

**Department of
PLANT SCIENCES**

<http://plantsciences.utk.edu/>

G. Neil Rhodes, *Head*

Professors

Albrecht, M.L. (Associate Dean), PhDOhio State
Allen, F.L., PhDMinnesota
Augé, R.M., PhD Washington State
Bates, G.E., PhD.....Georgia
Denton, H.P., PhD.....North Carolina State
Deyton, D.E., PhDNorth Carolina State
Hayes, R.M., PhD.....Illinois
Lockwood, D.W., PhD.....Purdue
McDaniel, G.L., PhDIowa State
Miller, R.D., PhDKentucky
Mueller, T.C., PhDGeorgia
Rhodes, G.N., PhD.....North Carolina State
Samples, T.J., PhDOklahoma State
Sams, C.E. (Austin Distinguished Professor), PhDMichigan State
Stewart, C.N. (Racheff Chair), PhD.....Virginia Tech
West, D.R., PhD.....Nebraska

Associate Professors

Cheng, Z.M., PhD.....Cornell
Gwathmay, C.O., PhDCalifornia (Riverside)
Hamilton, S.L., EdDTennessee
Klingeman, W.E., PhD.....Georgia
Menendez, G.L., MS.....Tennessee
Pantalone, V.R., PhDNorth Carolina State
Robinson, D.K., PhDNorth Carolina State
Rogers, S.M., MLA.....Georgia
Stewart, C.E., MLAGeorgia

Assistant Professors

Bailey, W.A., PhDVirginia Tech
Chen, F., PhD.....California (Davis)
Craig, C.C., PhDLouisiana State
Garton, S., PhDMinnesota
Kopsell, D.A., PhDGeorgia
McElroy, J.S., PhDNorth Carolina State
SoroChan, J.C., PhD.....Michigan State
Steckel, L.E., PhDIllinois
Straw, R.A., PhDTennessee
Thompson, M.A., PhDTennessee
Zale, J.M., PhDSaskatchewan

Instructor

Flanagan, P.C., MSTennessee

Adjunct Faculty

Airhart, D.L., PhD.....Georgia
Ott, R.J., MBATennessee
Pepin, T. MS.....Tennessee

Rivero, R. E., ED.D.....Tennessee

Emeriti Faculty

Coffey, D.L., PhDPurdue

Reich, V. H., PhD.....Iowa State

Advisors

Hamilton, McDaniel, Menendez, Rogers, Sorochan, C. Stewart

Academic programs in the Department of Plant Sciences span the art, science and technology of plant use in society. Students receive preparation for careers in horticulture and agronomy within four concentrations: (1) landscape design and construction; (2) plant science, biotechnology and horticulture; (3) public horticulture; and (4) turfgrass science and management. With the increasing emphasis placed on plants in urban areas, we offer particularly extensive training in landscape horticulture: planning, implementation and management for landscapes, turf and gardens. We also offer comprehensive programs in plant biotechnology and plant production.

Upon entering our department, each student is assigned a faculty advisor to guide them in selection of career specialties and elective courses. The curriculum builds upon the university-wide general education requirements with critical courses in botany, soils, and business, and adds a set of required departmental courses specific to each concentration. Students are able to customize their program by selecting electives. Students in all concentrations are trained to work knowledgeably in general plant culture. Students are encouraged to earn a minor degree in a supportive field to further enhance their academic training and professional competitiveness. While firmly grounding students in the knowledge and skills of the plant sciences and arts, our curricula emphasize critical thinking and creative activity. Our students also gain the theoretical education necessary for continuing on for advanced degrees in plant related fields.

Internship or undergraduate research participation is required for each concentration. Full-time summer internships are available at selected local, regional, and national companies or institutions. Part-time summer or semester internships and research experiences are available from the Department of Plant Sciences, other university departments and laboratories, and local commercial firms.

Our graduates find employment in a wide variety of professions. In working for others or within their own business, graduates of the landscape concentration design residential landscapes, select proper woody and herbaceous plant materials for specific sites, restore native landscapes, specify specialty components dealing with landscape construction (irrigation, lighting, water features), prepare materials lists and cost estimates for landscape installations, and manage landscape

crews. Turf majors have career opportunities in the industries involved with lawn management, athletic fields, golf courses, sales, and park and grounds maintenance. The public horticulture concentration prepares students for careers in botanic gardens, zoos and national parks; professional writing, television and radio; urban forestry; teaching; and municipal and university horticulture. Graduates in plant science, biotechnology and horticulture find employment in education, consulting, sales, agricultural extension, and research and development.

Enrollment Management Plan

Students should declare a concentration early in their undergraduate program and strictly follow the curriculum described for the concentration. Students who transfer into plant sciences from other colleges or programs must meet the same requirements as those entering the department as freshmen.

