UNIVERSITY OF THE PACIFIC

COURSE APPROVAL FORM

REVISION

Please fill in all information. Required signatures are on page 2 of this form. Please return to:
Academic Affairs Committee, Office of the Provost, Anderson Hall, 2nd Floor.

Contact Person: Chi-Wook Lee Phone: 63083

Date: 9/12/03 School or College: SOECS Department: Mechanical Engr

Proposed Course #: MECH 110 Title: Instrumentation and Experimental Methods

Proposed Prerequisites: MATH 50 & ENGR 20 or permission of the instructor

Proposed Units: 3 Enrollment/Expected Enrollment: 15 Grade Option: A-F

Existing Course Title: (SAME) Existing Course #: (SAME)

Existing Unit Value: 3 (SAME)

Existing Prerequisites: MATH 57

Revised catalog description:

(No Change)

Please attach a syllabus.

Describe the proposed changes and provide a rationale.

Need to have knowledge of forces and moments in equilibrium. Therefore, ENGR 20 needs to be added as a prerequisite.

If approved, when will this be implemented? Spring, 2004

What is the anticipated impact on resources (e.g., Faculty, funds, library materials, etc.)?

NONE

Describe any special facilities, furnishings, or technical needs. List software needs, if any.

No (Use existing MEC Lab)
## Approval Process

Please obtain all signatures before submitting to Academic Affairs Committee. Acquire signatures in the order in which they are listed below.

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<tr>
<th>Step</th>
<th>Action</th>
<th>Approved by</th>
<th>Date</th>
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<tr>
<td>1.</td>
<td>Action by department requesting addition/change:</td>
<td>[Signature]</td>
<td>9/15/03</td>
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<td>2.</td>
<td>Action by the Curriculum Committee of the School/College:</td>
<td>[Signature]</td>
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<td>3.</td>
<td>Action by the Dean of the School/College:</td>
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<td>4.</td>
<td>Action by the Dean of the Library:</td>
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<td>5.</td>
<td>Action by the Director of Educational Technology Services (If computer lab, software needed):</td>
<td>N/A</td>
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<td>6.</td>
<td>Action by the Registrar:</td>
<td>[Signature]</td>
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<td>7.</td>
<td>Action by the General Education Committee (as appropriate):</td>
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<td>Action by the Academic Affairs Committee:</td>
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After approval by the Academic Affairs Committee, information regarding new, revised, or deleted programs and courses is sent to the Registrar for listing in or modifying the catalog.

Form revised 9/4/03
MECH 110 Instrumentation and Experimental Methods (3)  
Fall, 2003

Instructor Dr. Chi-Wook Lee  
(Office) Khoury 104  
(Phone) 946-3083  
e-mail: clee@uop.edu

Class Time  
9:30 AM - 10:50 AM  
MW (Lecture)  
9:30 AM - 10:50 AM  
F (Lab1)  
11:00 AM - 12:20 PM  
F (Lab2)

Class Rooms  
Khoury 205 for lecture, Anderson 107 (LabVIEW) and Khoury 201  
(Measurement and Instrumentation) for lab

Office Hour  
Open Door Policy  
9:00 – 11:00  
TR or by appointment

Course Description  
- Experimental techniques in the measurement of quantities such as strain, force,  
temperature, pressure, flow, motion, and noise.  
- Statistical analysis and errors in measurement, data analysis and transmission.  
- Use of instruments in the laboratory.

Prerequisites  
MATH 57 Ordinary Differential Equations

Text  
Mechanical Measurements, by T.G. Beckwith et al., 5th Ed., Addison  
Wesley, 1995 (required)  
Learning with LabVIEW 6i, by R.H. Bishop, Prentice Hall, 2001  
(recommended)

Course Objectives  
Upon completion of this course you should be able to:  
- Understand the basic elements of measurement pertinent to mechanical systems,  
- Analyze and interpret experimental data,  
- Use the LabVIEW for data acquisition and analysis for a system,  
- Design a measurement experiment in mechanical engineering systems.

Topics  
- Basic Circuit Analysis  
- LabVIEW for Laboratory Virtual Instrument Engineering Workbench (Handout)  
- The Process of Measurement: Overview (Chapter 1)  
- Standards and Dimensional Units of Measurement (Chapter 2)
• Assessing and Presenting Experimental Data (Chapter 3)
• The Analog Measurand: Time-Dependent Characteristics (Chapter 4)
• The Response of Measuring Systems (Chapter 5)
• Sensors (Chapter 6)
• Signal Conditioning (Chapter 7)
• Digital Techniques in Mechanical Measurements (Chapter 8)
• Readout and Data Processing (Chapter 9)
• Measurement of Pressure (Chapter 14)
• Measurement of Motion (Chapter 17)
• Temperature Measurements (Chapter 16)
• Strain and Stress: Measurement and Analysis (Chapter 12)

Grading

Homework 10%
Quizzes 10%
Lab Reports 30%
Exams 30%
Final/Project 20%
Class Participation 10%

(Final Examination Schedule: Dec. 17 (Wednesday), 8:00 AM – 11:00 AM)

Homework – Homework is assigned on a weekly basis. Due date is before or at the beginning of the class one week after the homework is assigned. You can work in groups but the submitted work must be yours.

Quizzes - 10 minute quiz (average 1 quiz per week)
Lab Reports – Must be typed and should be submitted within one week after the completion of lab exercises. Should follow the provided department of mechanical engineering guidelines for laboratory.

Tests – TBA
Final/Project – There will be a final design project to measure mechanical properties from mechanical systems or comprehensive exam. On a scheduled day for final exam, in case of project, you have to present your work (oral and written).

Class Participation – It includes attendance, answering questions in class, presenting problems.

Important Dates

• Labor Day Holiday September 1
• Fall Student Break October 10
• Last Day to Drop October 17
• Thanksgiving Holiday November 26 - 28
• Classes End December 12
Class Etiquette
Lecture begins at 9:30 am and Lab starts at 9:30 am (or 11:00 am). Repetitive tardiness is disruptive to the class and will not be tolerated. If you must be late for a lecture please let me know ahead of time. Eating and drinking in class should be avoided. If your class schedule does permit you time for lunch, then I ask you to be courteous when you eat in class.

Honor Code.
The University Honor Code is an essential element in academic integrity. It is a violation of the Honor Code to give or receive information from another student during an examination; or to submit all or part of someone else's work as one's own. If a student violates the Honor Code, the faculty member may refer the matter to the office of student life. If found guilty, the student may be penalized with failure of the assignment, or failure of the course. The student may also be reprimanded or suspended from the University. A complete statement of the Honor Code may be found in the student handbook, the Tiger Lore.

Final Note
There will be no make-up test unless you have a very good reason such as medical. However, if there is a time conflict and if and only if you let me know in advance, you may take the test before the class takes the test. This syllabus has been created to give you an idea about the course. This can be changed at any time during the semester.