



Course Number and Title: SCI 223 Applied Ecology

Campus Location:
Georgetown, Stanton

Effective Date:
2018-51

Prerequisite:
ENG 090 or ENG 091, MAT 120 or higher

Co-Requisites:
none

Course Credits and Hours:
3.00 credits
3.00 lecture hours/week
0.00 lab hours/week

Course Description:

This course explores and evaluates basic concepts in the field of ecology with a focus on plant ecology. Topics include plant adaptations to environmental conditions, life history variation, competition, biodiversity, and proper identification of mid-Atlantic plant species.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:
None

Schedule Type:
Classroom Course
Online Course

Disclaimer:
None

Core Course Performance Objectives (CCPOs):

1. Evaluate the ecological relationships that exist among individual organisms, populations, species, communities, and ecosystems. (CCC 1, 2, 4, 5, 6; PGC AGSAASTMT 1,2,3,4; AGSAASBMT 1,2,5; ENVAASEET 1,2,5,10)
2. Evaluate human interactions with nature and effects on natural systems. (CCC 1, 2, 4, 5, 6; PGC AGSAASTMT 1,2,3,4; AGSAASBMT 1,2,4,5; ENVAASEET 1,2,3,10,12)
3. Design and conduct an ecological investigation using the scientific method. (CCC 1, 2, 3, 4, 5, 6; PGC AGSAASTMT 1,2,3,4,5; AGSAASBMT 1,2,5; ENVAASEET 1,2,3,4,5,6,8,9,10,11,12)
4. Demonstrate field skills in ecology. (CCC 1,2,4,5,6; PGC AGSAASTMT 1,2,3,4,5; AGSAASBMT 1,2,5; ENVAASEET 1,2,3,4,5,10,12)
5. Demonstrate professional and ethical conduct as expected in the industry. (CCC 1,3,4; PGC AGSAASTMT 6; AGSAASBMT 2,4; ENVAASEET 4,7,8,9,11,12)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Evaluate the ecological relationships that exist among individual organisms, populations, species, communities, and ecosystems.
 1. Describe the role of adaptation in evolution.
 2. Examine the modes with which speciation can occur in nature.
 3. Discuss the connections among organisms relative to energy transfer in food webs.
 4. Discuss the connection between organisms both abiotic and biotic environments.
 5. Compare and contrast the concept of biodiversity within a natural system to that of an agricultural application.
 6. Evaluate the biodiversity of species present within an ecosystem.
2. Evaluate human interactions with nature and effects on natural systems.
 1. Analyze the factors that impinge on natural populations, including human impact.
 2. Examine the ecological factors that are relevant to endangered species and biodiversity.
 3. Predict the ecological future of a specific population of plant or animal species and how that may relate to overall biodiversity within the system as a whole.
 4. Discuss the ecological relevance to environmental issues/problems.
 5. Apply ecological knowledge to the sound solution of environmental problems.
3. Design and conduct an ecological investigation using the scientific method.
 1. Identify relevant ecological questions by developing a hypotheses.
 2. Design methodology to test these hypotheses.
 3. Analyze and interpret results to test these hypotheses.
 4. Accept or reject the hypotheses.
 5. Compare findings of the ecological investigation with similar studies.
 6. Create a final project on the ecological investigation using the formal scientific format.
4. Demonstrate field skills in ecology.
 1. Employ proper field identification of plant species.
 2. Use sound judgement relative to the execution of the experiment in the field for the ecological investigation.
 3. Employ all standard and procedures, as applicable, for field sampling and methodology.
 4. Employ safety procedures.
5. Demonstrate professional and ethical conduct as expected in the industry.
 1. Identify the need for self-discipline and time management in technical industries.
 2. Communicate and function effectively as a member of a team.

Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):
AGSAASTMT

1. Apply knowledge of landscape plants and grasses to cultivate and maintain golf course
2. landscapes.
3. Implement preventive maintenance programs for greens, fairways, and equipment.
4. Operate irrigation systems for maximum efficiency.
5. Prepare soils for laying sod and seeding greens, tees, and fairways.
6. Operate turf equipment for maximum field efficiency.
7. Apply business principles and strategies to the turfgrass industry.

AGSAASBMT

1. Communicate knowledge of current agricultural issues.
2. Apply management theories to agricultural business operations through practical experience.
3. Prepare financial statements; interpret and communicate financial and accounting information to support an agribusiness decision-making process.
4. Distinguish business career areas in agribusiness.
5. Interpret the strategies and objectives of an agribusiness organization.

ENVAASEET

1. Apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.
2. Apply a knowledge of mathematics, science, engineering, and technology to engineering technology programs that require limited application of principles but extensive practical knowledge.
3. Conduct standard tests and measurements, and conduct, analyze, and interpret experiments.
4. Function effectively as a member of a technical team.
5. Identify, analyze, and solve narrowly defined engineering technology problems.
6. Apply written, oral, and graphical communication in both technical and nontechnical environments; and identify and use appropriate technical literature.
7. Recognize the need for and an ability to engage in self-directed continuing professional development.
8. Integrate a commitment to address professional and ethical responsibilities, with a respect for diversity.
9. Demonstrate a commitment to quality, timeliness, and continuous improvement.
10. Explain the major aspects of the normal ecology of the planet and risks associated with polluting the environment.
11. Apply the concepts of professional practice and the roles and responsibilities of public institutions and private organizations pertaining to environmental engineering.
12. Apply current federal, state and local environmental and safety regulations.

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.