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

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
CMGT 410 – Construction Layout

Created by: Adrienne Rygel

Updated by:

Canino School of Engineering Technology

Department: Civil and Construction Technology

Semester/Year: Fall 2020
A. **TITLE:** Construction Layout

B. **COURSE NUMBER:** CMGT 410

C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)
   
   # Credit Hours: 3
   # Lecture Hours: 2 per week
   # Lab Hours: 2 per week
   Other: per week

   **Course Length:** 15 Weeks

D. **WRITING INTENSIVE COURSE:** Yes [ ] No [X]

E. **GER CATEGORY:** None [X] Yes: GER
   
   *If course satisfies more than one: GER*

F. **SEMESTER(S) OFFERED:** Fall [ ] Spring [X] Fall & Spring [ ]

G. **COURSE DESCRIPTION:**

   Site layout is an integral part of all construction projects and can have a significant impact on time, money, and construction efficiency. Students learn how to apply their skills in surveying, print reading, and construction management to develop and manage a site layout for each phase of a construction project. Students learn how to lay out the location of structures and other features on the site, check dimensions of structures as they are built, document completed work, and verify that the project is progressing in accordance to the design plans and specifications.

H. **PRE-REQUISITES:** None [ ] Yes [X] If yes, list below:

   CONS 203 Advanced Surveying, CMGT 200 Building Codes and Commercial Print Reading, and CMGT 300 Construction Management; or permission of the instructor

   **CO-REQUISITES:** None [X] Yes [ ] If yes, list below:
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>
</tr>
</thead>
<tbody>
<tr>
<td>a. Prepare a bid for a layout job.</td>
<td>SO 5 and 7</td>
<td>5-Ind, Prof, Disc, Know Skills Subsets</td>
<td>Subsets</td>
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<td></td>
<td></td>
<td>ISLO Subsets</td>
<td>Subsets</td>
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<td></td>
<td>ISLO</td>
<td>Subsets</td>
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<tr>
<td>b. Describe and explain the documentation associated with a layout job.</td>
<td>SO 5 and 7</td>
<td>5-Ind, Prof, Disc, Know Skills Subsets</td>
<td>Subsets</td>
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<td></td>
<td>ISLO</td>
<td>Subsets</td>
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<tr>
<td>c. Prepare a work order and a change order.</td>
<td>SO 5 and 7</td>
<td>5-Ind, Prof, Disc, Know Skills Subsets</td>
<td>Subsets</td>
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<td></td>
<td>ISLO</td>
<td>Subsets</td>
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<tr>
<td>d. Utilize surveying equipment with a team to site in a layout.</td>
<td>SO 4, 5 and 6</td>
<td>4-Soc Respons</td>
<td>T Subsets</td>
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<td>ISLO</td>
<td>Subsets</td>
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<tr>
<td>e. Describe layout techniques and methodologies for different phases of a construction project (e.g. building, sewer lines, grades, grid systems)</td>
<td>SO5</td>
<td>5-Ind, Prof, Disc, Know Skills Subsets</td>
<td>Subsets</td>
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<td>ISLO</td>
<td>Subsets</td>
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<tr>
<td>f. Discuss the safety concerns during site layout.</td>
<td>SO 5</td>
<td>5-Ind, Prof, Disc, Know Skills Subsets</td>
<td>Subsets</td>
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<td>ISLO</td>
<td>Subsets</td>
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<tr>
<td>g. Discuss ethical components of site layout.</td>
<td>SO 4</td>
<td>4-Soc Respons</td>
<td>ER Subsets</td>
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<td></td>
<td>ISLO</td>
<td>Subsets</td>
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</tbody>
</table>

*Key: ISLO = Interdiscipline Student Learning Outcome, GER = General Education Requirement, T = Technical, ER = English Requirement, Subsets = Subsets of Learning Outcomes.*
<table>
<thead>
<tr>
<th>KEY</th>
<th>Institutional Student Learning Outcomes [ISLO 1 – 5]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISLO #</td>
<td>ISLO &amp; Subsets</td>
</tr>
</tbody>
</table>
| 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:**


AutoCad Civil 3D for surveyors, Schroff Development Corporation

M. **EQUIPMENT:** None ☒ **Needed:** Automatic level, total station, prism poles, geographic positioning system receivers, drafting software, metal detector, steel tape, range pole, engineering rod (leveling), miscellaneous hand equipment provided by the department, student field book, calculator, ruler, protractor, flash memory drive, engineering computation paper

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Assignments, projects, and exams

P. **DETAILED COURSE OUTLINE:**

1. Obtaining Layout Contracts
   a. contracts
   b. bidding
   c. fee negotiation, payment schedules
   d. liability

2. Documentation
   a. record keeping
   b. documentation
   c. work orders
   d. change orders

3. Site Layout Procedures
   a. layout techniques
   b. equipment selection, use, and maintenance
   c. horizontal, vertical, and angular measurements
   d. establishing and preserving control points
   e. checking and redundancy; adjustment
   f. safety
g. ethics
h. pitfalls to avoid

4. Site Layout Projects
   a. buildings
   b. sewer lines
   c. grade stakes
   d. slope stakes
   e. construction grid systems

Q.   LABORATORY OUTLINE: None ☐ Yes ☑

1. Preparation of site layout project bid proposals
2. Preparation of work orders
3. Preparation of change orders
4. Record keeping and documentation
5. Site layout of a residential project
6. Site layout of a commercial building
7. Site layout of a sewer line
8. Site layout of a grade stake and slope stake
9. Site layout of a construction grid system
10. Term Project