Sample Syllabus

PennState

Department of Mechanical and Nuclear Engineering

ME375 – Vibrations Laboratory
Spring 2019

Classroom: 239 Reber Building

Section #1: Tuesday 11:15 – 14:15
Section #2: Tuesday 14:30 – 17:30

Pre-requisite or concurrent: ME 345, ME 370

Grading:

50% Three individual lab reports and one group presentation

25% Weekly deliverables

25% Weekly quizzes

Course Instructional Outcomes:

1. To plan, implement and debug instrumentation to measure free and forced dynamic responses of mechanical systems.
2. To effectively operate dynamic motion sensors, data acquisition and understand computer based processing of the data.
3. To identify the dominant system dynamic characteristics from experimental data.
4. To select a system dynamics model that is most appropriately captures the dominant characteristics.
5. To understand the interplay of using experimental data and observations to develop an accurate system dynamics model.
6. To understand a model capabilities in relation to measurement statistical uncertainty.
7. To appreciate the fundamental capabilities of analytical models to capture the system dynamics of actual mechanical hardware.

ABET Student Outcomes supported by the course:

b. An ability to design and conduct experiments, as well as to analyze and interpret data.
g. An ability to communicate effectively.

ME 375 Schedule

Week	*Date*	*Topic*	*Due*
1	Tue Jan 8	MATLAB Review	
2	Tue Jan 15	Introduction to Data Physics Hardware and Software	
3	Tue Jan 22	Translational Test Stand - Free Vibration Experimental Analysis	
4	Tue Jan 29	Translational Test Stand - Analytical and Experimental Comparison	
5	Tue Feb 5	Torsional Test Stand - Free Vibration Analysis	
6	Tue Feb 12	Translational Test Stand - Base Excitation Analysis	Report 1
7	Tue Feb 19	Fourier Analysis - Power Spectra	
8	Tue Feb 26	Pump Isolation Platform Performance	
	Tue Mar 5	Spring Break – No Class	
9	Tue Mar 12	Finite Element Modal Analysis	Report 2
10	Tue Mar 19	Experimental Modal Analysis	
11	Tue Mar 26	RC Car Spring Constants and Shock Absorber Damping Constants	Report 3
12	Tue April 2	RC Car suspension design	
13	Tue April 9	RC Car Suspension Performance Assessment	Presentation

Instructor:

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Graduate Teaching Assistant
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Course Policies:

- **Academic Integrity:** Students are expected to abide by the College of Engineering's Academic Integrity policy, (http://www.engr.psu.edu/CurrentStudents/acadinteg.aspx). In this course, students are expected to work together with their team in the laboratory to perform the experiments and gather the data. The lab reports are to be individually based upon the team gathered information. Plagiarism is strictly prohibited. An example of behavior that is considered plagiarism is submitting a written assignment that includes text taken directly from another source and/or text that is not properly referenced. If you have any questions as to how to properly reference material taken from another source, please ask.
- **Deadlines:** All reports and materials are due at the start of the class period as shown in attached syllabus. Late submissions will NOT be accepted.
- **Grading Disputes:** If a student feels that a report or homework set was graded unfairly or in error, please bring it to my attention within one week after the graded material was handed back. Scores will not be reconsidered after this time period has elapsed.
- **Attendance:** As a laboratory oriented activity, your active participation is needed. Team members are expected to attend **ALL** classes. As a professional courtesy, please inform the instructor prior to any anticipated legitimate absences. Each absence without a reasonable excuse is one letter grade reduction, etc,. Illness or a job interview is a reasonable basis. Job interview absences must be previously cleared with all team members and instructor. Also see the Faculty Senate Policy on Class Attendance (42-27).
- **Influenza:** In compliance with Pennsylvania Department of Health and Centers for Disease Control recommendations, students should NOT attend class or any public gatherings while ill with influenza. Students with flu symptoms will be asked to leave campus if possible and to return home during recovery. The illness and self-isolation period will usually be about a week. It is very important that individuals avoid spreading the flu to others.
- **Cell Phones:** Turn cell phones off upon entering classroom.