
MIDDLESEX COUNTY COLLEGE

COURSE SYLLABUS

Department:	Engineering Technologies
Program:	Civil Engineering Technology
Course Number:	CIT 216
Title of Course:	Soil Mechanics
Curriculum Coordinator:	Daniel Grek
Designation:	Required Course

Course Description:

Basic study of soils as a material in building construction and environmental projects. Topics include: index properties, soil classification, soil moisture, shear strength, stress analysis, lateral earth pressure, compaction and stabilization and settlement and consolidation. The laboratory will provide sieve analysis, shear strength of soils, relative density, proctor compaction and consolidation, and complete testing of concrete cylinders.

Prerequisite:

CIT 105 Statics for Technicians

Co-requisite:

None

Textbooks (s) and /or other required material:

Soils and Foundations by Liu and Evett, Pearson, 8th Ed
Soil Mechanics Lab Manual by Kalinski, Wiley, 2nd Ed

Course objectives and their relationships to Student Outcomes:

1. Students should be able to perform the Atterberg limits tests and perform the required calculations. **(SO c, k)**
2. Students should be able to calculate weight and volume relationships of a soil quantity.
3. Students should be able to classify a soil using the A-line chart.
4. Students should be able to apply basic statics principles and draw the free body diagrams associated with a gravity or cantilever retaining wall. **(SO m)**
5. Students should be able to apply the required equations used to solve settlement and consolidation problems. **(SO e)**
6. Students should be able to utilize soil test data to solve compaction problems. **(SO c, k)**
7. Students should be able to demonstrate an ability to apply statics to solve lateral earth pressure problems. **(SO e, m)**

Topics Covered:

- Discussion of soil mechanics as it pertains to the building construction process.
- Engineering properties of soils
- Water in soil
- Permeability and Seepage
- Soil Compaction and Stabilization
- Stress distribution in soil
- Settlement and Consolidation of soil
- Shear strength in a soil
- Lateral Earth Pressure
- Shallow foundations-Soil bearing capacity
- Retaining structures

Laboratory Topics Covered:

- Water Content
- Atterberg Limits
- Grain Size Distribution
- Soil Classification-UCS
- Moisture/Density
- Standard Proctor Compaction
- Density
- In-Place field density
- Shear Strength
- Unconfined Compression
- Consolidation
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Class/laboratory Schedule. Number of sessions each week and duration of each session:

3 lecture hours per week for 14 weeks

2 lab hours per week for 14 weeks

Criterion 5 Contribution: Technical Content

Prepared By:	Jay Edelson	Date:	4/16/08
Rev 1	Thom Sabol	Date:	February 13, 2009
Rev 2:	Thom Sabol	Date:	5/15/09
Rev 3:	Jay Edelson	Date:	2/22/11
Rev 4:	Jay Edelson Update mapping of new 2014-2015 ABET student outcomes	Date:	4/7/14
Rev 5:	General Update	Date:	3/15/21