

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



MASTER SYLLABUS

**COURSE NUMBER – COURSE NAME
CONS 111 – Commercial Structures**

Created by: J. Reilly

Updated by: A. Reiter

Canino School of Engineering Technology

Department: Civil and Environmental Technology

Semester/Year: Fall 2018

A. **TITLE:** Commercial Structures

B. **COURSE NUMBER:** CONS 111

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

Credit Hours: 3

Lecture Hours: 2 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:**

The study of construction materials, practices, equipment and terminology used in commercial construction. Lectures and laboratory periods develop theory and practice in excavation; foundation formwork; masonry walls; concrete; erection of steel frame buildings; commercial wall and roof systems; and interior and exterior wall finishes. Field trips to be arranged when practical

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

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> <u>[SLO]</u>	<u>Program Student Learning Outcome</u> <u>[PSLO]</u>	<u>GER</u> <i>[If Applicable]</i>	<u>ISLO & SUBSETS</u>	
a. Explain the major elements involved in the process of constructing a building including options and concerns associated with foundations, structural frames and walls, exterior finish (cladding), interior walls and finish, and roofs.			5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
b. Discuss the properties and assembly techniques of the materials (steel, masonry, concrete) commonly used in construction of non-residential buildings.			5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
c. Perform calculations associated with construction planning and material estimating. This includes the use of English and SI systems, length conversions, area and volume calculations			5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
d. Communicate using an extensive vocabulary of construction terms and phrases common to the industry			5-Ind, Prof, Disc, Know Skills 1-Comm Skills ISLO	Subsets O 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:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement |
| <input type="checkbox"/> Internship | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement | <input type="checkbox"/> Research |
| <input type="checkbox"/> Practicum | <input type="checkbox"/> Entrepreneurship |
| <input type="checkbox"/> Service Learning | (program, class, project) |
| <input type="checkbox"/> Community Service | |

K. **TEXTS:**

Principles and Practices of Commercial Construction 6th Ed, Andres and Smith, Prentice Hall

L. **REFERENCES:**

Engineering News Record, Civil Engineering, Concrete Construction, Modern Steel Construction

M. **EQUIPMENT:** None Needed:

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

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

- Exams
- Quizzes
- Home Assignments
- Lab: Participation and assignments
- Field Trips required

P. **DETAILED COURSE OUTLINE:**

I. Introduction to the Building Process

1. Feasibility of designs
2. Choosing a building system
3. The work of the design professional
4. Involvement of the building codes
5. The role of specifications and their divisions in the building process

II. Foundations and Site Work

1. Foundation loads
2. Foundation settlement
3. Soil types and properties
4. Excavation and support
5. Shallow (spread) foundations

6. Deep (pile) foundations

7. Dewatering

III. Concrete Construction

1. History

2. Cement and aggregate

3. Mixing

4. Formwork

5. Placement

6. Reinforcing

7. Prestressing and posttensioning

8. Problems in concrete quantities

IV. Masonry Construction

1. History

2. Mortar

3. Brick masonry

4. Concrete block masonry

5. Stone masonry

6. Construction techniques

V. Structural Steel Frame Construction

1. History of steel and metals in construction

2. Steel, the material

3. Details of steel framing

4. The fabrication and erection process

5. Fireproofing of steel framing

6. Longer spans in steel

VI. Interior Walls and Partitions

1. Types of interior walls

2. Framed partition systems (steel studs)

3. Masonry partitions

4. Wall and partition facings (gypsum board)

VII. Roofing

1. Low-slope (Aflat@) roofs

2. Components of roof systems

2. Roofing and the building codes

VIII. Exterior Finish and Cladding

1. The glass process and design

2. Design requirements for cladding

3. Watertightness in cladding

4. Curtain wall design

5. Energy requirements

Q. LABORATORY OUTLINE: None Yes

1. Introduction lab safety/length measure and units conversion.

2. Practice layout of small commercial building for excavation of foundation.

- 3. Area and volumes computations**
- 4. Fundamentals of concrete mixing and quality testing**
- 5. Form work - comparison between manufactured and job built forms.**
- 6. Compressive tests and strength analysis in concrete**
- 7. Masonry construction - walking tour of Canton.**
- 8. Field Trip - TBD**
- 9. Masonry construction - layout and construct block foundation wall.**
- 10. Erect steel frame building**
- 11. Field Trip - Steel Fabricator**
- 12. Wall framing using metal studs**
- 13. Interior finish on metal studs with hollow metal frames and sheetrock**
- 14. Blueprint Reading - construction systems**
- 15. Review for Final Exam**