PLANT SCIENCE MAJOR

Program Director: Gary Coleman, Ph.D.

Plant Sciences combines basic science courses with applied technical classes to prepare students for research, public sector, and industry careers. Students seeking a Plant Sciences degree must complete requirements in one of the following Areas of Concentration: Plant Biology, Turf and Golf Course Management, or Urban Forestry.

- **Plant Biology** is designed to prepare students for graduate or professional schools and/or a career in research. This area provides a strong foundation for postgraduate education and research careers in biotechnology, plant physiology and development, cell biology, molecular biology, plant genetics/genomics, conservation biology, ecology, and plant pathology.

**Management Programs:**

- **Turf and Golf Course Management** prepares students to succeed as a turfgrass professional in the golf course or sports turf industry, stressing an interdisciplinary approach to this career.
- **Urban Forestry** prepares students to manage urban trees and forests and enhance their sustainability. This program stresses tree biology, forest ecology and forest assessment and management tools and prepares students for careers with municipalities or government agencies as well as private industry such as power companies and the tree-care industry.

- A Landscape Management minor (https://academiccatalog.umd.edu/undergraduate/colleges-schools/agriculture-natural-resources/plant-sciences-landscape-architecture/landscape-management-minor/) is also available in the department.

**Program Learning Outcomes**

1. Students will develop technical and knowledge-based skills in the required areas of study.
2. Students will use technical and basic learned knowledge to collaborate, solve problems and then articulate conclusions.
3. Students shall develop effective communication skills and demonstrate the ability to present ideas with clarity to an appropriate audience.
4. Students will connect and build relationships with external groups in the appropriate fields of study.

**Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM131</td>
<td>Chemistry I - Fundamentals of General Chemistry</td>
<td>4</td>
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<tr>
<td>&amp; CHEM132</td>
<td>and General Chemistry I Laboratory</td>
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</tr>
<tr>
<td>ENGL101</td>
<td>Academic Writing</td>
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<tr>
<td>ENGL393</td>
<td>Technical Writing</td>
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<tr>
<td>ENST200</td>
<td>Fundamentals of Soil Science</td>
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<tr>
<td>MATH113</td>
<td>College Algebra and Trigonometry</td>
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<tr>
<td>or MATH115</td>
<td>Precalculus</td>
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<tr>
<td>PLSC100</td>
<td>or PLSC101</td>
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<tr>
<td>PLSC98</td>
<td>Seminar</td>
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**Select a specialization from the list below:**

- Plant Biology
- Turf and Golf Course Management
- Urban Forestry

**Total Credits:** 70-77

1 With the exception of ENGL101 and ENGL393, a grade of "C-" or better is required in the courses above.

### Specializations:

#### Plant Biology

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BSCI337</td>
<td>Biology of Insects</td>
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<tr>
<td>BSCI442</td>
<td>Plant Physiology</td>
<td>4</td>
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<tr>
<td>or PLSC400</td>
<td>Plant Physiology</td>
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<tr>
<td>CHEM231</td>
<td>Organic Chemistry I</td>
<td>4</td>
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<tr>
<td>&amp; CHEM232</td>
<td>and Organic Chemistry Laboratory I</td>
<td></td>
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<tr>
<td>CHEM241</td>
<td>Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM242</td>
<td>and Organic Chemistry Laboratory II</td>
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<tr>
<td>MATH140</td>
<td>Calculus I</td>
<td>4</td>
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<tr>
<td>or MATH120</td>
<td>Elementary Calculus I</td>
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<tr>
<td>PHYS121</td>
<td>Fundamentals of Physics I</td>
<td>4</td>
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<tr>
<td>PLSC201</td>
<td>Plant Structure and Function</td>
<td>4</td>
</tr>
<tr>
<td>PLSC202</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PLSC203</td>
<td>Plants, Genes and Biotechnology</td>
<td>3</td>
</tr>
<tr>
<td>PLSC271</td>
<td>Plant Propagation</td>
<td>3</td>
</tr>
<tr>
<td>PLSC399</td>
<td>Special Problems in Plant Science</td>
<td>1-3</td>
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<tr>
<td>PLSC420</td>
<td>Principles of Plant Pathology</td>
<td>4</td>
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**Advanced Plant Science Electives**

Select one of the following: 3-4

- PLSC403
- PLSC430 Water and Nutrient Planning for the Nursery and Greenhouse Industry
- PLSC432 Greenhouse Crop Production
- PLSC433 Technology of Fruit and Vegetable Production
- PLSC452 Environmental Horticulture
- PLSC456
- PLSC474

**Advanced Science Electives**

Select one of the following: 3-4

- BCHM261
- or BSCI461
- ENST411 Principles of Soil Fertility
- ENST417 Soil Physics and Hydrology
- ENST421 Soil Chemistry
- PHYS122 Fundamentals of Physics II

