COURSE SYLLABUS
MIE-402 MECHANICAL ENGINEERING LABORATORY II
Fall 1999

INSTRUCTOR
Yossi Chait, Elab 208F, 5-0134, Email: chait@ecs.umass.edu, is in charge of the course, class lectures, and assigning course letter grades. Lab sessions will be supervised as follows:
W (1:25-4:25) Ashish Deshpande (grad student)
Th (9:30-12:30) Yossi Chait
Th (1:25-4:25) Ashish Deshpande (grad student)

CATALOG DESCRIPTION
• Mechanical Engineering Laboratory II (both sem), 4 cr.
• Two 75-min lectures (M 11:15-12:30, W 11:15-12:30).
• One 3-hour lab (W 1:25-4:25, Th 9:30-12:30; Th 1:25-4:25).
• Prerequisites: ECE 361, MIE 302, 340, and 444 (MIE 444 may be taken concurrently).

COURSE OBJECTIVES
The objective of this course is to equip the students with the skills necessary to conduct engineering experiments. It includes
♦ analytical experiment planning;
♦ use of basic engineering measurement instrumentation including the oscilloscope, digital voltmeter, and signal generator;
♦ measuring different physical variables such as temperature, pressure, velocity, strain, position and torque.
♦ making simple engineering measurements within given tolerance levels;
♦ understanding the role and usage of state-of-the art data acquisition software/hardware.
♦ performing basic data analysis, and
♦ keeping written record of experimental work;
♦ writing engineering laboratory reports; and
♦ presenting laboratory results orally.
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COURSE FORMAT
General background material on mechanical engineering measurements will be discussed in the lectures. Specific information on the various laboratory exercises will also be given during lectures, as will homework assignments. Attendance at lab meetings is mandatory.

Lab sessions meet once per week and normally require background reading and/or preliminary computations. Lab work will normally be done in two-student groups with each student writing his/her own memo/report. Each student is required to have a laboratory notebook (bound, doubled paged, removable pages) in which preliminary computations, lab procedures, data, calculations and other pertinent information should be neatly recorded. These notebooks should be brought to each laboratory session.

Two types of written laboratory reports will be utilized. One is the formal lab report with Abstract, Analysis, Procedure and Results, Discussion and Conclusion sections. The second type is a short memorandum report of one or two typewritten pages plus attachments. In addition, each group will give two to three oral presentations on specific laboratory assignments.

LABORATORY TOPICS: Different topics are addressed in the weekly lab sessions. Workshops do not require memo/reports.

Our laboratory topics includes are:
1. Test Equipment workshop
2. Probability, Statistics and Uncertainty Analysis experiment
3. Data Acquisition and Signal Processing workshop
4. Fluid Mechanics experiment
5. Mechanical Vibration experiment
6. Frequency response experiment
7. System Dynamics/Controls I experiment
8. System Dynamics/Controls II experiment

TEXTBOOK
HOMEWORK
Homework will be assigned and collected at the lecture meetings. Late homework will not be accepted - there will be enough assignments throughout the semester so that if you miss one this policy should not adversely impact the course grade. *Homework assignments must be handed in on a regular basis.* Unless otherwise announced, the following rules shall apply:

⇒ use engineering (or lab notebook) paper,
⇒ one problem per page, one side of the paper only; name, date and problem number on top of page,
⇒ give a brief problem statement for each problem,
⇒ box your answers, and
⇒ be neat - messy work will not be deciphered.

These same guidelines should be followed in carrying out pre-lab assignments in the lab notebook.

GRADING POLICY
The course grade will be computed according to:

1. Lecture portion of course (homework)  15%
2. Laboratory portion of course  85%
   a. Pre-lab assignments  (10%)
   b. In lab write-up  (5%)
   c. Lab notebook (overall)  (5%)
   d. Memos  (15%)
   e. Reports  (25%)
   f. Oral presentations  (25%)

MAKE-UPS
There will be no provisions for making up missed laboratory sessions. Please note that as some sections may be fully enrolled, accommodating students from other sections may not be feasible. Absence from the laboratory should be discussed in advance with the lab instructor (if possible). Last minute emergencies which result in missing a laboratory will be handled on a case-by-case basis.

ACADEMIC HONESTY
A copy of the Faculty Senate Memorandum on Course Procedures & Academic Honesty will be posted during the first weeks of the semester.
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