All students in the Department of Plant Sciences must meet certain requirements before registering for upper-division plant sciences classes. Admittance to each of the departmental concentrations will be determined by completion of core courses for a particular concentration with a C or better, completion of a minimum of 62 credit hours toward the degree, and a minimum cumulative grade point average (GPA) of 2.25.

To be considered for progression into the upper division of the program, majors must submit an application of intent for progression prior to registering for upper-division courses. Faculty members will review student's transcripts for completion of all core courses and cumulative GPA. Students must have completed all but three core courses for their concentration by the end of the semester in which they apply for acceptance into upper-division courses. They must complete all core courses before entering upper-division courses. They will also need the prerequisites to these individual upper-division courses.

Once admitted for progression to upper-division programs, students must maintain a cumulative GPA of 2.25. Junior and senior majors in plant sciences whose cumulative GPA falls below the minimum of 2.25 will not be allowed to register in departmental upper-division classes until they again meet the required GPA for progression.

Core Courses

The core courses for the plant sciences concentrations, required for entry into upper-division courses are

Landscape Design Concentration: two courses in English composition (English 101 and 102 or equivalent); Mathematics 113 or 123 or 151 or equivalent; Computer Sciences 100 or 102

or equivalent; general chemistry (Chemistry 100 or 120 or equivalent); two courses in general botany (Biology 111 and 112 or equivalent); soil science (Environmental and Soil Sciences 210 or equivalent); Basic Landscape Plants (Plant Sciences 220 or equivalent); Fundamentals of Landscape Design (Plant Sciences 280 or equivalent).

Plant Science, Biotechnology and Horticulture

Concentration: two courses in English composition (English 101 and 102 or equivalent); two courses in mathematics (Mathematics 123 and 125 or Mathematics 151 and 152 or equivalent); two courses in general chemistry (Chemistry 100 and 110 or 120 and 130 or equivalent); two courses in general botany (Biology 111 and 112 or equivalent); soil science (Environmental and Soil Sciences 210 or equivalent); Computer Applications to Problem Solving (Agriculture and Natural Resources 290 or equivalent).

Public Horticulture Concentration: two courses in English composition (English 101 and 102 or equivalent); Mathematics 113 or 123 or 151 or equivalent; Computer Sciences 100 or 102 or equivalent; general chemistry (Chemistry 100 or 120 or equivalent); two courses in general botany (Biology 111 and 112 or equivalent); soil science (Environmental and Soil Sciences 210 or equivalent); a plant materials course (Plant Sciences 220 or 230 or 290 or equivalent); Public Horticulture (Plant Sciences 226 or equivalent).

Turfgrass Science and Management Concentration: two courses in English composition (English 101 and 102 or equivalent); two courses in mathematics (Mathematics 123 and 125 or equivalent); two courses in general chemistry (Chemistry 100 and 110 or 120 and 130 or equivalent); two courses in general botany (Biology 111 and 112 or equivalent); soil science (Environmental and Soil Sciences 210 or equivalent); Turfgrass Management (Plant Sciences 240 or equivalent); Computer Applications to Problem Solving (Agriculture and Natural Resources 290 or equivalent).

PLANT SCIENCES MAJOR

Landscape Design and Construction Concentration

Landscape designers create aesthetic concepts and practical designs for improved outdoor living. Students study fundamental and advanced landscape design, landscape design graphics, computer aided landscape design, surveying, art, socio-economic impact of plants, field botany, professional practices, contracting, basic woody plant identification, landscape construction

and maintenance methods. The development of comprehensive design projects helps students prepare for careers in landscape design or advanced studies in landscape architecture. Graduates in design and construction are prepared for employment in several professions in ornamental horticulture. Careful selection of departmental courses and other electives in consultation with the assigned academic advisor will allow graduates to pursue suitable career paths.

**Requirements for the Bachelor of Science in Plant Sciences •
Plant Sciences Major • Landscape Design and Construction Concentration**

Freshman Hours Credit

Biology 111*, 112*.....	8
Chemistry 100* or 120*	4
Computer Science 100* or 102*	3
English 101*, 102*	6
Mathematics 113*, 123* or 151*	3
Plant Sciences 120	2
1Social Sciences Elective*	3

Sophomore

1Arts and Humanities Elective*.....	3
Communication Studies 210* or 240*	3
Economics 201*	4
Environmental and Soil Sciences 210	4
Plant Sciences 210, 220, 280	8
Technical Electives	6
Unrestricted Elective.....	3

Junior

1Cultures and Civilizations Elective*	3
Plant Sciences 350, 380	6
Select from Plant Sciences 226, 230, 240, 330, 360, 370.....	5-6
Plant Sciences 290 or 291	3
Technical Electives	6
Unrestricted Electives.....	6-7

Junior Year Summer

Plant Sciences 492	3
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Senior

Agricultural Economics 310	1
1Arts and Humanities Elective*.....	3
1Cultures and Civilizations Elective*	3
Plant Sciences 421, 460, 480, 485	11
Select from Plant Sciences 410, 427, 429, 430, 434, 441, 446, 450, 493.....	5-6
Technical Electives	7-8
Total	124

*Meets University General Education Requirement.

