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



# **MASTER SYLLABUS**

## MECH 377 – Capstone I

For available course numbers, contact the Registrar's Office at registrar@canton.edu

## CIP Code: 14.1901

For assistance determining CIP Code, please refer to this webpage <u>https://nces.ed.gov/ipeds/cipcode/browse.aspx?y=55</u> or reach out to Sarah Todd at <u>todds@canton.edu</u>

Created by: Dr. Lucas Craig Updated by: Cullen Haskins

> School: Canino School of Engineering Technology Department: Mechanical Engineering Technology Implementation Semester/Year: Fall 2025

## A. TITLE: Capstone I

## B. COURSE NUMBER: MECH 377

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

# Credit Hours per Week	2
# Lecture Hours per Week	0
# Lab Hours per Week	4
Other per Week	0

## D. WRITING INTENSIVE COURSE:

Yes	
No	Х

## E. GER CATEGORY: N/A

### F. SEMESTER(S) OFFERED:

Fall	Х
Spring	
Fall and Spring	

## G. COURSE DESCRIPTION:

This course is the first course in a two-semester course sequence in the development of a senior design project. Students define a project, define the product to be designed, and engage in conceptual design work to prepare for the second semester course and completion of the design project. During this process, students engage in project discovery, selection, planning tasks, research, and product definition. Students generate multiple design concepts and perform analyses supporting the evaluation thereof, document the advancement of the design state, and present their work in a series of design reviews.

## H. PRE-REQUISITES: MECH 312 CO-REQUISITES:

### I. STUDENT LEARNING OUTCOMES:

Course Student Learning Outcome [SLO]	Program Student Learning Outcome [PSLO]	GER	ISLO & Subsets
a. Perform project discovery, selection, and planning tasks; define a product; generate and evaluate concepts	SO 2		<ol> <li>Critical Thinking [CA, IA, &amp; PS]</li> <li>Industry, Professional,</li> <li>Discipline Specific Knowledge and Skills</li> </ol>

b. Perform research supporting project	SO 3	3. Foundational Skills [IM & QTR]
advancement		
c. Prepare and present	SO 3	
project and product		1. Communication [W & O]
proposals		

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	Х
No	

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

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

# K. TEXTS: N/A

## L. REFERENCES:

Hoffman, Harvey. The Engineering Capstone Course: Fundamentals for Students and Instructors. New York: Springer, 2014

Ullman, David. The Mechanical Design Process

## M. EQUIPMENT: N/A

## N. GRADING METHOD: A-F

#### 0. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Student Artifacts

- Project Discovery & Selection
- Project Proposal & Plan
- Product Definition (House of Quality)
- o Concept Generation
- o Concept Analysis, Evaluation, and Selection
- Product Proposal
- Team Member Evaluation(s)

# P. DETAILED COURSE OUTLINE:

See Laboratory Outline

## Q. LABORATORY OUTLINE:

General Timeline:

- 1. Week 1: Project Discovery
- 2. Week 2: Choose Project
- 3. Week 3: Plan Project Part 1
  - a. Develop Team
  - b. Identify Tasks
  - c. Estimate Resources
- 4. Week 4: Plan Project Part II
  - a. Develop Task Sequence
    - b. Estimate Costs
    - c. Write outline for MECH 477 Design Report
- 5. Week 5: Design Review
- 6. Week 6: Write Campus Enhancement Award
- 7. Week 7: Define Product Part I
  - a. Identify Customers
  - b. Develop Customer Data Collection Methods
- 8. Week 8: Define Product Part II
  - a. Collect Customer Data
  - b. Generate Customers' Requirements
- 9. Week 9: Define Product Part III
  - a. Evaluate Competition
  - b. Generate Engineering Specifications
  - c. Set Targets
- 10. Week 10: Generate Concepts
  - a. Basic Methods
- 11. Week 11: Generate Concepts
  - a. Patents, Experts, TRIZ, Evaporating Cloud, etc.
- 12. Week 12: Evaluate Concepts
- 13. Week 13: Choose Concepts & Document
- 14. Week 14: Refine Plan
- 15. Week 15: Product Proposal Presentation