**Total Credits:** 49-53
## Turf and Golf Course Management

<table>
<thead>
<tr>
<th>Course Requirements</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BSCI170 &amp; BSCI171</td>
<td>Principles of Molecular &amp; Cellular Biology and Principles of Molecular &amp; Cellular Biology Laboratory</td>
<td>4</td>
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<tr>
<td>BSCI160 &amp; BSCI161</td>
<td>Principles of Ecology and Evolution and Principles of Ecology and Evolution Lab</td>
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<tr>
<td>BSCI337</td>
<td>Biology of Insects</td>
<td>4</td>
</tr>
<tr>
<td>COMM100 or COMM107</td>
<td>Foundations of Oral Communication or Oral Communication: Principles and Practices</td>
<td>3</td>
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<tr>
<td>ENBE237</td>
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<tr>
<td>PHYS117 or PHYS121</td>
<td>Fundamentals of Physics I</td>
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<tr>
<td>PLSC305</td>
<td>Introduction to Turf Management</td>
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<tr>
<td>PLSC389</td>
<td>Internship</td>
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<tr>
<td>PLSC400</td>
<td>Plant Physiology</td>
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<tr>
<td>PLSC401</td>
<td>Pest Management Strategies for Turfgrass</td>
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<tr>
<td>PLSC402</td>
<td>Sports Turf Management</td>
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<tr>
<td>PLSC410</td>
<td>Commercial Turf Maintenance and Production</td>
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<tr>
<td>PLSC420</td>
<td>Principles of Plant Pathology</td>
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## Urban Forestry

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<tr>
<td>AREC240</td>
<td>Introduction to Economics and the Environment</td>
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<tr>
<td>BMGT220</td>
<td>Principles of Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>BSCI337 or BSCI497</td>
<td>Biology of Insects or Insect Pests of Ornamentals and Turf</td>
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<td>Select one of the following:</td>
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<td>3</td>
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<tr>
<td>CHEM231 &amp; CHEM232</td>
<td>Organic Chemistry I and Organic Chemistry Laboratory I</td>
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<tr>
<td>ENST411</td>
<td>Principles of Soil Fertility</td>
<td>3</td>
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<tr>
<td>LARC160</td>
<td>Introduction to Landscape Architecture and Environmental Design</td>
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<td>PLSC171</td>
<td>Introduction to Urban Forestry</td>
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<td>PLSC201</td>
<td>Plant Structure and Function</td>
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<td>PLSC253</td>
<td>Woody Plants for Mid-Atlantic Landscapes I</td>
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<td>Woody Plants for Mid-Atlantic Landscape II</td>
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<td>PLSC272</td>
<td>Principles of Arboriculture</td>
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<td>PLSC389</td>
<td>Internship</td>
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<td>PLSC400</td>
<td>Plant Physiology</td>
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<td>PLSC420</td>
<td>Principles of Plant Pathology</td>
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<td>PLSC471</td>
<td>Forest Ecology</td>
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<td>PLSC472</td>
<td>Capstone-Urban Forest Project Management</td>
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## Suggested General Education Courses and Electives for Urban Forestry

<table>
<thead>
<tr>
<th>Course Requirements</th>
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<tbody>
<tr>
<td>BIOM301</td>
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<td>BSCI460</td>
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<td>CHEM241</td>
<td>Organic Chemistry II</td>
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<tr>
<td>&amp; CHEM242</td>
<td>and Organic Chemistry Laboratory I</td>
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<tr>
<td>CHEM271</td>
<td>General Chemistry and Energetics</td>
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<tr>
<td>&amp; CHEM272</td>
<td>and General Bioanalytical Chemistry Laboratory</td>
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<td>COMM107</td>
<td>Oral Communication: Principles and Practices</td>
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<td>ENST415</td>
<td>Renewable Energy</td>
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<td>ENST444</td>
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<td>GEOG201</td>
<td>Geography of Environmental Systems</td>
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<td>GVPT170</td>
<td>American Government</td>
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<td>GVPT273</td>
<td>Introduction to Environmental Politics</td>
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<td>LARC450</td>
<td>Environmental Resources</td>
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<td>PHYS121 &amp; PHYS122</td>
<td>Fundamentals of Physics I and Fundamentals of Physics II</td>
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<tr>
<td>PHYS141 &amp; PHYS142</td>
<td>Principles of Physics and Principles of Physics</td>
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<tr>
<td>PLSC200</td>
<td>Plants, Genes and Biotechnology</td>
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<td>PLSC203</td>
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<td>PLSC320</td>
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<td>PLSC473</td>
<td>Woody Plant Physiology</td>
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<td>PLSC475</td>
<td>Applied Forestry Practices</td>
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<tr>
<td>SOCY100</td>
<td>Introduction to Sociology</td>
<td>3</td>
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<tr>
<td>SOCY105</td>
<td>Introduction to Contemporary Social Problems</td>
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<td>SOCY305</td>
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<td>SPAN223</td>
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<td>URSP100</td>
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<td>URSP320</td>
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<tr>
<td>URSP372</td>
<td>Diversity and the City</td>
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</table>

1 Suggested electives for students planning on graduate study in Forestry

## Four Year Plan

Click here (http://www.gened.umd.edu/for-students/forstudents-4yearplans-agnr.html) for roadmaps for four-year plans in the College of Agricultural and Natural Resources.

Additional information on developing a four-year academic plan can be found on the following pages:

- 4yearplans.umd.edu (http://4yearplans.umd.edu)
- the Student Academic Success-Degree Completion Policy (https://academiccatalog.umd.edu/undergraduate/registration-academic-requirements-regulations/academic-advising/) section of this catalog