

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



MASTER SYLLABUS

CIVL 326 – Steel Bridge Design

CIP Code: 15.0201

For assistance determining CIP Code, please refer to this webpage

<https://nces.ed.gov/ipeds/cipcode/browse.aspx?v=55>

or reach out to Sarah Todd at todds@canton.edu

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Updated by:

**Canino School of Engineering Technology
Department: Civil and Construction Technology
Semester/Year: Spring 2023**

A. TITLE: Steel Bridge Design

B. COURSE NUMBER: CIVL 326

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

Credit Hours: 3

Lecture Hours: 1 per Week

Lab Hours: 2-2hr Week

Other ___ per Week

Course Length (# of Weeks): 15 weeks

D. WRITING INTENSIVE COURSE: No

E. GER CATEGORY:

Does course satisfy more than one GER category? If so, which one? No

F. SEMESTER(S) OFFERED: (*Fall, Spring, or Fall and Spring*) Fall

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 concept design, structural design, fabrication processes, construction planning, organization, and teamwork. Students will design and make preparations for construction of an approximately 21-foot long steel bridge that is both light and strong, and capable of supporting about 2,500 pounds. The class will use their bridge design to represent SUNY Canton's entry in the Regional competition. This class will design the bridge using advanced structural analysis software (e.g. SAP 2000), produce shop drawing in AutoCAD, and prepare material bill to ensure an effective design and construction of steel bridge. Depending on the students background and course work they will be tasked with varying components of this overall project.

H. PRE-REQUISITES:

CIVL 339 Structural Analysis Lab, or permission of the instructor

CO-REQUISITES: None

I. STUDENT LEARNING OUTCOMES:

<u>Course Student Learning Outcome [SLO]</u>	<u>PSLO</u>	<u>GER</u>	<u>ISLO</u>
a) apply structural analysis software to design an efficient steel bridge per AISC bridge competition rules	2488: 1, 2 517: 2 162: 2		2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO
b) apply AutoCAD and other software if necessary to provide a complete set of shop drawings for the bridge design	2488: 1, 3 517: 1, 3 162: 1, 3		5-Ind, Prof, Disc, Know Skills ISLO ISLO
c) provide a complete bill of construction material	2488: 1 517: 1 162: 1		5-Ind, Prof, Disc, Know Skills ISLO ISLO
d) work as part of an interdisciplinary team	2488: 5 517: 5 162: 5		4-Soc Respons ISLO ISLO
e) Present the conceptual design and final design.	2488: 3 517:3 162:3		1- O, W ISLO ISLO
f) Demonstrate professionalism through timeliness and continuous improvement of work	2488: 6 517: 6 162: 6		4-Soc Respons ISLO ISLO

KEY	<u>Institutional Student Learning Outcomes</u> <u>[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

- J. APPLIED LEARNING COMPONENT: Yes No _____
- | | |
|---|---|
| Classroom/Lab <input checked="" type="checkbox"/> | Civic Engagement _____ |
| Internship _____ | Creative Works/Senior Project <input checked="" type="checkbox"/> |
| Clinical Practicum _____ | Research _____ |
| Practicum _____ | Entrepreneurship _____ |
| Service Learning _____ | (program, class, project) |
| Community Service _____ | |
- K. TEXTS:
Current National Student Steel Bridge Competition Rules published by the AISC
- L. REFERENCES:
Steel Construction Manual, 15th Edition, AISC
- M. EQUIPMENT:
Structural analysis software and all construction tools and materials will be provided by the department.
- N. GRADING METHOD: A-F
- O. SUGGESTED MEASUREMENT CRITERIA/METHODS:
- Homework Assignment
 - Design Report
 - Shop Drawings
 - Poster
 - Communication Skills
- P. DETAILED COURSE OUTLINE:
- A. Orientation and Criteria Review
 - B. Conceptual Design
 - a) Shape study
 - b) Bridge geometry
 - c) Bridge modeling
 - d) Bridge performance
 - C. Final Design
 - a) Bridge geometry
 - b) Bridge modeling
 - c) Bridge performance
 - D. Bill of Construction Materials and Shop Drawings
- Q. LABORATORY OUTLINE: None