

Course Number and Title: ENV 271 Principles of Site Assessment

Campus Location:

Georgetown, Stanton

Effective Date:

2021-51

Prerequisite:

ENG 102, ENV 190, CHM 110

Co-Requisites:

None

Course Credits and Hours:

3.00 credits

3.00 lecture hours/week

0.00 lab hours/week

Course Description:

This course is an overview of the major principles and techniques required to conduct a Phase I and Phase II environmental site assessment. The course provides students with the opportunity to examine federal, state, and local government structures as they relate to the site assessment. In addition, students conduct an in-depth assessment of the site in the form of a Phase I Environmental Site Assessment using American Society for Testing and Materials standards (ASTM 1527).

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

Hybrid Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Examine and locate data provided by state and federal agencies involved in environmental protection. (CCC 2, 5, 6; PGC EET 1, 6)
2. Examine resources, and generate a comprehensive document that describes the site and any potential environmental hazards. (CCC 1, 2, 5, 6; PGC EET 1, 2, 3, 4, 5, 6)
3. Classify types of contamination. (CCC 2, 5, 6; PGC EET 1, 5, 6)
4. Develop liability terms under the National Environmental Policy Act (NEPA). (CCC 6; PGC EET 1, 6)
5. Assess elements within the Phase I Environmental Site Assessment (ESA) as prescribed under the ASTM standard (ASTM 1527). (CCC 5, 6; PGC EET 1, 3, 6)
6. Assess a given site using the ASTM standard (ASTM 1527). (CCC 1, 2, 4, 5, 6; PGC EET 1, 2, 4, 5, 6)
7. Demonstrate professional and ethical conduct as expected in industry. (CCC 1, 3, 4; PGC EET 1, 3, 6)

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. Examine and locate data provided by state and federal agencies involved in environmental protection.
 1. Describe the general roles of the U.S. Department of Interior's U.S. Geologic Survey, Bureau of Land Management, National Park Service, and U.S. Fish and Wildlife Service.
 2. Describe the general roles of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration, which includes the National Geodetic Survey, National Weather Service, and National Marine Fisheries Service.
 3. Describe the general roles of the U.S. Department of Agriculture's Natural Resource Conservation Service and U.S. Forest Service.
 4. Describe the general roles of the U.S. Department of Defense's U.S. Army Corps of Engineers.
 5. Describe the general roles of the U.S. Department of Homeland Security's Federal Emergency Management Agency.
 6. Describe the general roles of the Environmental Protection Agency (EPA).
 7. Describe the roles of state agencies in implementation of federal environmental laws.
2. Examine resources, and generate a comprehensive document that describes the site and any potential environmental hazards.
 1. Examine historical events (such as Love Canal and Bhopal) that led to the creation of acts relating to chemically contaminated sites.
 2. Differentiate among regulation specific hazardous waste and public protection, including the National Environmental Policy Act (NEPA), 1975 Resource Conservation and Recovery Act (RCRA); 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); 1986 Superfund Amendments and Reauthorization Act (SARA); 1998 Superfund Cleanup Acceleration Act; and the 2002 Small Business Liability Relief and Brownfields Revitalization Act.
 3. Analyze data within the confines of the laws specific to the protection of human health and the environment on contaminated sites.
 4. Analyze data within the confines of environmental laws specific to the Clean Air Act, Clean Water Act, Safe Drinking Water Act, Endangered Species Act, State Wetlands Regulations, and any other laws related to the environment.
3. Classify types of contamination.
 1. Define a pollutant according to the all appropriate inquiries (AAI) rule under CERCLA.
 2. Define the differences between solid and hazardous waste according to RCRA.
 3. Classify hazardous waste according to EPA's categories: reactive, toxic, corrosive, and ignitable.
4. Develop liability terms under the National Environmental Policy Act (NEPA).
 1. Examine the legal term *potentially responsible party* (PRP).
 2. Differentiate between what is required under CERCLA's AAI rule and the ASTM standard (ASTM 1527).
 3. Explain the circumstances requiring an Environmental Site Assessment (ESA).
 4. Identify differences among a Phase I, Phase II, and Phase III ESAs.
5. Assess elements within the Phase I Environmental Site Assessment (ESA) as prescribed under the ASTM standard (ASTM 1527).
 1. Outline the methods of determining the historical usage of a subject site.
 2. Evaluate and select accessible documentation within the ESA under the ASTM 1527.
 3. Describe the procedures appropriate to property reconnaissance and personal interviews.
 4. Identify different building materials and building conditions that may impact the outcome of the ESA (i.e., asbestos, mold, lead, pesticides, or powerlines).
 5. Identify potential concerns of various industrial/commercial activities such as paint production, printing, paper manufacturing, or wood preserving.
6. Assess a given site using ASTM standard (ASTM 1527).
 1. Describe when a Phase I ESA is required.
 2. Describe the importance of conducting a title search.
 3. Describe the property (including location, city and address, and parcel ID).
 4. Classify the site by industry type using the Standard Industrial Classification (SIC) code if the given site is held under State of Delaware National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater Regulations.
 5. Identify the contamination potential using historic documentation.
 6. Identify on site or adjacent wells.
 7. Identify if tax ditches or wetlands exist on or near the site.
 8. Identify if current or prior environmental violations have occurred on the site.
 9. Identify if the site is located within a set minimum radius of known contamination. (i.e., National Priorities List [NPL] Superfund sites, the CERCLA Information List [CERCLIS] database, RCRA database, Facility Index System [FINDS], and National Response Center [ERNS] database).
 10. Identify the potential impact of water quality permits or waste management permits that may exist for the site.
 11. Conduct a mock Freedom of Information Act (FOIA) request.
 12. Conduct a visual inspection of the site.
 13. Examine and describe the physical setting and geography.
 14. Examine and describe topographic and soil characteristics.
 15. Sketch the site, including property boundaries and adjoining properties, surface waters, tax ditches, wetlands, underground storage tanks, specific locations of contamination sources or other relevant site characteristics.
 16. Create an aerial photo imagery of the site.
 17. Create a soils map.
 18. Create a 100-year floodplain map using flood insurance rate map (FIRM).
 19. Prepare an interview sheet for a mock interview.
7. Demonstrate professional and ethical conduct as expected in 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:

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
Summative: 2 Tests (weighted equally)	20%
Summative: Phase I Environmental Site Assessment	35%
Summative: Final Presentation	5%
Formative: Assignments (Quizzes, Readings, Participation, Design Problems, Labs, Homework, etc.)	40%
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):

1. Apply the knowledge, techniques, skills, and applicable tools of the discipline to engineering activities, including but not limited to site development, hydraulics and hydrology, grading, water and wastewater treatment, pollution prevention and treatment, and sustainable design.
2. Conduct standardized field and laboratory testing.
3. Demonstrate a commitment to quality, timeliness, professional development, and continuous improvement.
4. Use graphic techniques and productivity software to produce technical documents.
5. Explain the major aspects of the normal ecology of the planet and risks associated with polluting the environment.
6. Apply current federal, state, and local environmental and safety regulations and industry best management practices.

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.