# PLANT SCIENCES

## What can I do with this major?

### AREAS

**BIOENERGY**
- Plant Breeding
- Crop Science
- Feedstocks
- Production and Processing
- Regulation
- Consulting
- Biofuel Transportation, Distribution, Sales

**BIOTECHNOLOGY**
- Plant Tissue Culture
- Plant Breeding
- Genetic Engineering
- Textiles (Enzymes, Novel Fibers, Medical)
- Bioinformatics

### EMPLOYERS

**BIOENERGY**
- Biofuel companies
- Colleges and universities
- Research organizations
- Feedstock supply companies
- Federal laboratories and regulatory agencies including: US Department of Agriculture, Environmental Protection Agency

**BIOTECHNOLOGY**
- Colleges and universities
- Research organizations
- Agricultural and pharmaceutical companies
- Federal laboratories and regulatory agencies including: US Food and Drug Administration, US Department of Agriculture, Environmental Protection Agency
- Plant propagation and production businesses
- Biotechnology companies

### STRATEGIES

**BIOENERGY**
- Seek experience in the bioenergy field through research with faculty, internships or part-time jobs.
- Build close relationships with faculty who can provide strong recommendations for graduate school.
- Maintain knowledge of current alternative energy and product industry trends and regulations.
- Supplement program with courses such as finance, marketing, management, etc. to increase understanding of business theory.
- Pursue a master’s or Ph.D. for increased research opportunities.

**BIOTECHNOLOGY**
- Gain practical laboratory, greenhouse or field experience in collaboration with professors and through internships.
- Join horticultural, agronomy clubs or other student professional associations to network and cultivate related academic interests.
- A master’s or doctoral degree may be necessary for advancement. Some federal and private agency and research positions require a graduate degree.
- Maintain a strong grade point average to be competitive for graduate school admission.
<table>
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<tr>
<th>AREAS</th>
<th>EMPLOYERS</th>
<th>STRATEGIES</th>
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</table>
| **HORTICULTURE SCIENCE AND PRODUCTION** | Nurseries, greenhouses, florists and other wholesale and retail companies  
  Plant Breeding  
  Vegetable, Fruit, Ornamental Crop Production  
  Greenhouse and Nursery Management  
  Sales and Marketing  
  Agribusinesses  
  Harvesting companies  
  Agrichemical companies  
  Consulting firms  
  State and federal departments of agriculture  
  Extension offices  
  High schools, colleges and universities  
  Self-employment | Seek work in areas such as crop production and greenhouse operations to build skills and experience.  
  Assist a professor with a research project.  
  Join horticultural, agronomy clubs or other student professional associations to network.  
  Seek additional training in business to advance into management positions.  
  Become a Certified Horticulturist through the American Society for Horticulture Science.  
  A master’s or doctoral degree may be necessary for some positions in private companies and government organizations.  
  Maintain a strong grade point average to be competitive for graduate school admission.  
  Research extension and teacher education programs for working with youth. |
| **LANDSCAPE DESIGN** | Landscape design companies  
  Ecological/Environmental Restoration  
  Residential/Commercial Design  
  Landscape Construction  
  Landscape Maintenance/Management  
  Specialty Installation (Irrigation systems, ponds, rockscapes, lighting)  
  Sales and Contracting  
  Garden centers  
  Parks, amusement parks and zoos  
  Golf courses  
  Sport fields  
  Cemeteries  
  Large hotels and resorts  
  Industrial sites  
  Colleges and universities  
  Local/city governments  
  State highway departments  
  Self-employment | Seek practical experience through internships or summer and part-time jobs at garden centers or with landscape contractors to learn more about the industry.  
  Develop computer aided design (CAD) and effective communication skills for conferring with clients.  
  Obtain a minor in business, agricultural economics or agricultural leadership if interested in management or self-employment.  
  Consider earning a landscape architect degree and obtain professional certification as a landscape architect. Requirements vary by state.  
  Participate in the annual Professional Landcare Network’s (PLANET) Student Career Days competition. |
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<tr>
<td>ORGANIC PRODUCTION</td>
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<tr>
<td>Crop Production</td>
<td>Organic Farms</td>
<td>Pursue experience in organic production through work at organic greenhouses, farms or agribusinesses.</td>
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<tr>
<td>Greenhouse and Nursery Management</td>
<td>Non-profit Organizations</td>
<td>Seek involvement with local farmers’ markets, community food projects and other sustainable agriculture initiatives.</td>
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<tr>
<td>Sales and Marketing</td>
<td>Agribusinesses</td>
<td>Join student chapters of professional associations to network in the industry.</td>
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<tr>
<td>Organic Certification</td>
<td>State and federal departments of agriculture</td>
<td>Become a Certified Horticulturist through the American Society for Horticulture Science.</td>
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<tr>
<td>Product Development</td>
<td>Plant propagation and production businesses</td>
<td>Research extension and teacher education programs for working with youth which vary by state.</td>
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<td></td>
<td>Agrichemical companies</td>
<td>Become familiar with certification programs for organic produce.</td>
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<td>Colleges and universities</td>
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<td></td>
<td>Self-employment</td>
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<tr>
<td></td>
<td>High-end produce buyers</td>
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<td></td>
<td>Local tourism departments</td>
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<td>PUBLIC HORTICULTURE</td>
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<tr>
<td>Education/Outreach</td>
<td>Public and botanic gardens</td>
<td>Develop excellent writing and speaking skills, as those interested in public horticulture work extensively with people. Photography skills may be advantageous for some career paths.</td>
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<tr>
<td>Urban Horticulture</td>
<td>Arboretas and conservatories</td>
<td>Join student organizations to develop leadership and communication skills.</td>
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<tr>
<td>Urban Forestry</td>
<td>Museums</td>
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<td>Horticulture Therapy</td>
<td>Radio and television stations</td>
<td>Gain related experience through internships part-time job in public gardens or parks.</td>
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<td>Plant Collections</td>
<td>Magazines, newspapers and internet sites</td>
<td>Earn Registered Horticultural Therapist licensure for plant therapy through The American Horticulture Therapy Association or become a Certified Horticulturist through the American Society for Horticultural Science.</td>
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<tr>
<td>Research</td>
<td>Zoos and aquariums</td>
<td>Obtain teacher certification for public school positions.</td>
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<td>Communications</td>
<td>Cities and parks</td>
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<tr>
<td>Management</td>
<td>State highway departments</td>
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<tr>
<td>Facilities and Maintenance</td>
<td>Cemeteries</td>
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<td>Theme parks</td>
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<td></td>
<td>Universities</td>
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<td>Extension Offices</td>
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<td>Hospitals and therapy centers</td>
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<td>Nursing homes and senior centers</td>
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<td>Freelance writer</td>
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TURFGRASS SCIENCE AND MANAGEMENT

