

# INTERDISCIPLINARY STUDIES | ENVIRONMENTAL MANAGEMENT IN AGRICULTURE AND NATURAL RESOURCES UF ONLINE

This degree program uses an interdisciplinary approach to provide the scientific and technical foundation needed to integrate and communicate the diverse environmental issues associated with urban, agricultural, and natural ecosystems. Students develop an understanding of the best use of natural resources for their social and economic benefits while protecting associated resource values, property rights and the environment. This degree provides a solid grounding in the areas of hydrology, soil science, pest management, water resources, and agricultural ecology.

## About this Program

- **College:** Agricultural and Life Sciences (<http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/>)
- **School:** Natural Resources and Environment (<http://catalog.ufl.edu/UGRD/colleges-schools/UGNTR/>)
- **Degree:** Bachelor of Science
- **Credits for Degree:** 120
- **Contact:** 1.855.99GATOR
- **More Info**

*To graduate with this major, students must complete all university, college, and major requirements.*

## Department Information

The Soil, Water, and Ecosystem Sciences Department researches and teaches about soil, water, and environmental sciences in urban, agricultural, and natural ecosystems. Since its origins over 100 years ago, the department has made significant contributions to improving the productivity of Florida's agriculture, helping protect the state's unique ecosystems, and contributing to soil and water science at national and international levels.

**Website** (<https://soils.ifas.ufl.edu/>)

## CONTACT

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Map (<http://campusmap.ufl.edu/#/index/0495>)

## Curriculum

- Combination Degrees
- Environmental Management in Agriculture and Natural Resources | Interdisciplinary Studies
- Interdisciplinary Studies | Environmental Management in Agriculture and Natural Resources UF Online
- Soil, Water, and Ecosystem Sciences
- Soil, Water, and Ecosystem Sciences Minor

This major is for students who desire education in environmental management with substantial emphasis on agriculture and natural resources.

Graduates will find employment with agricultural producers, consulting companies and government agencies that are involved in maintaining a sustainable environment.

## Critical Tracking

Critical Tracking records each student's progress in courses that are required for progress toward each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (<https://cpm.flvc.org/advance-search/>) may be used for transfer students.

## Semester 1

- Complete 1 of 6 critical-tracking courses, excluding labs: AEC 3030C or SPC 2608, BSC 2005/BSC 2005L or BSC 2010/BSC 2010L, CHM 2045/CHM 2045L, CHM 2046/CHM 2046L, MAC 2233, STA 2023

- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

## Semester 2

- Complete 2 additional critical-tracking courses, excluding labs
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

## Semester 3

- Complete 2 additional critical-tracking courses, excluding labs
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

## Semester 4

- Complete 1 additional critical-tracking course, excluding labs
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

## Semester 5

- Complete all critical-tracking courses, including labs from semesters 1 – 4
- Complete 1 additional tracking course
- 2.0 GPA required for all critical-tracking courses
- 2.0 upper division GPA required
- 2.0 UF GPA required

## Semester 6

- Complete 1 additional tracking course
- 2.0 upper division GPA required
- 2.0 UF GPA required

## Semester 7

- Complete 2 additional tracking courses
- 2.0 upper division GPA required.
- 2.0 UF GPA required

## Semester 8

- Complete all remaining tracking course from semester 5 - 8
- 2.0 upper division GPA required.
- 2.0 UF GPA required

### Model Semester Plan

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

*This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.*

| Course   | Title  | Credits |
|--|--|---------|
| <b>Semester One</b>  |  |         |
| MAC 2233   | Survey of Calculus 1 ( <b>Critical Tracking</b> ; State Core Gen Ed Mathematics) | 3       |
| State Core Gen Ed Composition ( <a href="http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext">http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext</a> ); Writing Requirement |  | 3       |
| State Core Gen Ed Humanities ( <a href="http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext">http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext</a> )                       |  | 3       |
| State Core Gen Ed Social and Behavioral Sciences ( <a href="http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext">http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext</a> )   |  | 3       |

