>
<td>Science of Food Preparation</td>
<td></td>
</tr>
<tr>
<td>HN&amp;F 512</td>
<td>Maternal and Child Nutrition</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours: 18
HORTICULTURE
MINOR CODE - U062
The minor in Horticulture is designed to provide students educational opportunities in the area of ornamental horticulture as it relates to current urban environments. Emphasis is given to learning about the establishment and management of herbaceous and woody plants used in commercial and home settings. The program would complement the curricula of students interested in careers in various aspects of management and care of turf, parks, and recreational areas, and in landscaping planning. A grade of C or higher must be earned in all minor courses.

A minimum GPA of 2.0 is required in all minor courses

Minor Requirements
PLSC 206 Principles of Plant Science 4
HORT 220 General Horticulture 3
Select three of the following 9
  HORT 330 Plant Propagation
  HORT 441 Garden Center Management
  HORT 444 Handling and Storage of Horticultural Crops
  HORT 445 Greenhouse Management

Total Hours 16

NUTRITION AND FOOD STUDIES
MINOR CODE - U143
A grade of C- or higher is required all minor coursework.

Required Courses:
HN&F 126 Society and Food 3
HN&F 171 Introduction to Human Nutrition 3

Select one of the following: 3
HN&F 200 Nutrition/Activity/Health
HN&F 271 Fundamentals of Nutrition

Select three of the following: 9
AGBI 410 Introductory Biochemistry
HN&F 350 Cross-Cultural Cuisine
HN&F 353 Food Service Systems Management
HN&F 460 Advanced Nutrition
HN&F 472 Community and Public Health Nutrition
HN&F 491 Professional Field Experience

Total Hours 18

* Students may not combine the Nutrition & Food Studies minor with the Food Science & Technology minor, Foodservice Production Minor, or Bachelor of Science in Human Nutrition & Foods.

PEST MANAGEMENT
MINOR CODE - U059
This minor is designed to introduce students to insects, plant pathogens, and weeds as pests that attack or compete with agricultural crops, ornamentals, and forest trees. Emphasis will be placed on environmentally sound management systems based on cultural, biological, and chemical strategies. This program complements current degrees and strengthens the background of students in horticulture, crops agronomy, environmental protection and other majors in biological sciences. A minimum GPA of 2.0 is required in all minor courses.

A grade of C or higher must be earned in all minor courses

Minor Requirements
Select one of the following: 4
ENTO 412 Pest Management
ENVP 412 Pest Management
PPTH 401 General Plant Pathology

Select at least three of the following: 7
SOIL SCIENCE
MINOR CODE - U060

This minor is designed to introduce students to the relationships of soils to environmental protection and agricultural production. It serves as a means to broaden and strengthen the backgrounds of students majoring in non-soils curricula within the Davis College as well as students majoring in biological, earth science, and environmental curricula in other WVU colleges.

A grade of C or higher must be earned in all minor courses

Minor Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRN 202</td>
<td>Principles of Soil Science</td>
<td>3</td>
</tr>
<tr>
<td>AGRN 203</td>
<td>Principles of Soil Science Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AGRN 425</td>
<td>Environmental Soil Management</td>
<td></td>
</tr>
<tr>
<td>ENVP 425</td>
<td>Environmental Soil Management</td>
<td></td>
</tr>
<tr>
<td>Select at least three of the following:</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>AGRN 125</td>
<td>Soil Judging</td>
<td></td>
</tr>
<tr>
<td>AGRN 410</td>
<td>Soil Fertility</td>
<td></td>
</tr>
<tr>
<td>AGRN 415</td>
<td>Soil Survey and Land Use</td>
<td></td>
</tr>
<tr>
<td>AGRN 417</td>
<td>Soil Genesis and Classification</td>
<td></td>
</tr>
<tr>
<td>AGRN 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 420</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>ENVP 420</td>
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<tr>
<td>AGRN 430</td>
<td>Soil Physics</td>
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</tr>
<tr>
<td>AGRN 455</td>
<td>Reclamation of Disturbed Soils</td>
<td></td>
</tr>
<tr>
<td>ENVP 455</td>
<td>Reclamation of Disturbed Soils</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours: 15

* Courses with the same title are equivalent to each other.

* No more than four hours may be taken as special topics.