



DISCOVER

University of Kentucky • College of Agriculture

Plant and Soil Science

UK

Bachelor of Science in Plant and Soil Science
Effective: July 1, 1994

The Plant and Soil Science degree program provides you with the knowledge and skills you need for a career in the production and management of plants and soils for food, fiber, forage, oil, recreation, landscaping, and the enhancement of the human environment.

Graduates have the technical and scientific skills as well as the communication, computational, leadership, and interpersonal capabilities necessary to function effectively as professionals. Careers are as diverse as they are challenging. Each Area of Emphasis prepares you for specific professional opportunities.

Areas of Emphasis

Students pursuing a Plant and Soil Science degree may choose from the following areas:

- Crops and Livestock
- Crops and Soils
- Horticultural Science
- Horticulture Enterprise Management
- Soil and Water Environmental Science
- Turfgrass Science.

Crops and Livestock— Emphasizes the interactions between the crop and livestock industries. Graduates can find their niche in the areas of farm ownership/management, Agricultural supply retail representation/ management, and in consulting or Extension positions.

Crops and Soils— Emphasizes the interactions between plants and soils. Graduates develop a broad range of diagnostic skills making them ideally suited for

positions in the emerging crop consulting industry and a wide range of PLSi businesses as well as in the area of crop farm management.

Horticulture Enterprise Management—Emphasizes a diverse horticultural production background as well as proficiency in business skills. Careers include the management of production operations for nurseries, greenhouses or fruit/vegetable farms; installation and maintenance of exterior and interior ornamental plants; marketing horticultural supplies and products; management of arboreta, botanical gardens, and conservatories; and service as horticultural Extension agents or in technical positions at university and professional laboratories.

Horticultural Science— Emphasizes an in-depth study of the basic sciences in conjunction with a broad knowledge of horticulture. Careers include research positions with universities, conservatories, the USDA, industry, and state and federal regulatory services. Graduates are well prepared to pursue the advanced degrees often necessary for these positions.

Soil and Water Environmental Science— Emphasizes an in-depth study of the basic sciences and concentrates on the function of soil and water ecosystems. Graduates are prepared for careers in federal and state agencies charged with the management and protection of the environment, such as the U.S. Environmental Protection Agency, Natural Resource Conservation Service or the Kentucky Division of Water. Many other opportunities exist in the developing area of environmental consulting.

Turfgrass Science— Emphasizes an in-depth study of the basic sciences with a focus on pest management and irrigation principles. Graduates are competitive for careers in the expanding employment area of golf course development and maintenance, especially when coupled with a business minor. Additional opportunities exist in grounds and sports field maintenance, product sales, sod production, and commercial lawn care.

Graduation Requirements

Students must complete a minimum of 128 semester hours with at least 48 hours from courses at the 300 level or above. In addition to the University Studies and College requirements, students must select an Area of Emphasis with the assistance of an advisor and fulfill the area's program requirements.

Core Program Requirements—

University Studies Program

(USP)

Requirements: 36-48 hours

Courses specifically listed in the University Studies outline also satisfy college, pre-major, or major requirements.

I. Basic Skills

A. Mathematics

Completed by one of the following

1. A score ≥ 26 on mathematics section of ACT **or**
2. A bypass examination **or**
3. MA 109 College Algebra **or**
4. Any calculus course (satisfies section II-A requirement)

B. Foreign Language

Completed by one of the following

1. Two years of the same foreign language in high school **or**
2. Two courses from an approved USP sequence.

II. Inference and Communication Skills

A. Inference

Completed by any calculus course

B. University Writing

Completed by one of the following

1. ENG 101/102 Writing I and II **or**
2. Students who score > 29 on English section of ACT and who pass an English proficiency examination may satisfy the University Writing requirement by passing ENG 105 Writing: An Accelerated Course.

C. Communication

Students who begin their first academic year in the College of Agriculture will satisfy this requirement with GEN 100 and GEN 200; these courses also satisfy General requirements of the College of Agriculture.

Other students will take 3 hours from the following list:

- COM 181—Basic Public Speaking
- COM 252—Introduction to Interpersonal Communications
- COM 281—Communication in Small Groups
- COM 287—Persuasive Speaking
- TA 225—Vocal Production for the Stage I

III. Disciplinary Requirements

A. Natural Sciences

- CHE 105— General College Chemistry I
- CHE 107— General College Chemistry II
- CHE 115— General Chemistry Laboratory

B. Social Sciences

- GEN 101— Economics of Food & Agriculture
- GEN 102— Dynamics of Rural Social Life

C. Humanities

Six hours from an approved sequence.

