MEMS 431 Structural Dynamics and Vibrations

Laboratory Manual for fall 2012

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Course website: http://classes.engineering.wustl.edu/mems431_lab

MEMS 431: Lab Policies

Safety:

The first concern during all labs should be safety. Dynamics necessarily involves moving parts, so some care is required. Note specific safety suggestions in individual labs.

1) Read instructions and safety notices. Listen to directions from the lab instructor.
2) Know the locations of exits and telephones.
3) Do not touch bare electrical wires, even in low voltage circuits.
4) Do not turn on power to a device before you understand its operation.
5) Before turning on any device, make sure your hands, clothing and hair are not dangerously near moving parts. *Be especially careful of long hair and neck ties*.
6) Whenever possible, start tests at low speed and amplitude. Slowly increase values.
7) Use extreme caution when handling equipment near the Lenovo laptop. Be careful not to scrap or drop tools or equipment on or near the laptop.

Assignments:

Lab write-ups have a variety of formats: full report, extended abstract, or other. The lab schedule and the lab manual list the desired format for each lab. A sample lab report is located on the course website. Design experiment reports need not follow the lab report format exactly, but should be clear, concise, professional descriptions of your design.

Lab report grading follows guidelines shown in Table 1. Grading for design projects is similar, although the *Procedures* and *Results* section replaces sections such as *Design Objectives* and *Design Approach*.

Assignments are due at the next meeting of the lab group, usually two weeks later. *Each student must turn in a report for each lab. Each report must contain a copy of the raw data taken in lab. Collaboration between students is encouraged, but tabulating raw data, and creating the final text and graphics must be the work of only the author of the report.*

Make-up and late labs:

Students who miss a lab for a valid reason may be able make up the work during a scheduled lab period if they request a make-up lab before they miss the lab. Students are required to complete the lab within two weeks of the original date. The instructors will not schedule extra lab sessions. Late labs receive half credit up to one week after the due date. Labs receive no credit if they are more than one week late.

Groups: Each lab section (A, B, C) will be broken into four groups (1, 2, 3, and 4). Groups 1 and 2 meet on the first week of every 2-week cycle. Groups 3 and 4 meet on the second week. The early groups (1 and 3) will meet from 1:00pm-2:30pm, while the late groups (2 and 4) will meet from 2:30pm-4:00pm.

Academic Integrity:

Violations (cheating, plagiarism) will result in a zero for the assignment and possible referral to the judiciary board.

Table 1

Category	Score	Note
Abstract	5	Overview and summary
Introduction	10	Experiment background, experiment devices list, overview of goals and procedures
Theory	10	Experiment theoretical background, key equations, formula for parameter calculation
Procedure	15	Detailed experiment steps, schematic drawing of experiment (connections)
Results	15	Raw data acquired, clear data table (upload raw data file to backboard)
Discussion	15	Observed experimental phenomenon discussion, related to what you learned from textbook
Conclusion	15	Short summary of experiment results
Appendix	5	Large equations (detailed derivation), large tables
References	5	Consistent reference style
Clarity & Style	5	Simple and clear
Total	100	