|   |  |              |
|---|--|--------------|
| Elective  |  | 3            |
|   | <b>Credits</b>   | <b>15</b>    |
| <b>Semester Two</b>                             |  |              |
| Quest 1 (Gen Ed Humanities)                     |  | 3            |
| Select one:                                     |  | 3-4          |
| AEB 2014  | Economic Issues, Food and You (Gen Ed Social and Behavioral Sciences)  |              |
| ECO 2013  | Principles of Macroeconomics (Gen Ed Social and Behavioral Sciences)   |              |
| ECO 2023  | Principles of Microeconomics (Gen Ed Social and Behavioral Sciences)   |              |
| Select one:                                     |  | 4            |
| BSC 2005<br>& 2005L                             | Biological Sciences<br>and Laboratory in Biological Sciences ( <b>Critical Tracking</b> ; Gen Ed Biological Sciences)                            |              |
| BSC 2010<br>& 2010L                             | Integrated Principles of Biology 1<br>and Integrated Principles of Biology Laboratory 1 ( <b>Critical Tracking</b> ; Gen Ed Biological Sciences) |              |
| STA 2023  | Introduction to Statistics 1 ( <b>Critical Tracking</b> ; Gen Ed Mathematics)  | 3            |
| Gen Ed Composition (Writing Requirement)        |  | 3            |
|   | <b>Credits</b>   | <b>16-17</b> |
| <b>Semester Three</b>                           |  |              |
| Quest 2 (Gen Ed Social and Behavioral Sciences) |  | 3            |
| Select one:                                     |  | 3            |
| AEC 3030C                                       | Effective Oral Communication ( <b>Critical Tracking</b> )  |              |
| SPC 2608  | Introduction to Public Speaking ( <b>Critical Tracking</b> )   |              |
| CHM 2045<br>& 2045L                             | General Chemistry 1<br>and General Chemistry 1 Laboratory ( <b>Critical Tracking</b> ; State Core Gen Ed Biological or Physical Sciences)        | 4            |
| GLY 2030C                                       | Environmental and Engineering Geology (Gen Ed Physical Sciences)   | 3            |
| Gen Ed Humanities                               |  | 3            |
|   | <b>Credits</b>   | <b>16</b>    |
| <b>Semester Four</b>                            |  |              |
| ALS 3133  | Agricultural and Environmental Quality (Gen Ed Physical Sciences)  | 3            |
| CHM 2046<br>& 2046L                             | General Chemistry 2<br>and General Chemistry 2 Laboratory ( <b>Critical Tracking</b> ; Gen Ed Physical Sciences)                                 | 4            |
| Select one:                                     |  | 3            |
| PHY 2020  | Introduction to Principles of Physics (Gen Ed Physical Sciences)   |              |
| PHY 2004  | Applied Physics 1 (Gen Ed Physical Sciences)   |              |
| SWS 2007  | The World of Water   |              |
| Elective  |  | 3            |
|   | <b>Credits</b>   | <b>13</b>    |
| <b>Semester Five</b>                            |  |              |
| Select one:                                     |  | 3            |
| ALS 3153  | Agricultural Ecology   |              |
| SWS 4303C                                       | Soil Microbial Ecology   |              |
| WIS 3404  | Natural Resource Ecology   |              |
| SWS 3022  | Introduction to Soils in the Environment ( <b>Critical Tracking</b> ; Gen Ed Physical Sciences)  | 3            |
| SWS 4244  | Wetlands   | 3            |
| Approved elective                               |  | 3            |
|   | <b>Credits</b>   | <b>12</b>    |
| <b>Semester Six</b>                             |  |              |
| AEB 3133<br>or MAN 3025                         | Principles of Agribusiness Management<br>or Principles of Management   | 3-4          |
| AEC 3033C                                       | Research and Business Writing in Agricultural and Life Sciences (Writing Requirement)  | 3            |
| Select one:                                     |  | 3            |
| ENY 3005<br>& 3005L                             | Principles of Entomology<br>and Principles of Entomology Laboratory ( <b>Critical Tracking</b> )   |              |
| IPM 3022  | Fundamentals of Pest Management ( <b>Critical Tracking</b> )   |              |
| Approved elective                               |  | 3            |
| Elective  |  | 3            |
|   | <b>Credits</b>   | <b>15-16</b> |
| <b>Summer After Semester Six</b>                |  |              |
| Select one:                                     |  | 3            |
| SWS 4900  | Supervised Extension Experience in Soil and Water Sciences   |              |

|                       |   |            |
|-----------------------|---|------------|
| SWS 4905              | Individual Work   |            |
| SWS 4911              | Supervised Research in Soil and Water Science                               |            |
| SWS 4915              | Honors Thesis Research in Soil and Water Science                            |            |
| SWS 4941              | Full-time Practical Work Experience in Soil and Water Science               |            |
| Approved elective     |   | 3          |
| <b>Credits</b>        |   | <b>6</b>   |
| <b>Semester Seven</b> |   |            |
| AOM 4643              | Environmental Hydrology: Principles and Issues ( <b>Critical Tracking</b> ) | 3          |
| FNR 4660              | Natural Resource Policy and Economics ( <b>Critical Tracking</b> )          | 3          |
| SWS 4116              | Environmental Nutrient Management   | 3          |
| Approved elective     |   | 3          |
| Elective              |   | 3          |
| <b>Credits</b>        |   | <b>15</b>  |
| <b>Semester Eight</b> |   |            |
| SWS 4223              | Environmental Biogeochemistry ( <b>Critical Tracking</b> )                  | 3          |
| SWS 4720C             | GIS in Soil and Water Science   | 3          |
| Approved electives    |   | 6          |
| <b>Credits</b>        |   | <b>12</b>  |
| <b>Total Credits</b>  |   | <b>120</b> |

