

Syllabus

Instructor: Dr. Brian Reding & Dr. Andres Tremante

Office Hours: TBA

Room: TBA

Classroom: EC3410 / EC3330

Phone: 305-348-1806 & 305-348-0149

Schedule: TBA

Email: breiding@fiu.edu & tremante@fiu.edu

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 introduce students to the process of designing an experiment for mechanical engineering systems; specifically in heat transfer.
2. To acquaint students with the methods of experimental analysis
3. To reinforce the students' technical communication skills and teamwork spirit.

Topics Covered

1. Laboratory Safety and Writing Technical Reports.
2. Introduction of Heat Transfer and Thermodynamics.
3. Basic Concepts and Combination of Modes of Heat Transfer
 - a. Conduction
 - b. Free and Forced Convection
 - c. Radiation
4. Experimental Data Analysis and Dynamic Response of First Order Systems
5. Transient Heat Transfer
6. Heat Exchangers

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: EML4906L_Sect#_Exp#_Grp#.pdf (i.e.: EML4906L_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: Cross Flow Heat Exchanger
3	Experiment 1 (continued)
4	Experiment 2: Extended Surface Heat Transfer
5	Experiment 2 (continued)
6	Experiment 3: Transient Heat Transfer
7	Experiment 3 (continued)
8	Experiment 4: Forced Convection Over a Cylinder
9	Experiment 4 (continued)
10	Experiment 5: Natural Convection and Radiation
11	Experiment 5 (continued)
12	Experiment 6: Forced Convection and Radiation
13	Experiment 6 (continued)

Required Materials

Item	Recommended	Website	Item Number	Quantity
Thermocouple Reader	Omega UTC-USB	http://www.omega.com/	UTC-USB	1 per Group

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.
- D. The ability to function on multi-disciplinary teams.
- E. The ability to identify, formulate, and solve engineering problems.
- G. The ability to communicate effectively.
- K. The ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.