ME 454 Dynamic Mechanical Systems Laboratory Winter 2010

CATALOG DESCRIPTION
Design, implementation, and use of portable digital data acquisition systems for characterization and control of dynamic mechanical systems. Emphasis on durable systems developed for harsh environments.

CONTACT INFORMATION
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CLASS MEETINGS
Lecture: Section 005 CRN 35867 Covell 218 Monday and Wednesday 3:00 – 3:50 PM
Lab: Section 010 CRN 35868 Rogers 330 Monday and Wednesday 12:00 – 13:50 PM
Lab: Section 020 CRN 37295 Rogers 330 Tuesday and Thursday 8:00 – 9:50 AM

PREREQUISITES
ME 451 – Introduction to Instrumentation and Measurement Systems

ELECTRONIC FILE ACCESS
web: http://classes.engr.oregonstate.edu/mime/winter2010/me454-005
unix: /nfs/stak/a2/classes/mime/winter2010/me454-005
windows: \stak.engr.oregonstate.edu\classes\mime\winter2010\me454-005

GENERAL DESCRIPTION
This course explores experimental dynamics as a counterpart to theoretical and analytical classes in dynamic mechanical systems and control. Course content focuses on the experimental assessment of dynamic response from two perspectives: 1) the measurement of parameters used in analytical predictions, and 2) the evaluation of predicted results. Emphasis is placed on the development of portable measurement systems, design and execution of dynamic experiments, analysis of dynamic data, and critical comparison with modeling results.

COURSE LEARNING OUTCOMES
1. Design digital data acquisition systems for dynamic measurements of mechanical signals.
2. Calculate sampling frequencies using Fourier Transform methods and select analog signal filters.
3. Select transducers suitable for dynamic measurements of acceleration, displacement, and strain.
4. Develop protective packaging for portable measurement systems deployed in harsh environments.
5. Analyze and interpret dynamic data in both time and frequency domains.

GRADING
Project Task Reports (3): 20% each 60% total
Final Project Report: 40%

STATEMENT REGARDING STUDENTS WITH DISABILITIES
Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through SSD should contact SSD immediately at 737-4098.

LINK TO STATEMENT OF EXPECTATIONS FOR STUDENT CONDUCT
http://oregonstate.edu/admin/stucon/achon.htm