

Course Number and Title: AGS 101 Soil Science

Campus Location:

Georgetown

Effective Date:

2021-52

Prerequisite:

SSC 100 or concurrent

Co-Requisites:

None

Course Credits and Hours:

3.00 credits

2.00 lecture hours/week

2.00 lab hours/week

Course Description:

In this course, students learn elements of soil science and management as they relate to production agriculture, horticulture, and turf sciences.

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. Describe soil origins and development with emphasis on parent materials, weathering, and soil formation processes. (CCC 1, 2, 3, 5, 6; PGC LOH 2, 4, 5; PAG 2; TMT 1, 4)
2. Explain soil loss by erosion. (CCC 1, 2, 3, 5, 6; PGC LOH 2; PAG 4; TMT 2, 4)
3. Describe the role of water in soils, including phases, movement, and measurement. (CCC 1, 2, 3, 5, 6; PGC LOH 2, 5; PAG 3; TMT 1, 2, 3, 4)
4. Explain how the organic components of soils influence plant growth. (CCC 1, 2, 3; PGC LOH 2, 5; PAG 3, 4; TMT 2, 4)
5. Explain how soil nutrients and power of hydrogen (pH) affect plant growth. (CCC 1, 2, 3, 5; PGC LOH 2, 4, 5; PAG 2, 4; TMT 1, 2, 4)
6. Use global positioning system/geographic information systems (GPS/GIS) for applications in agriculture. (CCC 1, 2, 3, 5, 6; PGC LOH 1, 2, 4, 5; PAG 3, 4; TMT 2, 3, 4, 5)

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. Describe soil origins and development with emphasis on parent materials, weathering, and soil formation processes.
 1. Define important soil science terms such as *soil texture, soil profile, structure, color, porosity, aeration, temperature, colloids, and materials.*
 2. Identify the United States Department of Agriculture (USDA) system of soil taxonomy.
 3. Identify soil types by using a soil survey map.
 4. Discuss topography and its effect on soils.
 5. Identify soil textures using the USDA Soil Textural Triangle.
2. Explain soil loss by erosion.
 1. Discuss the significance of soil erosion and land degradation.
 2. Discuss erosion and sediment controls in various agricultural applications.
 3. Define factors affecting wind erosion.
3. Describe the role of water in soils, including phases, movement, and measurement.
 1. Discuss types of water in soils and related properties of water.
 2. Discuss water quality and soils.
 3. Define terms related to water and soils, including *adhesion, cohesion, cation exchange capacity, episaturation, endosaturation, percolation, transpiration, and evaporation.*
 4. Discuss the movement of water in soil hydrology.
 5. Define and discuss the water and nitrogen cycles.
 6. Discuss soil color and its relationship to water movement.
4. Explain how the organic components of soils influence plant growth.
 1. Define *soil organic matter* and *humus*.
 2. Discuss the composition of organic matter.
 3. Describe factors affecting the kinds and numbers of organisms in the soil.
 4. Discuss organic matter maintenance.
5. Explain how soil nutrients and power of hydrogen (pH) affect plant growth.
 1. Describe mineral nutrients specific plants require, what these nutrients do, and how to recognize deficiency symptoms.
 2. Describe how to control and measure soil pH.
 3. Explain the importance of soil sampling and soil tests to plant growth and development.
6. Use global positioning system/geographic information systems (GPS/GIS) for applications in agriculture.
 1. Determine when and how to use waypoints to locate specific sites of soil samples.
 2. Develop attributes for each waypoint marked.
 3. Prepare a soil site survey map of soil sample locations using GPS/GIS software.

Evaluation Criteria/Policies:

The grade will be determined using the Delaware Tech grading system:

90	-	100	=	A
80	-	89	=	B
70	-	79	=	C
0	-	69	=	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.

Final Course Grade:

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Exams (2-3) (Summative) (equally weighted)	20%
Final Project (Summative)	20%
Group Presentation (Summative)	20%
Assignments/Activities (Formative) (equally weighted)	20%
Labs (Formative) (equally weighted)	20%
TOTAL	100%

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):
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1. Apply basic agribusiness management procedures to production and marketing of agriculture products.
2. Integrate pest management procedures into crop production techniques.
3. Demonstrate production techniques related to sustainable agriculture.
4. Demonstrate scheduling, production, marketing, harvesting, and safe handling of crops.
5. Describe the importance of poultry, livestock, and crop production to the agriculture industry.
6. Assess breeding, care, and nutrition of livestock animals.

AGSAASTOH

1. Demonstrate professional behaviors that satisfy workplace expectations and include adherence to safety and environmental concerns related to the field.
2. Demonstrate basic management functions to include environmental controls, scheduling, production, pest control, and nutrient management of turf and ornamental plants.
3. Cultivate and maintain golf course landscapes.
4. Apply business principles and strategies to the turf and ornamental horticulture industries.
5. Explain the importance of environmental factors such as soil and water management to the turf and ornamental horticulture industries.
6. Apply basic installation and maintenance techniques for irrigation systems.
7. Design and install a finished landscape plan, using native plant materials when possible.
8. Examine current agricultural issues and topics.

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.