

Syllabus

Instructor: Dr. Norman Munroe

Room: EC 3443

Phone: 305-348-3556

Email: munroen@fiu.edu

Office Hours: Mon. & Wed 10:00am – 12:00pm.

Classroom: EC3275

Schedule: Wed. 1:00 -3:50pm

Textbook: No textbook is required for the course; instructions for the experiments are available on the class website as a downloadable PDF.

Objectives

1. To reinforce the concepts of mechanics of materials and mechanical design through hands-on laboratory experiments. To practice experimental data analysis and technical report writing. Experiments include:
 - a. Tensile Test
 - b. Torsion of a Rod
 - c. Beam Bending
 - d. Euler Buckling
 - e. Rockwell and/or Vickers Testing
2. To acquaint students with the methods of experimental data analysis
3. To reinforce the students' technical communication skills and teamwork spirit.

Topics Covered

1. Introduction of Mechanics of Materials, Laboratory Safety, Writing Technical Reports
2. Tensile Testing
3. Force Measurement: Strain Gage and Wheatstone Bridge Circuits
4. Torsion Testing
5. Beam Bending
6. Moments in Beams

7. Euler Buckling
8. Hardness Testing: Rockwell and/or Vickers

Grading Policy

Reports & Presentations	70%
Experiments & Attendance	30%

A	95.0 – 100
A-	90.0 – 94.9
B+	86.7 – 89.9
B	83.3 – 86.6

B-	80.0 – 83.2
C+	76.7 – 79.9
C	73.3 – 76.6
C-	70.0 – 73.2

D	60 – 69.9
F	Below 60

Reports and Presentations: All reports and presentations have to be submitted electronically. Reports should be submitted in PDF and Presentations in MS PowerPoint format, any other electronic formats will not be accepted. The file name of all files being submitted should be: EML3301L_Sect#_Exp#_Grp#.pdf (i.e.: EML3301L_U01_Exp1_Grp1)

Any Experiment Not Attended Receives a Zero for the Report and the Presentation.

Missing 2 Experiments Results in Failure of the Course.

Being Absent for a Presentation, Results in a Zero for that Presentation.

Presentations or Reports Submitted Late Will Be Deducted 20 Points from the Final Overall Grade.

Incomplete Data for an Experiment or Not Turning in Shared Data in a Timely Manner will Result in a 50 Point Deduction from the Final Grade of that Report.

Tentative Schedule

Week	Topic
1	Introduction, Lab Safety, and Experimental Report
2	Experiment 1: Tensile Test
3	Experiment 1 (cont.)
4	Experiment 2: Beam Bending
5	Experiment 2 (cont.)
6	Experiment 3: Torsion of a Rod
7	Experiment 3 (cont.)
8	Experiment 4: Euler Buckling
9	Experiment 4 (cont.)
10	Experiment 5: Strain and Stress
11	Experiment 5 (cont.)
12	Experiment 6: Hardness Testing
13	Experiment 6 (cont.)

Mechanical Engineering Program Objectives

ME Program Educational Objectives

1. A broad and in-depth knowledge of engineering science and principles in the major field of Mechanical Engineering for effective engineering practices, professional growth, and as a base for life-long learning.
2. Hands-on experience with available instruments and lab techniques to bridge classroom learning and practical, “real world” problems.
3. The ability to utilize analytical and experimental methods, along with modern computing techniques, in-order to effectively create engineering designs and to solve realistic engineering problems.
4. The ability to work effectively with others in a team, while simultaneously maintaining independent and creative thought.
5. The ability to communicate effectively and to articulate technical matters using verbal, written, and graphic techniques.
6. An adequate background to pursue graduate studies in engineering and other fields.
7. A sense of professional and social responsibility, including a commitment to protect both occupational and public health and safety, developed through the consideration of moral, social, and ethical paradigms related to the engineering profession and practice.

ME Program Outcomes

- A. The ability to apply knowledge of mathematics, science, and engineering.
- B. The ability to design and conduct experiments, as well as to analyze and interpret data.
- E. The ability to identify, formulate, and solve engineering problems.
- F. Understanding of professional and ethical responsibility.
- G. The ability to communicate effectively.
- I. Recognition of the need for and ability to engage in life-long learning.
- K. The ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.