

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



MASTER SYLLABUS

MECH 221 –MET LAB

CIP Code: 15.0805

*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: N/A

**CANINO SCHOOL OF ENGINEERING TECHNOLOGY
MECHANICAL ENGINEERING TECHNOLOGY
FALL 2022**

A. TITLE: MET LAB

B. COURSE NUMBER: MECH 221

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

Credit Hours: 1

Lecture Hours ___ per Week

Lab Hours 2 Week (1x at 2 hours)

Other ___ per Week

Course Length (# of Weeks): 15

D. WRITING INTENSIVE COURSE: Yes

E. GER CATEGORY:

Does course satisfy more than one GER category? If so, which one?

F. SEMESTER(S) OFFERED: (*Spring*)

G. COURSE DESCRIPTION:

In this course, students explore concepts related to statics, strengths, and materials courses through labs designed to reinforce key concepts. Students utilize knowledge and skills developed during the first two years of their engineering education to solve a simple design problem. Written communication skills are practiced and refined through the creation of lab reports documenting key information for each lab and/or design experiment.

H. PRE-REQUISITES: ENGS 201

CO-REQUISITES: ENGS 203 and ENGS 205

I. STUDENT LEARNING OUTCOMES:

<u>Course Student Learning Outcome /SLO/</u>	<u>PSLO</u>	<u>GER</u>	<u>ISLO</u>
a. Demonstrate practical ability to select and apply knowledge of engineering and technology from statics, strengths, and engineering materials courses to solve well-defined engineering problems.	ABET SO#1 – e: “Select and apply knowledge of engineering and technology”		2-Critical Thinking 5-Ind, Prof, Disc, Know Skills
b. Demonstrate an ability to design solutions for well-defined technical problems.	ABET SO#2 – b: “Design solutions for well-defined technical problems”		2-Critical Thinking 5-Ind, Prof, Disc, Know Skills
c. Demonstrate an ability to apply written and graphical communication in well-defined technical environments.	ABET SO#3 – b & c: “Written Communication” and “Graphical Skills”		1-Comm Skills, Written

d. Demonstrate an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results.	ABET SO#4 – a & b: “Conduct tests and measurements” and “Conduct, analyze, and interpret experiments”		5-Ind, Prof, Disc, Know Skills
e. Demonstrate an ability to function effectively as a member of a technical team.	ABET SO#5 – b: “Team member”		4-Soc Respons 5-Ind, Prof, Disc, Know Skills

KEY	<u>Institutional Student Learning Outcomes</u> [ISLO 1 – 5]
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 X No

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

Classroom/Lab X
 Internship
 Clinical Practicum
 Practicum
 Service Learning
 Community Service

Civic Engagement
 Creative Works/Senior Project X
 Research
 Entrepreneurship
 (program, class, project)

- K. TEXTS:
Lab Manual
- L. REFERENCES: N/A
- M. EQUIPMENT: Materials Testing Laboratory (NS110)
- N. GRADING METHOD: A-F
- O. SUGGESTED MEASUREMENT CRITERIA/METHODS:
Laboratory Reports
Design Report(s)
Final Exam/Final Project
- P. DETAILED COURSE OUTLINE:
See Lab Outline
- Q. LABORATORY OUTLINE:
1. Lab 1 – Preparing Templates for Memo, Letter, and Full Lab Reports
 2. Lab 2 – Statics: Forces, Moments, and Static Equilibrium
 3. Lab 3 – Statics: Centroids and Moments of Inertia
 4. Lab 4 – Statics: Frames, Trusses, and Simple Machines
 5. Lab 5 – Strengths: Analysis of Deformable Bodies
 6. Lab 6 – Strengths: Internal Shear, Bending Moment, and Deflection in Loaded Systems
 7. Lab 7 – Strengths: Column Loading and Buckling
 8. Lab 8 – Materials: Tensile Testing
 9. Lab 9 – Materials: Effects of Cold Working
 10. Lab 10 – Materials: Impact Testing
 11. Lab 11 – Materials: Mechanical Properties and Selection (Including Heat Treatment)
 12. Lab 12 – Design Project/Experiment
 13. Lab 13 – Design Project/Experiment
 14. Lab 14 – Design Project/Experiment Testing & Review for Final Exam
 15. Final Exam – Design to test practical understanding of concepts covered in lab.