IV. Cross Disciplinary Requirements

- PLS 104— Plants, Soils & People: A Global Perspective
- PLS 210— The Life Processes of Plants

V. Cross-Cultural Requirement

Three hours from the approved list.

College

Requirements: 6-9 hours

A. General Requirements: 6 hours

GEN 100— Issues in Agriculture: The Development of Modern Agriculture*

GEN 200— Issues in Agriculture: Contemporary Problems in Agriculture and Natural Resources*

* Students transferring into the College of Agriculture after completing their first academic year in another UK major or at another university are required to take only GEN 200 in addition to completion of the University Studies Communication requirement.

B. Business Writing: 3 hours

- ENG 203— Writing for Business and Industry **or**
- ENG 204— Technical Writing

C. Complete a proposed plan of study for third and fourth years with the assistance of an advisor.

Major Requirements: 31 hours

GEN 100*— Issues in Agriculture: Development of Modern Agriculture	3*
GEN 200*— Issues in Agriculture: Contemporary Problems in Agriculture and Natural Resources	3*
GEN 101*— Economics of Food & Agriculture	3*
GEN 102*— Dynamics of Rural Social Life	3*
PLS 104*— Plants, Soils & People: A Global Perspective	3*
PLS 210*— The Life Processes of Plants	3*
PLS 220— Introduction to Plant Identification	3
PLS 366— Fundamentals of Soil Science	3
PLS 386— Plant Production Systems	4
PLS 490— Topics in Plant and Soil Science	3

* Required in Plant and Soil Science curriculum and also satisfy USP or College of Agriculture requirements.

Additional Major and Specialty Support requirements depend on the Area of Emphasis you select. General requirements for Major and Specialty Support are given below; specific requirements are listed under the Area of Emphasis.

Additional Major Requirements: 15-31 hours

Select 15-31 hours from Plant and Soil Science (PLS), Plant Pathology (PPA) or Agricultural Biotechnology (ABT). The total hours in the Major depends on your Area of Emphasis.

During the sophomore year each student is required to identify an Area of Emphasis and develop a Plan of Study that details the course work to be taken during the junior and senior years. The Plan of Study must be approved by the undergraduate curriculum committee in the Area of Emphasis.

Specialty Support Requirements: 21-39 hours

Select 21-39 hours from courses offered by Animal Sciences, Entomology, Veterinary Science, Natural Resource Conservation, Landscape Architecture, Agricultural Engineering, Chemistry, Geology, Geography, Physics, Biology, Mathematics, Statistics, Agricultural Economics, Accounting, Management, Marketing, and Economics. Course selection and total hours depend on your Area of Emphasis.

Free Electives: minimum 9 hours

TOTAL: 128 hours

AREA of EMPHASIS

Crops and Livestock

Additional Major Requirements: 15 hours

ABT 360— Genetics	3
PLS 404— Integrated Weed Management	4
PLS 468G— Soil Use and Management	3

Select an additional 5 credit hours from PLS, PPA, or ABT courses with advisor's approval. Students are encouraged to consider PLS 395 (Special Problems in Plant and Soil Science) or PLS 399 (Experiential Learning in Plant and Soil Science).

Specialty Support: 31 hours

Required:

CHE 236— Survey of Organic Chemistry	3
ASC 106— Agricultural Animal Science	3
ASC 120— Introductory Animal Science Laboratory	1
ASC 362— Animal Breeding	3
ASC 364— Reproductive Physiology of Farm Animals	3
and	
ASC 382— Principles of Livestock Nutrition	3
or	
ASC 378— Animal Nutrition	3
and	
ASC 380— Feeds and Feeding	3

The additional specialty support courses will be selected based on the student's interests and the advisor's approval.

The following courses are highly recommended:

ECO 201— Principles of Economics I	3
AEC 302— Agricultural Management Principles	4
AEC 305— Food and Agricultural Marketing Principles	3

Earn a Minor in Animal Sciences:

In addition to (or as part of) ASC courses previously listed, complete the following:

ASC 300— Meat Science	5
ASC 364— Reproductive Physiology of Farm Animals	3
ASC 382— Principles of Livestock Nutrition	3
or	
ASC 378— Animal Nutrition	3

Free Electives: 21 hours

No restrictions are placed on these selections.

