STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
CMGT 315 – Soils In Construction Laboratory

Created by: Adrienne Rygel

Updated by:

Canino School of Engineering Technology

Department: Civil and Construction Technology

Semester/Year: Fall 2020

A. **TITLE**: Soils In Construction Laboratory

B. **COURSE NUMBER:** CMGT 315

C. **CREDIT HOURS: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)**

 # Credit Hours: 1
 # Lecture Hours: **per week**
 # Lab Hours: 3 **per week**
Other: **per week**

Course Length: 15 **Weeks**

D. **WRITING INTENSIVE COURSE**: Yes ☐ No ☒

E. **GER CATEGORY: None:** ☒ **Yes:** GER
***If course satisfies more than one*:** GER

F. **SEMESTER(S) OFFERED: Fall** ☐ **Spring** ☒ **Fall & Spring** ☐

G. **COURSE DESCRIPTION:**

Students learn about soil types, soil properties, soil classification, and basic soil property tests in applied laboratory sessions, soil testing methods and solve analytical problems. Students learn and practice basic reporting styles used in industry. If a student has obtained their ACI (American Concrete Institute) certifications in aggregate testing (Aggregate Testing Technician - Level 1 certification) and aggregate/soils base testing (Aggregate/Soils Base Testing Technicial certification) and can provide formal certifications, they can receive content credit for this course.

H. **PRE-REQUISITES: None** ☐ **Yes** ☒ **If yes, list below:**

CMGT 314 Soils In Construction, or permission of instructor

CO-REQUISITES: None ☐ **Yes** ☒ **If yes, list below:**

CMGT 314 Soils In Construction

I. STUDENT LEARNING OUTCOMES: (*see key below*)

By the end of this course, the student will be able to:

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER*** *[If Applicable]*	***ISLO & SUBSETS***	
a. Test a soil sample and analyze the data to determine the following soil index properties: grain size distribution, coefficient of uniformity, coefficient of curvature, moisture content, liquid limit, plastic limit, specific gravity.	SO 5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
b. Calculate the following soil properties based on mass-volume relationships: void ratio, porosity, degree of saturation, water content, wet unit weight and dry unit weight, wet unit mass and dry unit mass, and specific gravity.	SO 3 and 5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
c. Classify a soil sample using the Unified Soil Classification System and the AASHTO Classification System.	SO 5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
d. Conduct compaction control tests to determine the maximum dry unit weight and in place unit weight of a soil sample; and explain the compaction control process.	SO 5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
e. Determine the hydraulic conductivity of a soil sample using the constant head permeameter test.	SO 5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
f. Compose an Engineering Research Report regarding a soil design or construction topic using appropriate syntax and grammar	SO 1		1-Comm Skills ISLO ISLO	W Subsets Subsets Subsets

KEY	**Institutional Student Learning Outcomes [ISLO 1 – 5]**
ISLO #	**ISLO & Subsets**
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

*Include program objectives if applicable. Please consult with Program Coordinator

J. **APPLIED LEARNING COMPONENT:** Yes ☒ No ☐

If YES, select one or more of the following categories:

- ☒ Classroom/Lab
- ☐ Internship
- ☐ Clinical Placement
- ☐ Practicum
- ☐ Service Learning
- ☐ Community Service

- ☐ Civic Engagement
- ☐ Creative Works/Senior Project
- ☐ Research
- ☐ Entrepreneurship
  (program, class, project)

K. TEXTS:

Rygel, Adrienne. (2020). CMGT 315 Soils In Construction Laboratory Manual. SUNY Canton.

L. REFERENCES:

Bardet, Jean-Pierre (1997). Experimental Soil Mechanics. Upper Saddle River, New Jersey: Pearson Prentice Hall.
Coduto, Conald P. (2000). Foundation Design, Principles and Practices, 2nd edition. Upper Saddle River, New Jersey: Pearson Prentice Hall.
Coduto, Conald P. (1999). Geotechnical Engineering: Principles and Practice, 1st edition. Upper Saddle River, New Jersey: Pearson Prentice Hall.
McCarthy, David F. (2007). Essentials of Soil Mechanics and Foundations: Basic Geotechnics, 7th edition. Upper Saddle River, New Jersey: Pearson Prentice Hall.
Slgado, Rodrigo (2008). The Engineering of Foundations. New York, New York: McGraw Hill.
Schroeder, W.L., Dickenson, Stephen, and Warrington, Don. C. (2004). Soils in Construction, 5th edition. Upper Saddle River, New Jersey: Pearson Prentice Hall.

M. EQUIPMENT: None ☐ Needed: Standard oven, microwave oven, US standard sieve sets, Casagrande liquid limit devices, plastic limit devices, constant head permeability devices, Standard Proctor equipment, Modified Proctor equipment, sand cone equipment are provided by the department.

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Laboratory Assignments, Written Report(s)

P. DETAILED COURSE OUTLINE:

Q. LABORATORY OUTLINE: None ☐ Yes ☒

1. **Lab Report Writing and Finding Term Project References in the Library**
2. **Sieve Analysis**
3. **Hydrometer Analysis**
4. **Water Content Determination and Mass-Volume Problems**
5. **Specific Gravity of Solids and Atterberg Limits (Liquid Limit and Plastic Limit)**
6. **Control Low Strength Material (CLSM)**
7. **Constant Head Permeability**
8. **Standard Proctor Compaction Test**
9. **In Place Unit Weight by the Sand Cone Method**
10. **Break CLSM Cylinders and Standard Proctor Test Group Poster Presentations**
11. **Subsurface Investigation: Soil Boring/Test Pit Logging and Soil Classification**
12. **Compaction Control Plan**
13. **Student Term Project Presentations**

14. Student Term Project Presentations