1Choose from the University General Education lists. Selection should be made in conference with academic advisor.

Students must meet the General Education requirement for Communicating through

Writing by selecting a course with a (WC) designation. This course may be in the major or from another discipline.

Plant Science, Biotechnology and Horticulture Concentration

The plant science, biotechnology and horticulture concentration is designed for students desiring to pursue professions in biotechnology or commercial production of agronomic and horticultural crops. This concentration also prepares students for graduate studies in plant sciences. Careful selection of departmental courses and other electives in consultation with the assigned academic advisor will prepare graduates for the career of their choice. The concentration consists of two tracks of study: (1) emphasis in production horticulture and (2) emphasis in science and biotechnology.

Requirements for the Bachelor of Science in Plant Sciences • Plant Sciences Major • Plant Science, Biotechnology and Horticulture Concentration

Freshman Hours Credit

Biology 111*, 112*	8
Chemistry 100 and 110*, or 120* and 130*	8
English 101*, 102*	6
Mathematics 151*, 152*	6
Plant Sciences 120	2

Sophomore

Agriculture and Natural Resources 290	3
Agricultural Economics 212	3
1Arts and Humanities Elective*	3
Communication Studies 210* or 240*	3
1Cultures and Civilizations Elective*	3
Environmental and Soil Sciences 210	4
Economics 201*	4
Plant Sciences 210	2
1Social Sciences Elective*	3
Technical Electives	4

Junior

Agricultural Economics 310	1
Biochemistry and Cellular and Molecular Biology 321 or Forestry 414	4
1Cultures and Civilizations Elective*	3
English 360* for Production Horticulture Track; or Chemistry 350 for Science and Biotechnology Track	3
Environmental and Soil Sciences 334	3
Plant Sciences 240, 241, 330, 335, 370, 410, 430, 434, 435	8
Plant Sciences 457-458 or 457-459; Entomology and Plant Pathology 313 or 321 or 410	6
Technical Electives	3

Senior

1Arts and Humanities Elective*	3
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Plant Sciences 240, 241, 335, 370, 410, 430, 434, or 435 for Production Horticulture Track; or Plant Sciences 353, 454 for Science and Biotechnology Track	6
Plant Sciences 470	3
Plant Sciences 492 or 497.....	3
Plant Sciences 331 and Technical Electives for Production Horticulture Track; or Plant Sciences 461 for Science and Biotechnology Track	3
Technical Electives	10
Unrestricted Electives	3
Total 124	

*Meets University General Education Requirement.

1

Choose from the University General Education lists. Selection should be made in conference with academic advisor.

Students must meet the General Education requirement for Communicating through Writing by selecting a course with a (WC) designation. This course may be in the major or from another discipline.

Public Horticulture Concentration

The public horticulture concentration is intended for students interested in professional careers that promote horticulture and emphasize people, their education and their enjoyment of plants. Such careers include director of a botanical garden or park; city or urban horticulturist; extension agent, teacher, educational director, or program coordinator; professional garden writer/editor or publication manager; horticulture therapist; public garden curator; and plant collections manager. Technical electives allow students to concentrate in specialties of their interest while encouraging the development of strong communication skills. Students are encouraged to earn a minor degree in a supportive field such as education, communications or journalism, or earn a Non-Profit Management Certificate.

Requirements for the Bachelor of Science in Plant Sciences • Plant Sciences Major • Public Horticulture Concentration

Freshman Hours Credit

Biology 111*, 112*.....	8
Chemistry 100* or 120*	4
Computer Science 100* or 102*	3
English 101*, 102*	6
Environmental and Soil Sciences 210	4
Mathematics 113*, 123*, or 151*	3
Plant Sciences 120	2

Sophomore

1 Arts and Humanities Electives*	6
Communication Studies 240*	3

1Cultures and Civilizations Elective*	6
Plant Sciences 220, 226, 280, 290	11
1Social Sciences Elective*	3
Technical Electives	3

Junior

Economics 201*	4
Plant Sciences 230, 240, 328, 329, 330, 348, 370, 410, 434, 436	21
Technical Electives	6

Junior Year Summer

Plant Sciences 492	3
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Senior

Agricultural Economics 310	1
Entomology and Plant Pathology 313 or 321.....	3
Entomology and Plant Pathology 410	3
Plant Sciences 427, 430, 437, 446, 470.....	12
Plant Sciences 448 or 494	3
Technical Electives	3
Plant Sciences 421 or Unrestricted Electives	3
Total	124

*Meets University General Education Requirement.

