

**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
- E. **GER CATEGORY:** None: Yes: GER
If course satisfies more than one: GER
- F. **SEMESTER(S) OFFERED:** Fall Spring 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 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 Yes If yes, list below:

I. STUDENT LEARNING OUTCOMES: (see key below)

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

<u>Course Student Learning Outcome</u> <i>[SLO]</i>	<u>Program Student Learning Outcome</u> <i>[PSLO]</i>	<u>GER</u> <i>[If Applicable]</i>	<u>ISLO & SUBSETS</u>	
a. Prepare a bid for a layout job.	SO 5 and 7		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
b. Describe and explain the documentation associated with a layout job.	SO 5 and 7		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
c. Prepare a work order and a change order.	SO 5 and 7		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
d. Utilze surveying equipment with a team to site in a layout.	SO 4, 5 and 6		4-Soc Respons ISLO ISLO	T Subsets Subsets Subsets
e. Describe layout techniques and methodologies for diffenet phases of a construction project (e.g. building, sewer lines, grades, grid systems)	SO5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
f. Discuss the safety concerns during site layout.	SO 5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
g. Discuss ethical components of site layout.	SO 4		4-Soc Respons ISLO ISLO	ER Subsets Subsets Subsets
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KEY	<u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u>
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
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:

Elbeltagi, Emad (2014). "Construction Site Layout Planning: Identifying, Sizing, and Locating Temporary Facilities on Construction Sites." LAP Lambert Academic Publishing, 196 p. ISBN 13: 978-3659540677.

L. REFERENCES:

Crawford, Wesley G., (2002). "Construction Surveying and Layout." 3rd edition, Creative Construction Publishing, 840p., ISBN 13: 978-096472116.

Construction Surveying, and Layout, 3rd Edition, Wesley G. Crawford, Creative Construction, 2720 S. River Rd, West Lafayette, IN, 2003. ISBN 0-9647421-1-X.

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. buidings**
- 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**