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

MASTER SYLLABUS

CIVL 326 – STEEL BRIDGE DESIGN

CIP Code: 14.0803

Created by: Saeid Haji Ghasemali
Updated by:

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

A.   TITLE: Steel Bridge Design

B.   COURSE NUMBER: CIVL 326

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

# Credit Hours per Week	3
# Lecture Hours per Week	1
# Lab Hours per Week	4
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	
Spring	x
Fall and Spring	

G.   COURSE DESCRIPTION:
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 student's background and course work they will be tasked with varying components of this overall project.

H.   PRE-REQUISITES:
      ENGS 101 Intro to Engineering, 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) apply structural analysis software to design an efficient steel bridge per AISC bridge competition rules	SO 2, SO1		ISLO 2 (PS) and ISLO 5
b) apply AutoCAD and other software if necessary to provide a complete set of shop drawings for the bridge design	SO 2, SO1		ISLO 5
c) provide a complete bill of construction material	SO 2, SO1		ISLO 5
d) work as part of an interdisciplinary team	SO 2, SO1		ISLO 4

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**

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	x
Practicum		Research	
Service Learning		Entrepreneurship [program, class, project]	

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

L.   REFERENCES:
Current Steel Construction Manual, 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
1. Providing the scoring Excel
2. Preliminary design of bridge lay out
3. Preliminary Model of bridge in SAP2000
4. Evaluating the different layout and model and selecting the best based on the Rule book
5. Modelling the Final bridge in SAP2000
6. Providing the Shop Drawings
7. Providing the bill of Construction

8. Providing the Poster