Division of Plant and Soil Sciences

Students in the Division of Plant and Soil Sciences may choose from agroecology, agronomy, (including a turf emphasis), applied and environmental microbiology, horticulture, environmental protection, or soil science majors. Graduates from these curricula are employed in commercial industries involved with the production and distribution of food and fiber crops; fertilizers and pesticides; seeds and plants; nursery, floral and turf products. Graduates also gain positions as estate and farm managers, city and county planning technicians, park and golf course superintendents, and in land reclamation and environmental protection; state and federal government and private consulting positions are available as well. Graduates who wish to further their education may acquire the necessary backgrounds to enter professional or graduate programs in such fields as agricultural biochemistry, crop science, entomology, genetics, horticulture, microbiology and mycology, plant pathology, plant physiology, and soil science.

Faculty

Director
• Barton S. Baker - Ph.D. (WVU)
  Professor, Agronomy, Forage Crops

Professors
• Alan R. Biggs - Ph.D. (Pennsylvania State University)
  Plant Pathology, Tree Fruits
• Gary K. Bissonnette - Ph.D. (Montana State University)
  Applied and Environmental Microbiology, Aquatic Microbiology
• William L. MacDonald - Ph.D. (Iowa State University)
  Plant Pathology, Forest and Shade Tree Diseases
• Louis M. McDonald - Ph.D. (University of Kentucky)
  Soil Science, Soil Chemistry
• 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
• Alan J. Sexstone - Ph.D. (Michigan State University)
  Applied and Environmental Microbiology, Soil Microbiology
• Jeffrey Skousen - Ph.D. (Texas A&M University)
  Soil Science, Land Reclamation, Soil and Water Conservation, Watershed Restoration

Associate Professors
• James B. Kotcon - Ph.D. (University of Wisconsin)
  Plant Pathology, Agroecology, Nematology, Organic Farming Practices,
• Yong-Lak Park - Ph.D. (Iowa State University)
• Eugenia M. Pena-Yewtukiw - Ph.D. (University of Kentucky)
  Soil Science
• James A. Thompson - Ph.D. (University of Minnesota)
  Soil Science, Pedology and Land Use
• Sven Verlinden - Ph.D. (Purdue University)
  Horticulture, Post Harvest Physiology, Molecular Biology

Assistant Professors
• Vagner A. Benedito - Ph.D. (Wageningen University, The Netherlands)
  Genetics and Developmental Biology, Plant Genomics, Functional Genetics and Plant Physiology
• Thomas C. Griggs - Ph.D. (Texas Tech University)
  Agronomy, Field and Forage Crops
• Nicole Waterland - Ph.D. (Ohio State University)
  Horticulture, Flower Senescence

Faculty Emeriti
• James W. Amrine, Jr.
• Robert E. Anderson
• John A. Balasko
• John F. Baniecki
• Bradford C. Bearce
• James L. Brooks
• William B. Bryan
• Linda Butler
• Mannon E. Gallegly, Jr.
• Henry W. Hogmire
• L. Morris Ingle
• Robert F. Keefer
• Joginder Nath
• John C. Sencindiver
• Rabindar N. Singh
• Charles B. Sperow, Jr.
• William Van Eck
• Robert J. Young
• Richard K. Zimmerman

Adjunct Faculty
• Michael Glenn
  Soil Science
• Lee Kass - Ph.D. (Cornell University)
  Plant and Soil Sciences, History of Genetics
• Stephen S. Miller
  Horticulture
• Tong-Man Ong
  Genetics
• Thomas van der Zwet
  Plant Pathology
• Paul F. Ziemkiewicz
  Land Reclamation

Aboriculture Minor

Minor Code- U073

The minor in arboriculture is designed to provide students educational opportunities in the area of ornamental horticulture as it relates to current urban environments. Emphasis is given to the establishment and management of herbaceous and woody plants used in commercial, recreational, and home settings. The minor requires a minimum of twenty-four hours in forestry and horticulture related courses with a grade of C or higher in each course. A minimum GPA of 2.0 is required in all minor courses.

<table>
<thead>
<tr>
<th>Minor Requirements</th>
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</thead>
<tbody>
<tr>
<td>AGRN 410 Soil Fertility</td>
<td>3</td>
</tr>
<tr>
<td>FOR 205 Dendrology</td>
<td>3</td>
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<tr>
<td>Select one of the following:</td>
<td>3</td>
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<tr>
<td>HORT 260 Woody Plant Materials</td>
<td></td>
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<tr>
<td>LARC 260 Ornamental Woody Plant/Groundcover</td>
<td></td>
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<tr>
<td>Select one of the following:</td>
<td>9</td>
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<tr>
<td>ENTO 470 Forest Pest Management</td>
<td></td>
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<tr>
<td>PPTH 470 Forest Pest Management</td>
<td></td>
</tr>
<tr>
<td>ENTO 404 Principles of Entomology &amp; PPTH 401 and General Plant Pathology</td>
<td></td>
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<tr>
<td>FMAN 315 Survey of Arboriculture</td>
<td></td>
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<tr>
<td>ENTO 471 Urban Tree and Shrub Health</td>
<td></td>
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</tbody>
</table>
PPTH 471 Urban Tree and Shrub Health
FMAN 491 Professional Field Experience *
PLSC 491 Professional Field Experience *