1Choose from the University General Education lists. Selection should be made in conference with academic advisor.

Students must meet the General Education requirement for Communicating through Writing by selecting a course with a (WC) designation. This course may be in the major or from another discipline.

Turfgrass Science and Management Concentration

The turfgrass science and management concentration is designed for the student desiring to pursue professions that include growing and managing turfgrasses used for golf courses, parks, athletic fields, sports complexes, and residential and commercial lawns. This concentration also prepares students for graduate studies in turfgrass science. Students are encouraged to earn a minor degree in a supportive field such as agricultural economics or environmental and soil sciences. Careful selection of departmental courses and other electives in consultation with the assigned academic advisor will prepare graduates for the career of their choice.

Requirements for the Bachelor of Science in Plant Sciences • Plant Sciences Major • Turfgrass Science and Management Concentration

Freshman Hours Credit

1Arts and Humanities Elective*.....	3
Chemistry 100* and 110*, or 120* and 130*.....	8
1Cultures and Civilizations Elective*	3
English 101*, 102*	6
Mathematics 123* and 125*, or 151* and 152*	6
Plant Sciences 120	2

1 Social Sciences Elective*	3
Sophomore	
Agriculture and Natural Resources 290.....	3
Biology 111*, 112*.....	8
Communication Studies 210* or 240*	3
Economics 201*.....	4
Environmental and Soil Sciences 210	4
Plant Sciences 240, 241	3
Plant Sciences 220 or 280.....	3
Unrestricted Electives	3
Junior	
Agricultural Economics 212	3
1 Cultures and Civilizations Elective*	3
Plant Sciences 290, 330, 331, 341, 343, 348, 457-458, 442	16
Plant Sciences 350 or 370.....	3
Unrestricted Electives	3
Junior Year Summer	
Plant Sciences 492	3
Senior	
Agricultural Economics 310	1
1 Arts and Humanities Elective*.....	3
Biosystems Engineering Technology 452, 462	6
Biochemistry and Cellular and Molecular Biology 321.....	4
Entomology and Plant Pathology 313	3
Environmental and Soil Sciences 334	3
Plant Sciences 353 or 421 or 454	3
Plant Sciences 435, 441, 470	7
Unrestricted Elective.....	1
Total	124

*Meets University General Education Requirement.

1 Choose from the University General Education lists. Selection should be made in conference with academic advisor.

Students must meet the University General Education requirement Communicating through Writing by selecting a course with a (WC) designation. This course may be in the major or from another discipline.

Minor in Plant Sciences

Required Courses Hours Credit

A minimum of 18 semester hours

of upper-division plant sciences courses18

Total 18

ADDITIONAL ELECTIVES LIST FOR PLANT SCIENCES MAJOR

LANDSCAPE DESIGN AND CONSTRUCTION CONCENTRATION

Technical Electives

Architecture 111, 180, 211, 232, 421; Art 101, 103, 191, 295; Art Drawing 211, 212; Art Media Arts 231, 331; Art Painting 213, 214, 215, 216; Biochemistry and Cellular and Molecular Biology 306; Biology 250;

Biosystems Engineering Technology 202, 212; Ecology and Evolutionary Biology 304, 330, 433; Communication Studies 230, 310; English 360*; Entomology and Plant Pathology 201, 306, 313, 321, 410; Environmental and Soil Science 324, 334; Forestry 321; Forestry Wildlife and Fisheries 211, 250, 311; Geography 365, 366; Geology 201, 202, 203; Philosophy 243*, 244, 245*; Political Science 402, 403, 446; Spanish 211, 212.

PLANT SCIENCES, BIOTECHNOLOGY AND HORTICULTURE CONCENTRATION

Technical Electives

Agricultural Economics 330, 342, 350, 412; Accounting 200; Biochemistry and Cellular and Molecular Biology 310, 330, 401, 402, 404; Biology 240; Biosystems Engineering Technology 326; Business Administration 201; Chemistry 350; Ecology and Evolutionary Biology 304, 410, 414, 433; English 360*; Entomology and Plant Pathology 451; Environmental and Soil Sciences 355, 442; Finance 301; Management 300; Marketing 300; Microbiology 210.

PUBLIC HORTICULTURE CONCENTRATION

Technical Electives

Accounting 415; Art 481; Agriculture and Extension Education 346; Communication Studies 440; Ecology and Evolutionary Biology 309, 330, 433; Educational Administration and Policy Studies 200; Educational Psychology 210; English 360*; Human Resource Development 440, 562; Philosophy 245*; Public Relations 270, 470; Recreation and Leisure Studies 201, 430.

Courses marked with an * meet University General Education requirements.