

Massachusetts Maritime Academy – Department of Marine Engineering
Strengths of Materials Lab EN-3112L
Spring 2025

Instructor: Joe Riordan

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Office Hours: Monday, 0800-1000, Wednesday, 1200-1400, Thursday 0800-1000, or by appointment

Requisites:

Strength of Materials - Must be taken either prior to or at the same time as this course.

Entrance Requirements

- Demonstrate safe practices in laboratory environments.

Texts:

Mechanics of Materials Eighth Edition

Beer, Johnston, Dewolf, Mazureck

Caution:

- No food or drink is allowed in the classroom except bottled water.

Course Description:

This is the lab for Strength of Materials. This lab reinforces the basic concepts of normal stress, shear stress, torsion, beam bending and deflection, and beam design as taught in the Strength of Materials course. Formal engineering reports are required with emphasis on writing and spreadsheet skills.

Attendance:

- Attendance is mandatory for all labs

Dress Code:

All regimental cadets are required to be in the uniform of the day. Boiler suits are permitted; however, they must be clean and with no holes. If you are not in the proper uniform, you will be asked to leave, which will count as an absence.

Food & Drink:

No food and drink except water are allowed in the classroom.

Blackboard:

Blackboard will enhance the overall course content. It will be used to upload Lab content. You are responsible for checking your Blackboard for material and ensuring you can log in.

Homework:

Homework is only assigned if lab reports are not completed during the Lab. In that case lab reports are due by midnight the day of the lab.

Disability Accommodation:

Massachusetts Maritime Academy is committed to providing academic accommodations to students who qualify. Students with an IEP or 504 Plan in high school or others who believe they may need and qualify for accommodations in this class are encouraged to contact Dr. S. Elaine Craghead, Assistant Dean and Academic Accessibility Services Coordinator, ideally within the first two weeks of class. Please remember that academic accommodations are not retroactive. Dr. Craghead can be contacted at ADAcompliance@maritime.edu or x5350.

Mental Health:

If you feel overwhelmed or worried about a friend, don't hesitate to contact me or your academic advisor. We can try to help or put you in touch with someone who can. Mass Maritime Academy has trained counselors who are available to listen and help.

Lab Report Assignments:

Lab Report assignments will be posted on Blackboard at the beginning of each week.

Labs:

- Week 1: MICROSOFT EXCEL Review:**
- Week 2: Ultimate Shear Stress -Excel**
- Week 3: Ultimate Tensile Stress by Extensometer**
- Week 4: Izod and Charpy Impact-Excel**
- Week 5: Poisson's Ratio Only-MEMO**
- Week 6: Torsion-Tinius Olsen**
- Week 7: Bending Stress on a prismatic beam -ANY LOAD- Excel**
- Week 8: Stress Concentration-MEMO**
- Week 9: Principal Stresses - Excel**
- Week 10: Equation of the Elastic Curve-2 loads Excel-BB**

Student Learning Outcomes:

Success in this course will be students performing destructive testing in a controlled and monitored fashion. The production of an EXCEL or MEMO engineering report demonstrates student's competency in delivering concise technical information.

Learning Objectives:

After this course, the student should be able to:

- Demonstrate a basic strength of materials knowledge about component and system failures
- Demonstrate a basic understanding of material properties
- Demonstrate basic use of spreadsheet and graphing software

The course supports the achievement of the following ABET objectives:

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to identify, formulate, and solve engineering problems
- An ability to communicate effectively orally and report format

Student/Instructor Responsibilities:

Instructor will:

- Arrive on time, prepared for class
- Maintain student hours
- Treat students with respect
- Grade all labs promptly
- Inform students of any changes to the syllabus

Students will:

- Check email and Blackboard
- Arrive on time for class, prepared
- Treat all classmates with respect
- Reach out to the instructor with concerns or questions

Note:

This syllabus is subject to change. Students will be notified if anything changes in the syllabus throughout the course.