Select two of the following electives: 6
AGRN 315 Turfgrass Management
FMAN 440 Forestry Consulting
HORT 262 Herbaceous Plant Materials
HORT 441 Garden Center Management

Total Hours 24

* Must be related to an arboriculture topic and must be approved in advance by the director of the Division of Plant and Soil Sciences or the director of the Division of Forestry and Natural Resources.

Applied and Environmental Microbiology Minor

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. Total number of required hours: 15 hours with a minimum letter grade of C in each course and a cumulative GPA of at least 2.5.

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</th>
<th>Title</th>
<th>Hours</th>
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</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>
<tr>
<td>Minimum of seven hours selected from the following:</td>
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<tr>
<td>AEM 401</td>
<td>Environmental Microbiology</td>
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<tr>
<td>AEM 408</td>
<td>Applied Water Microbiology</td>
<td></td>
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<tr>
<td>AEM 420</td>
<td>Soil Microbiology</td>
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<tr>
<td>AEM 445</td>
<td>Food Microbiology</td>
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<tr>
<td>AEM 449</td>
<td>Food Microbiology Lab</td>
<td></td>
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<tr>
<td>AEM 493 Special Topics course</td>
<td></td>
<td></td>
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<tr>
<td>AEM 495</td>
<td>Independent Study</td>
<td></td>
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<tr>
<td>PPTH 409</td>
<td>Nematology</td>
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<tr>
<td>PPTH 470</td>
<td>Forest Pest Management</td>
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<tr>
<td>PPTH course - Research-Airborne Fungi</td>
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<tr>
<td>PPTH 503</td>
<td>Mycology</td>
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</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.

Environmental Protection Minor

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. The student is required to complete a minimum of 15 hours of environmental protection courses with grades of C or better in each course.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVP 155</td>
<td>Elements-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: 9
AEM 408  Applied Water Microbiology
ENVP 355  Environmental Sampling/Analysis
ENVP 401  Environmental Microbiology
AEM 401  Environmental Microbiology
ENVP 412  Pest Management
ENTO 412  Pest Management
ENVP 420  Soil Microbiology
AEM 420  Soil Microbiology
AGRN 420  Soil Microbiology
ENVP 425  Environmental Soil Management
AGRN 425  Environmental Soil Management
ENVP 451  Principles of Weed Science
AGRN 451  Principles of Weed Science
ENVP 455  Reclamation of Disturbed Soils
AGRN 455  Reclamation of Disturbed Soils

Total Hours 15

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

Horticulture Minor
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. This minor requires the completion of a minimum of 16 hours of horticulture-related courses with a grade of C or higher in each course.

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 420  Plant Propagation
HORT 441  Garden Center Management
HORT 444  Handling Sgr Hrttlr Crops
HORT 445  Greenhouse Management

Total Hours 16

Pest Management Minor
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. The proposed program would complement current degrees and strengthen the background of students in horticulture, crops agronomy, environmental protection and other majors in biological sciences. Requires completion of minimum of 15 hours of pest management-related courses with grades of C or better in each course.

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
AGRN 451  Principles of Weed Science
ENVP 451  Principles of Weed Science
ENTO 450  Insect Ecology
ENTO 470  Forest Pest Management
PPTH 470  Forest Pest Management
PPTH 470  Forest Pest Management
PLSC 453  Organic Crop Production
PPTH 409  Nematology
ENTO 493 Special Topics course **
PPTH 493 Special Topics course **

Total Hours  15

*  Courses with the same title are equivalent to each other.
**  No more than four hours may be taken as special topics.

Soil Science Minor

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. Minimum of 15 hours of soil science courses with grades of C or better in each course.

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

Minor Requirements

AGRN 202  Principles of Soil Science  3
AGRN 203  Principles of Soil Science Lab  1
Select one of the following:  3

AGRN 425  Environmental Soil Management
ENVP 425  Environmental Soil Management

Select at least three of the following: *  8

AGRN 125  Soil Judging
AGRN 410  Soil Fertility
AGRN 415  Soil Survey and Land Use
AGRN 417  Soil Genesis/Classification
AGRN 420  Soil Microbiology
AEM 420  Soil Microbiology
AGRN 420  Soil Microbiology
ENVP 420  Soil Microbiology
AGRN 430  Soil Physics
AGRN 455  Reclamation of Disturbed Soils
ENVP 455  Reclamation of Disturbed Soils

Total Hours  15

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