**Areas**
- Golf Course Management
- Sport Turf Management
- Sod Production
- Residential/Commercial Lawn Installation and Management
- Irrigation Systems
- Agrichemicals
- Sales and Service
- Green Industry Consulting

**Employers**
- Golf courses
- Lawn care companies
- Colleges and universities
- Sport and athletic fields
- Local/city governments
- Parks and amusement parks
- Sod production farms
- Pest management companies
- Landscape companies
- Irrigation firms
- Self-employment

**Strategies**
- Obtain practical experience with golf courses and other turf businesses through internships or summer and part-time jobs.
- Participate in relevant campus organizations, e.g. the Turf Club or Horticulture Club.
- Develop effective communication skills, particularly for leading crews of employees. Pursue a minor in business, agricultural economics or agricultural leadership for management or self-employment.
- Gain knowledge of federal, state and local laws and regulations governing operations and management of sports fields and facilities.
- Research professional certifications in the field including Certified Golf Course Superintendent (CGCS) and Certified Sports Field Manager (CSFM).

GENERAL INFORMATION

- For entry level positions in most areas of plant sciences, a bachelor’s degree is sufficient.
- Depending upon specialty area, supplement curriculum with supporting courses: business, journalism, planning, geology, entomology, soils or biology. Take communications courses to develop oral and written skills.
- Majoring in two subject areas or pursuing a minor can increase marketability. For example, study in landscape design and business, or public horticulture and journalism, can lead to greater opportunities.
- Internship experiences with well-known organizations aid students when seeking employment.
- A graduate degree may be necessary for advancement in some fields.
- Master’s degrees allow for more opportunities in research and administration. Some community colleges will hire Master’s level teachers.
- Doctoral degrees are necessary for advanced research and administrative positions, university teaching and independent research.
- Join professional associations and community organizations to stay abreast of current issues in the field and to develop networking contacts.
- Secure strong relationships and personal recommendations from professors for graduate school admission.
- Consider completing a post-doctoral experience after graduate school.
- Meet with career center staff that can assist with government job searches.