### Approved Electives

*Other electives require advisor approval*

| Code      | Title   | Credits |
|-----------|---|---------|
| AGG 4502  | Nanotechnology in Food, Agriculture, and Environment                            | 3       |
| AEB 2014  | Economic Issues, Food and You   | 3       |
| AEB 3671  | Comparative World Agriculture   | 3       |
| ALS 4162  | Consequences of Biological Invasions  | 3       |
| BUL 4310  | The Legal Environment of Business   | 4       |
| ECO 2013  | Principles of Macroeconomics  | 4       |
| ECO 2023  | Principles of Microeconomics  | 4       |
| ENT 3003  | Principles of Entrepreneurship  | 4       |
| ENY 3007C | Life Science  | 3       |
| GEB 3373  | International Business  | 4       |
| MAR 3023  | Principles of Marketing   | 4       |
| SWS 2007  | The World of Water  | 3       |
| SWS 4180  | Earth System Analysis   | 3       |
| SWS 4204  | Urban Soil and Water Systems  | 3       |
| SWS 4207  | Sustainable Agricultural and Urban Land Management                              | 3       |
| SWS 4233  | Soil and Water Conservation   | 3       |
| SWS 4800  | Environmental Soil and Water Monitoring Techniques                              | 3       |
| SWS 4932  | Special Topics in Soil and Water Science (Math for Environmental Professionals) | 2       |
| SWS 4932  | Special Topics in Soil and Water Science (Wetlands Seminar)                     | 1       |
| WIS 3404  | Natural Resource Ecology  | 3       |

### Academic Learning Compact

The interdisciplinary major in environmental management in agriculture provides students with the scientific and technical foundation to integrate and communicate the diverse environmental issues associated with agriculture and natural resources. Students will be able to deal in an informed manner with the agricultural regulations and permitting requirements established by various agencies and jurisdictions, and students will achieve an appreciation for the complexities of agricultural practices. Students will learn to integrate, balance and communicate the mix of agricultural and environmental issues that need to be addressed in modern society.

## Before Graduating Students Must

- Complete an approved senior-year research project, SWS 4905, related to management and science skills.
- Achieve minimum grades of C in AEC 3030C and AEC 3033C. These courses are graded using rubrics developed by a faculty committee.
- Complete requirements for the baccalaureate degree, as determined by faculty.

## Students in the Major Will Learn to

### Student Learning Outcomes | SLOs

#### Content

1. Appraise similarities between agronomic production and environmental protection issues.
2. Describe the processes in the carbon, nitrogen, phosphorus, and sulfur cycles, and relate these processes to global patterns of productivity, pollution, and consequences of environmental change.

#### Critical Thinking

3. Critically evaluate natural resource policies using basic economic tools, identify factors that influence the success of resource policy implementation, and apply ecological, social and political criteria.
4. Develop a plan for the analysis of an environmental/agricultural study using geographic information systems software.
5. Compare the effects of different fertility sources on nutrient cycling, interpret soil tests and quantify crop nutrient requirements, and fertilizer application rates.

#### Communication

6. Create, interpret, and analyze written text, oral messages, and multimedia presentations used in agricultural and life sciences.

## Curriculum Map

*I = Introduced; R = Reinforced; A = Assessed*

| Courses   | SLO 1 | SLO 2 | SLO 3 | SLO 4 | SLO 5 | SLO 6   |
|-----------|-------|-------|-------|-------|-------|---------|
| AEB 3133  |       |       | R     |       |       |         |
| AEC 3030C |       |       |       |       |       | I, R, A |
| AEC 3033C |       |       |       |       |       | I, R, A |
| ALS 3133  | I, A  | I     | I     |       | I     |         |
| AOM 4643  |       | R     | R     | I     |       |         |
| FNR 4660  |       |       | R, A  |       |       | R       |
| SWS 3022  |       | I     |       |       | I     |         |
| SWS 4116  | R     | R     |       |       | R, A  | R       |
| SWS 4223  | R     | R, A  |       |       |       | R       |
| SWS 4244  | R     | R     | R     |       |       |         |
| SWS 4720C |       |       |       | R, A  |       | R       |

## Assessment Types

- Average of tests in ALS 3133
  - Average of problem set and test scores in SWS 4223
  - Average test scores in FNR 4660
  - Project presentation in SWS 4720C
  - Test and problem set scores from SWS 4116
  - Course grades in AEC 3033C and AEC 3030C
-