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:

<table>
<thead>
<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>Program Student Learning Outcome [PSLO]</th>
<th>GER [If Applicable]</th>
<th>ISLO &amp; SUBSETS</th>
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</thead>
<tbody>
<tr>
<td>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.</td>
<td>SO 5</td>
<td>5-Ind, Prof, Disc, Know Skills</td>
<td>Subsets</td>
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<td>ISLO</td>
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<td>ISLO</td>
<td>Subsets</td>
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<td>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.</td>
<td>SO 3 and 5</td>
<td>5-Ind, Prof, Disc, Know Skills</td>
<td>Subsets</td>
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<td>ISLO</td>
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<td>c. Classify a soil sample using the Unified Soil Classification System and the AASHTO Classification System.</td>
<td>SO 5</td>
<td>5-Ind, Prof, Disc, Know Skills</td>
<td>Subsets</td>
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<td>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.</td>
<td>SO 5</td>
<td>5-Ind, Prof, Disc, Know Skills</td>
<td>Subsets</td>
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<td>e. Determine the hydraulic conductivity of a soil sample using the constant head permeameter test.</td>
<td>SO 5</td>
<td>5-Ind, Prof, Disc, Know Skills</td>
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<td>f. Compose an Engineering Research Report regarding a soil design or construction topic using appropriate syntax and grammar</td>
<td>SO 1</td>
<td>1-Comm Skills</td>
<td>Subsets</td>
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<td>KEY</td>
<td>Institutional Student Learning Outcomes [ISLO 1 – 5]</td>
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<td>ISLO #</td>
<td>ISLO &amp; Subsets</td>
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| 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:**


L. **REFERENCES:**


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
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