

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



MASTER SYLLABUS

**COURSE NUMBER – COURSE NAME
CONS 226 – BRIDGE BUILDING**

Created by: Robert R Blickwedehl

Updated by: Yilei Shi

Canino School of Engineering Technology

Department: Civil and Construction Technology

Semester/Year: Fall 2018

A. **TITLE:** Bridge Building

B. **COURSE NUMBER:** CONS 226

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

Credit Hours: 1

Lecture Hours: per week

Lab Hours: per week

Other: 45 hours per semester

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:**

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:** None Yes If yes, list below:

Enrollment in the Canino School of Engineering Technology and 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>	
Work as part of an interdisciplinary team.			4-Soc Respons ISLO ISLO	T 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:

- | | |
|---|--|
| <input 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:**

Current National Student Steel Bridge Competition Rules published by the AISC.

L. **REFERENCES:**

None

M. **EQUIPMENT:** None **Needed:** All tools and materials such as steel, welders, welding rod, bolts, wrenches, cutters, etc. will be provided by the department.

N. **GRADING METHOD:** P/F

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

Students will be evaluated based on their participation in meetings, contributions to the team's success, assistance with fabrication and submittal of original ideas.

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: None Yes