Division of Plant and Soil Sciences

Programs of Study

Students in the Division of Plant and Soil Sciences may choose from a major in Agroecology, Agronomy (including a turf emphasis), Applied & Environmental Microbiology, Horticulture, Environmental Protection, or Soil Science. 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, Mycology, Plant Pathology, Plant Physiology, and Soil Science.

FACULTY

DIRECTOR

• Matthew A. Jenks - Ph.D. (Purdue University)
  Professor - Horticulture

PROFESSORS

• Barton S. Baker - Ph.D. (West Virginia University)
  Agronomy, Forage Crops
• 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-Yewtuikhiw - 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. Benedeto - 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 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.

A minimum GPA of 2.0 is required in all minor courses

<table>
<thead>
<tr>
<th>Minor Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRN 410 Soil Fertility</td>
<td>3</td>
</tr>
<tr>
<td>FOR 205 Dendrology</td>
<td>3</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td>3</td>
</tr>
<tr>
<td>HORT 260 Woody Plant Materials</td>
<td></td>
</tr>
<tr>
<td>LARC 260 Ornamntl Woody Plant/Groundcover</td>
<td></td>
</tr>
<tr>
<td>Select 9 hours from the following:</td>
<td>9</td>
</tr>
<tr>
<td>ENTO 404 Principles Of Entomology &amp; PPTH 401</td>
<td></td>
</tr>
</tbody>
</table>
**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</th>
<th>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</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEM 401</td>
<td>Environmental Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 408</td>
<td>Applied Water Microbiology</td>
<td></td>
</tr>
<tr>
<td>AEM 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>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 course</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>
<td></td>
</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.

**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>Credits</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>
<tr>
<td></td>
<td>Select three of the following:</td>
<td>9</td>
</tr>
<tr>
<td>AEM 408</td>
<td>Applied Water Microbiology</td>
<td></td>
</tr>
<tr>
<td>ENVP 355</td>
<td>Environmental Sampling/Analysis</td>
<td></td>
</tr>
<tr>
<td>ENVP 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>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

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

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**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLSC 206</td>
<td>Principles of Plant Science</td>
<td>4</td>
</tr>
<tr>
<td>HORT 220</td>
<td>General Horticulture</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select three of the following</td>
<td>9</td>
</tr>
<tr>
<td>HORT 420</td>
<td>Plant Propagation</td>
<td></td>
</tr>
<tr>
<td>HORT 441</td>
<td>Garden Center Management</td>
<td></td>
</tr>
<tr>
<td>HORT 444</td>
<td>Handling Straw Hritic Crops</td>
<td></td>
</tr>
<tr>
<td>HORT 445</td>
<td>Greenhouse Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select one of the following:</td>
<td>4</td>
</tr>
</tbody>
</table>
**ENTO 412**  Pest Management  
**ENVP 412**  Pest Management  
**PPTH 401**  General Plant Pathology  

Select at least three of the following:  
*  
**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  
**PPTH 493**  Special Topics course  
**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**  
**AGRN 202**  Principles of Soil Science  
**AGRN 203**  Principles of Soil Science Lab  
Select one of the following:  
**AGRN 425**  Environmental Soil Management  
**ENVP 425**  Environmental Soil Management  
Select at least three of the following:  
*  
**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  
**ENVP 420**  Soil Microbiology  
**AGRN 430**  Soil Physics  
**AGRN 455**  Reclamation of Disturbed Soils  
**ENVP 455**  Reclamation of Disturbed Soils  

Total Hours  

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

**COURSES**  
**PLSC 105. Plants/People: Past/ Present. 3 Hours.**  
A course focused on exploring the interaction between plants and humans, and the impact plants have had, and have on human society.
PLSC 140. Sustainable Living. 3 Hours.
Explores the personal, social, economic, and environmental aspects of making sustainable choices. Sustainability principles and practices are discussed along with assessments of consumption and lifestyle decisions. Also listed as DSGN 140 and RESM 140.

PLSC 206. Principles of Plant Science. 4 Hours.
Anatomy, morphology, and physiology of higher plants. Study of growth and development of economically important plants, their culture, and products.

PLSC 293A-Z. Special Topics. 0-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

PLSC 453. Organic Crop Production. 3 Hours.
PR: PLSC 206 and AGRN 202 and AGRN 203 or consent. Principles, practices, history, philosophy, and economics of organic farming and gardening. The National Organic Rule, farm certification, crop/livestock systems and international organic production. (Students may not receive credit for both PLSC 453 and PLSC 553).

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

PLSC 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.

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

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

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

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

PLSC 497. Research. 1-6 Hours.
PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U).

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

PLSC 499A-Z. Global Service Learning. 1-3 Hours.
PR: Consent. Theory and practice of global service learning. The main objective will be to pair the experiential aspects of meaningful and sustained service in the host community with work from the student’s anchor course by offering a methodological framework for cultural immersion and community service as well as adding to the content of the anchor course.