TOTAL: 128 hours

AREA of EMPHASIS
Crops and Soils

Additional Major

Requirements: 22 hours

PLS 367— Soil and Water Analysis Laboratory	3
PLS 404— Integrated Weed Management	4
PLS 468G— Soil Use and Management	3
PPA 400G— Principles of Plant Pathology	3

Select an additional 9 credit hours from PLS, PPA or ABT courses with advisor's approval. Students are encouraged to consider PLS 395 (Special Problems in Plant and Soil Science) or PLS 399 (Experiential Learning in Plant and Soil Science).

Specialty Support: 24 hours

Required:

ENT 300— General Entomology	3
or	
ENT 310— Insect Pests of Field Crops	3
ECO 201— Principles of Economics I	3
CHE 236— Survey of Organic Chemistry	3
or	
CHE 226— Analytical Chemistry	3

The additional Specialty Support courses will be selected based on the student's interests and the advisor's approval. The following course is highly recommended.

GLY 220— Physical Geology	4
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Earn a Minor in Agricultural Economics:

In addition to ECO 201 previously listed, complete the following:

AEC 201— Introduction to Farm and Natural Resource Finance	3
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Select two of the following:

AEC 302— Agricultural Management Principles	4
AEC 303— Microeconomic Concepts/PLSic. Economics	3
AEC 304— Macroeconomic Concepts/PLSic. Economics	3
AEC 305— Food & Agricultural Marketing Principles	3

Plus take an additional 6 credit hours in AEC courses (three of which may be an upper division course in Business and Economics).

Free Electives: 21 hours

No restrictions are placed on these selections.

TOTAL: 128 hours

AREA of EMPHASIS
Horticultural Science

Additional Major

Requirements: 22 hours

PLS 100— An Introduction to Horticulture Professions	1
PLS 460— Greenhouses & Controlled Environments	3
PLS 450— Plant Propagation	3
PLS 410— Growth & Development of Hort. Crops	3
PLS 404— Integrated Weed Management	4
PPA 400G— Principles of Plant Pathology	3

Select one course from each category:

Food Crops

PLS 402— Fruit Production	3
PLS 520— Vegetable Crop Management	3

Ornamentals

PLS 352— Nursery Production	3
PLS 525— Greenhouse Floral Crop Management	3
PLS 451— Landscape Maintenance	3

Internship

Students are required to work a minimum of 10 weeks full-time or 400 hours part-time in a horticultural profession. Students are encouraged to complete more than one internship.

Specialty Support: 24 hours

Required courses:

STA 291— Statistical Method	3
ENT 360— Genetics	3
CHE 236— Survey of Organic Chemistry	3
or	
CHE 230— Organic Chemistry I	3

Additional Specialty Support courses will be selected based on the student's interests and the advisor's approval.

The following courses are highly recommended.

CHE 232— Organic Chemistry II	3
ENT 320— Horticultural Entomology	3
PHY 201— General Physics	3

Free Electives: 21 hours

No restrictions are placed on these selections.

TOTAL: 128 hours

AREA of EMPHASIS
**Horticulture Enterprise
 Management**

**Additional Major
 Requirements: 31 hours**

PLS 100— An Introduction to Horticulture Professions	1
PLS 460— Greenhouses & Controlled Environments	3
PLS 450— Plant Propagation	3
PLS 410— Growth & Development of Hort. Crops.....	3
PLS 404— Integrated Weed Management	4
PPA 400G— Principles of Plant Pathology	3

Select one course from each category:

Food Crops

PLS 402— Fruit Production	3
PLS 520— Vegetable Crop Management	3

Ornamentals

PLS 352— Nursery Production	3
PLS 525— Greenhouse Floral Crop Management	3
PLS 451— Landscape Maintenance	3

Select 9 credit hours from the following courses, if not taken to satisfy requirements above (*):

PLS 320—Woody Plants	4
PLS 330—Herbaceous Plants I	2
PLS 332—Herbaceous Plants II	2
PLS 352*—Nursery Production	3
PLS 402*—Fruit Crop Production	3
PLS 451*—Landscape Maintenance	3
PLS 520*—Vegetable Crop Management	3
PLS 515—Turf Management	3
PLS 525*—Greenhouse Floral Crop Management	3
PLS 582—Special Problems	0-6

Internship

Students are required to work a minimum of 10 weeks full-time or 400 hours part-time in a horticultural profession. Students are encouraged to complete more than one internship.

Specialty Support: 24 hours

Specialty Support courses will be selected based on the student's interest and the advisor's approval. Course offerings in AEC, ECO, ACC, DIS, FIN, MGT, MKT, STA, AEN (or approved others) may satisfy this requirement.

