

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



MASTER SYLLABUS

CONS 226 – Bridge Building

CIP Code: 15.0201

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**School: Canino School of Engineering Technology
Department: Civil and Construction Technology
Implementation Semester/Year: Fall 2024**

A. TITLE: Bridge Building

B. COURSE NUMBER: CONS 226

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

# Credit Hours per Week	1
# Lecture Hours per Week	
# Lab Hours per Week	2
Other per Week	

D. WRITING INTENSIVE COURSE:

Yes	
No	x

E. GER CATEGORY:

Does course satisfy a GER category(ies)? If so, please select all that apply.

[1-2] Communication	
[3] Diversity: Equity, Inclusion & Social Justice	
[4] Mathematics & Quantitative Reasoning	
[5] Natural Science & Scientific Reasoning	
[6] Humanities	
[7] Social Sciences	
[8] Arts	
[9] US History & Civic Engagement	
[10] World History & Global Awareness	
[11] World Languages	

F. SEMESTER(S) OFFERED:

Fall	x
Spring	
Fall and Spring	

G. COURSE DESCRIPTION:

Students are challenged to an inter-collegiate bridge building competition that includes design, fabrication, and construction. Participating students gain practical experience in structural design, fabrication processes, construction planning, organization, and teamwork. Students will essentially design and construct a 21-foot long steel bridge that is both light and strong, and capable of supporting 2,500 pounds. The class will use their bridge design to represent SUNY Canton's entry in the Regional competition.

H. PRE-REQUISITES:

Enrollment in a Canino School of Engineering Technology program or permission of the instructor.

CO-REQUISITES: None

I. STUDENT LEARNING OUTCOMES:

Course Student Learning Outcome [SLO]	Program Student Learning Outcome [PSLO]	GER	ISLO & Subsets
a. Work as part of an interdisciplinary team.	SO5		ISL 4 (T)
b.			
c.			
d.			
e.			

KEY	<u>Institutional Student Learning Outcomes</u> [ISLO 1 – 5]
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

J. APPLIED LEARNING COMPONENT:

Yes	x
No	

If yes, select [X] one or more of the following categories:

Classroom / Lab	x	Community Service	
Internship		Civic Engagement	
Clinical Practicum		Creative Works/Senior Project	
Practicum		Research	
Service Learning		Entrepreneurship [program, class, project]	

K. TEXTS:

Current National Student Steel Bridge Competition Rules published by the AISC

L. REFERENCES: none

M. EQUIPMENT:

All tools and materials such as computers, steel, welders, welding rod, bolts, wrenches, cutters, etc. will be provided by the department.

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Students will be evaluated based on their participation in meetings, contributions to conceptual design, assistance with final design and/or fabrication.

P. DETAILED COURSE OUTLINE:

I. Orientation

- A. wrap up from previous year
- B. criteria review (rules & regulations)

II. Conceptual Design

- A. design ideas (roundtable discussions)
- B. sketches
- C. calculations
- D. model (prototype) building
- E. budgeting
- F. consensus building
- G. documentation

III. Final Design

- A. calculations
- B. design adjustments
- C. material take off (bill of materials)
- D. order material
- E. documentation

IV. Fabrication

- A. cut members to size
- B. weld components
- C. fasteners
- D. documentation

V. Assembly

- A. initial assembly
- B. initial loading
- C. deflection measurement
- D. practice for speed
- E. documentation

VI. Presentation

- A. outline
- B. material compilation
- C. documentation
- D. oral practice
- E. final presentation

VII. Competition

Q. **LABORATORY OUTLINE:**

1. Providing the scoring Excel
2. Preliminary conceptual design of bridge lay out
3. Evaluating the different layout and model and selecting the best based on the

Rule book

5. Providing the Shop Drawings