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



### MASTER SYLLABUS

#### COURSE NUMBER – COURSE NAME CIVL 381 – Introduction to Architectural Engineering

Created by: Yilei Shi

Updated by:

**Canino School of Engineering Technology** 

**Department:** Civil and Construction Technology

Semester/Year: Fall 2019

A. <u>TITLE</u>: Introduction to Architectural Engineering

### B. <u>COURSE NUMBER</u>: CIVL 381

### C. <u>CREDIT HOURS</u>: 3 credit hour(s) per week for 15 weeks

 $\bigcirc$  One hour (50 minutes) of lecture per week 3

Two to three hours of lab or clinical per week

Two hours of recitation per week

40 hours of internship

# **D.** <u>WRITING INTENSIVE COURSE</u>: Yes $\square$ No $\boxtimes$

E. <u>GER CATEGORY</u>: None: Yes: GER *If course satisfies more than one*: GER

# F. <u>SEMESTER(S) OFFERED</u>: Fall Spring Fall & Spring

# G. <u>COURSE DESCRIPTION</u>:

This course introduces the functional parts and systems that make up a building as well as their interactions in delivering required sustainable and resilient performance. There is a general overview of professional design services and documents of architecture and engineering disciplines that encompasses foundations, structures, building enclosures, heating and air conditioning, electrical, plumbing and fire safety systems. Concepts of building performance and aspects of pertinent building codes and standards are also discussed. This course incorporates basic principles of building science, green construction, and professional ethics.

# H. <u>PRE-REQUISITES</u>: None Yes X If yes, list below:

CONS 272 Strength of Materials for Technicians or ENGS 203 Engineering Strength of Materials, or permission from the instructor

<u>CO-REQUISITES</u>: None Yes If yes, list below:

# I. <u>STUDENT LEARNING OUTCOMES</u>: (see key below)

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

<u>Course Student Learning Outcome</u> [SLO]	<u>Program Student Learning</u> <u>Outcome</u> <u>[PSLO]</u>	<u>GER</u> [If Applicable]	<u>ISLO &amp; SUBSETS</u>	
a. Select the necessary design services and documents of building parts and systems.	2488: SO 4a		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
b. Discuss the history of architecture and the future trends of architecure design.	2488: SO 1		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
c. Select the appropriate structural system to resist vertical loads in buildings.	2488: SO 4a		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
d. Select the appropriate structural system to resist lateral loads in buildings.	2488: SO 4a		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
e. Discuss the needs of mechanical, electrical, plumbing and fire safety systems for buildings.	2488: SO 4a		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
f. Perform basic research on the latest technology of building systems; for example: sustainability, resillience and smart buildings and cities.	2488: SO 1, 7		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets

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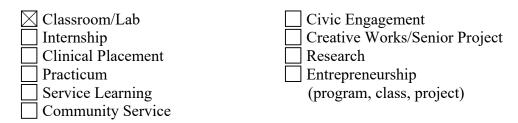
KEY	Institutional Student Learning Outcomes [ISLO 1 – 5]		
ISLO	ISLO & Subsets		
#			
1	Communication Skills		
	Oral [O], Written [W]		
2	Critical Thinking		
	Critical Analysis [CA], Inquiry & Analysis [IA], Problem		
	Solving [PS]		
3	Foundational Skills		
	Information Management [IM], Quantitative 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. <u>APPLIED LEARNING COMPONENT:</u>

Yes 🛛 No 🗌

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



### K. <u>TEXTS</u>:

No text required.

## L. <u>REFERENCES</u>:

Stephen Emmitt, Architectural Technology, 2nd ed., Wiley, 2012, ISBN: 978-1-4051-9479-2 James Ambrose, Patrick Tripeny, Simplified Engineering for Architects and Builders, 12th ed., Wiley, 2016, ISBN: 978-1-118-97504-6.

Frank Dagostino, Joseph B Wujek, Mechanical and Electrical Systems in Architecture, Engineering and Construction, 5th ed., Pearson, 2009, ISBN: 978-0135000045.

Robert Brown Butler, Architectural Engineering Design: Mechanical Systems, McGraw-Hill, 2002, ISBN: 9780071500869.

Leonard R. Bachman, Integrated Buildings: The Systems Basis of Architecture, Wiley, 2002, ISBN: 978-0-471-38827-2.

M. <u>EQUIPMENT</u>: None Needed: scientific calculator, scale/straight edge, engineering paper

### N. <u>GRADING METHOD</u>: A - F

### **O.** <u>SUGGESTED MEASUREMENT CRITERIA/METHODS</u>:

Assignments, Term Paper and/or Poster, Exams

### P. <u>DETAILED COURSE OUTLINE</u>:

1. Professional design services and documents of architecture and engineering disciplines

- 2. Components and brief history of architectural Design
- a. Components of architectural design
- b. Brief history of architectural Design
- c. Notable architects and representative designs
- d. Building classifications and type of construction
- 3. Fundamentals of architecture design
- a. Design considerations of residential buildings
- b. Design considerations of commercial buildings
- c. Design considerations of public buildings

- d. Design considerations of sports and large span structures
- 4. Building structural system
- a. Foundation
- **b. Building structures**
- c. Vertical force resisting systems
- d. Lateral force resisting systems
- e. Topics of tall building structures design
- 5. Building mechanical system
- a. Heating system
- b. Air conditioning system
- c. Plumbing system
- 6. Building electrical system
- 7. Building fire safety system
- 8. Building sustainable and resilient design
- 9. Smart building and cities
- 10. Professional ethics (Optional)

# Q. <u>LABORATORY OUTLINE</u>: None X Yes

NONE