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

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
CONS 366 – STRUCTURAL STEEL DETAILING

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Canino School of Engineering Technology

Department: Civil and Construction Technology

Semester/Year: Fall 2018

A. **TITLE**: Structural Steel Detailing

B. **COURSE NUMBER:** CONS 366

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

Credit Hours: 3
Lecture Hours: 1 per week
Lab Hours: 4 per week
  Other: per week

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:**

An acquaintance with the properties, dimensions, and characteristics of present day shapes and forms is achieved by making detail and erection drawings reflecting present day fabrication and erection procedures for structural steel. Mill practices, tolerances, and billings are considered. Proper drafting techniques are observed. Selection and detailing of beams, girders, columns, and connections is carried out. Drawing prints of columns and connections is carried out. Drawing prints are made for checking purposes from the pencil drawings. The AISC handbook is used extensively as a reference.

H. **PRE-REQUISITES: None** ☐ **Yes** ☒ **If yes, list below:**

CONS 336 (Structural Analysis) and SOET116 (Introduction to Computer Aided Drafting and Design)

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:

Course Student Learning Outcome [SLO]	Program Student Learning Outcome [PSLO]	GER [If Applicable]	ISLO & SUBSETS	
a. Create steel detail drawings that are consistent in quality and scope of those used in the industry.			5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
b. Utilize computer aided drawing and design software effectively and efficiently in the execution of outcome (a).			5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
c. Employ the manual of steel construction effectively and efficiently in the execution of outcome (a).			5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
d. Define terms and explain the principles used in steel detailing and fabrication.			5-Ind, Prof, Disc, Know Skills 1-Comm Skills ISLO	Subsets Subsets Subsets Subsets
			ISLO ISLO ISLO	Subsets Subsets Subsets Subsets

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.   APPLIED LEARNING COMPONENT: Yes ☐   No ☒

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

☐ Classroom/Lab   ☐ Civic Engagement
☐ Internship   ☐ Creative Works/Senior Project
☐ Clinical Placement   ☐ Research
☐ Practicum   ☐ Entrepreneurship
☐ Service Learning   (program, class, project)
☐ Community Service

K.   TEXTS:

Structural Steel Drafting and Design, 2nd Ed., David Maclaughlin and Hector Estrada, (2009)
        Delmar Publishing

L.   REFERENCES:

AISC Manual of Steel Construction, AISC Detailing for Steel Construction

M.   EQUIPMENT: None ☒   Needed:

N.   GRADING METHOD: A-F

O.   SUGGESTED MEASUREMENT CRITERIA/METHODS:

**Grading to be based on a combination of the student's drafting products, quizzes, which
        assess the student's grasp of information and timed drawing exams where the
        student must produce drawings that represent a comprehensive coverage of
        material that has been covered to date.**

P.   DETAILED COURSE OUTLINE:

I. Introduction
  A. The Steel Industry
    1. Manufacture - Mills
    2. Design – Engineering Practice
    3. Interpreting Structural Design Drawings
    4. Detailing and Fabrication
      a. The Drafting Office
      b. Function of the Detail Drawing
      c. Fabrication Shop Practices
      d. Erection and Field Practices
  B. Terminology
  C. Dimensioning Conventions
  D. Using Cadd Effectively

II. Connection Design Considerations
  A. ½ UDL

B. Bolt capacities
C. Weld capacities

III. Creating Column Details
  A. Main Members
    1.W shapes 2.HSS shapes
  B. Beam to Column Connections
  C. Connecting Devices 1.Clips 2.Tabs 3.Gussets
  D. Baseplates
  E. Splices

IV. Creating Beam Details
  A. W shapes 1.Dimensional clearances 2.Capacity of beams
  B. Beam to column connections
  C. Beam to beam connections
  D. Open web joists

V. Adding Bracing Details
  A. Working points
  B. Tensile Capacity of braces
  C. Bolt determination
  D. Weld requirements
  E. Gusset plate design

Q.   LABORATORY OUTLINE: None ☐ Yes ☒

In the lab students prepare drawings of a small, 4 story structure that contains 16 -20 beams and four unique columns. Many of the topics listed below will require more than 1 lab period to complete.
1. Steel Erection Lab (mock steel structure)
2. Acquiring dimensions of steel elements from the AISC manual
3. The steel fabrication industry – AISC Videos
4. The steel detail drawing – common practices
5. Sketching and dimensioning practice
6. Using Autocadd templates, creation of blocks, copying and scaling
7. Using Autocadd -scaled plotting
8. Column detail 1: sketch and cadd drawing
9. Beam detail 1: sketch and cadd drawing
10. Exam 1
11. First floor beams drawing
12. Second floor beams drawing
13. Field Trip
14. First tier columns drawing
15. Third floor beams drawing
16. Exam 2
17. Fourth floor beams drawing
18. Second tier columns drawing
19. Bracing drawing
20. Final Exam