The student may elect to satisfy this requirement by completing a minor in either Agricultural Economics or Business - see requirements for each below. Students interested in Landscape Management may take specific

Landscape Architecture (LA) courses to partially satisfy this requirement (see list below).

The following courses, in addition to satisfying a minor in Agricultural Economics or Business or taking the specified courses in Landscape Architecture, are highly recommended.

AEN 455—Residential & Commercial Irrigation	3
ENT 320—Horticulture Entomology	3

**Earn a Minor in
 Agricultural Economics:**

ECO 201—Principles of Economics I	3
AEC 201—Farm and Natural Resources Finance	3
AEC 302—Agricultural Management Principles	4
AEC 305—Food & Agricultural Marketing Principles	3
Select an additional 6 credit hours from AEC	

Earn a Minor in Business:

ECO 201—Principles of Economics I	3
ECO 202—Principles of Economics II	3
ACC 201—Principles of Accounting	3
ACC 202—Principles of Accounting	3
DIS 320—Management Information Systems	3
FIN 300—Corporate Finance	3
MGT 301—Business Management	3
MKT 300—Marketing Management	3

Landscape Management:

Non-landscape architecture major students interested in landscape management may take these courses. LA 205, LA 850, & PLS 320 are prerequisites for LA 851.

LA 205—History of Landscape Architecture	3
LA 810—Landscape Construction I	3
LA 850—Landscape Architecture Graphics	3
LA 851—Studies in Landscape Architecture: Planting Design	3

Free Electives: 12 hours

No restrictions are placed on these selections.

TOTAL: 128 hours

AREA of EMPHASIS
Soil and Water
Environmental Science

Additional Major

Requirements: 15 hours

PLS 367— Soil and Water Analysis Laboratory 3

Plus 12 credit hours selected from:

PLS 450G— Biogeochemistry 3

PLS 468G— Soil Use and Management 3

PLS 470G— Fertilizers and Soil Fertility 3

PLS 566— Soil Microbiology 3

PLS 573— Soil Morphology 3

PLS 575— Soil Physics 2

PLS 576— Soil Physics Lab (concurrent w/PLS 575) 1

PLS 581— Chemical Analysis of Plants and Soils 4

Participation in PLS 395 (Special Problems in Plant and Soil Science) with an emphasis on soil judging or PLS 399 (Experiential Learning in Plant and Soil Science) is encouraged.

Specialty Support: 31 hours

Required courses:

CHE 236— Survey of Organic Chemistry 3

CHE 226— Analytical Chemistry 3

GLY 220— Physical Geology 4

GLY 110— Introduction to Environmental Geology 3

AEN 438G— Fundamentals of Groundwater Hydrology 3

or

GLY 430— Environmental Geohydrology 3

Additional Specialty Support courses will be selected based on the student's interests and the advisor's approval.

The following course is highly recommended:

PHY 201— General Physics 4

Free Electives: 21 hours

No restrictions are placed on these selections.

TOTAL: 128 hours

AREA of EMPHASIS
Turfgrass Science

Additional Major

Requirements: 22 hours

PLS 367— Soil and Water Analysis Laboratory 3

PLS 404— Integrated Weed Management 4

PLS 515— Turf Management 3

PPA 400G— Principles of Plant Pathology 3

Select an additional 9 credit hours from PLS, PPA or ABT courses with advisor's approval. Students are encouraged to consider PLS 395 (Special Problems in Plant and Soil Science) or PLS 399 (Experiential Learning in Plant and Soil Science) with an emphasis on turfgrass science.

Specialty Support: 24 hours

Required:

ENT 320— Horticultural Entomology 3

AEN 455— Residential & Commercial Irrigation Design 3

or

AEN 537— Irrigation and Drainage Engineering 3

CHE 236— Survey of Organic Chemistry 3

or

CHE 226— Analytical Chemistry 3

Additional Specialty Support courses will be selected based on the student's interests and the advisor's approval. The following courses are highly recommended:

GLY 220— Physical Geology 4

ECO 201— Principles of Economics I 3

Earn a Minor in Business

Complete the following:

ECO 201— Principles of Economics I 3

ECO 202— Principles of Economics II 3

ACC 201— Principles of Accounting 3

ACC 202— Principles of Accounting 3

DIS 320— Management Information Systems 3

FIN 300— Corporate Finance 3

MGT 301— Business Management 3

MKT 300— Marketing Management 3

Free Electives: 21 hours

No restrictions are placed on these selections.

TOTAL: 128 hours

For more information contact:

*for information on the
Crops and Livestock,
Crops and Soils,
Soil and Water Environmental Science
or Turfgrass Science areas contact:*

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