

Vm395: Mechanical Engineering Laboratory I

Summer 2017

Lectures: Mon 14:00–15:40, Wed 16:00–17:40, 4th-floor JI Teaching Lab
 Lab Section: Wed 18:20–21:20, 4th-floor JI Teaching Lab

This syllabus is subject to change at the instructors' discretion, based on class progress and needs.

INSTRUCTORS

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VM395/495 ME LAB TEACHING ASSISTANTS

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VM395 TECHNICAL COMMUNICATION TEACHING ASSISTANT

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COURSE DESCRIPTION AND OBJECTIVES

This is the first of two required Mechanical Engineering Lab courses that offer hands-on lab experience on the basics of mechanical engineering experimentation. The learning objectives for Vm395 include

- 1) Developing lab skills and competencies needed by professionals in mechanical engineering
 - Students will be aware of standard procedures and safe conduct in a laboratory
 - Students will gain hands-on experience in using basic measuring equipment for mechanical, thermal and fluid systems
 - Students will acquire, process, and reduce experimental data into clear and informative figures
 - Students will estimate the uncertainty of an experimental result due to measurement errors
- 2) Developing skill in communicating technical information orally and in writing
 - Students will build on the skills developed in previous courses in communicating technical ideas in oral presentations and written reports
- 3) Acquiring skills in working with others as a member of a lab team
 - Students will develop team-building skills to work more effectively as a team member to accomplish a common team goal

The IDEA course evaluation in the Joint Institute will assess Vm395 teaching effectiveness based on student progress towards these learning objectives.

More about IDEA

The IDEA Student Ratings of Instruction is an **anonymous** online survey administered externally by the non-profit IDEA Center (<http://www.theideacenter.org/services/student-ratings>). The survey is typically set for the last two weeks of the term, although more details will be forthcoming. Your prompt, thoughtful, and honest feedback through this survey is crucial for us to identify aspects of Vm395 instruction that are effective and areas for improvement.

COURSE PRE/CO-REQUISITES

Physics (Vp240/Vp260 and Vp241), solid mechanics (Vm211), dynamics (Vm240), thermodynamics (Vm235); preceded or accompanied by fluid mechanics (Vm320) and materials (Vm382). **You are expected to have access to the textbooks and materials from these pre/co-requisite courses.**

ADDITIONAL REFERENCE TEXTS

A. J. Wheeler and A. R. Ganji, 2004. *Introduction to Engineering Experimentation*, 2nd ed. (international ed.). Pearson Prentice Hall, NJ (ISBN: 978-013-124685-0).

R. S. Figliola and D. E. Beasley, 2011. *Theory and Design for Mechanical Measurements*, 5th ed. (international student ver.). Wiley (ISBN: 978-0-470-64618-2).

- These textbooks are available from the SJTU Main Library.
- They are not required texts.

Canvas Course Management System

Canvas (<http://umji.sjtu.edu.cn/canvas> → “Login with JAccount”) hosts the electronic versions of all Vm395 course materials, including lecture notes from the instructors, as well as documents submitted from each student and lab team. The instructors and teaching assistants may also use Canvas to make announcements and convey urgent messages to the entire class. Therefore, you should remember to check Canvas on a daily basis.

COURSE POLICIES

Academic Integrity

All students in the class are presumed to be decent and honorable, and they are bound by the Joint Institute Honor Code. In the context of Vm395: **all individual work must be completed individually, and all team work must be completed within the team.** You may receive help from the course instructors and teaching assistants. You may also consult with other students/teams in the course. Nevertheless, you must carry out the calculations and write up the pre-labs or the lab reports as stipulated in the lab manual, on your own or for your own team.

You must appropriately acknowledge your use of another person’s work; you may not consult, look at, or possess the unpublished work of others without their permission; you must not falsify laboratory data or results.

Violations will be reported to the appropriate authorities. **If violations are found and proven, there will be an automatic reduction of the final course grade by ONE full letter grade.** Please consult with the course instructors if you have questions about this academic integrity policy.

More Notes on Plagiarism

You must refer to the 2013 JI Undergraduate Student Handbook (2013 USH) for a description of what acceptable academic conduct is. Section 9 of the Handbook contains the Honor Code. In particular,

- “It is dishonorable for students to receive credit for work that is not the result of their own efforts” (2013 USH, Sect. 9.1).
- “It is a violation of the Honor Code for students to submit, as their own, work that is not the result of their own labor and thoughts. This applies, in particular, to ideas, expressions or work obtained from other students as well as from books, the internet, and other sources [including lab manuals]. The failure to properly credit ideas, expressions or work from others is considered plagiarism.” (2013 USH, Sect. 9.4).
- “Plagiarism is taken extremely seriously at JI. A student is required to follow the rules of citation and attribution as set down by the instructor. The following list includes some specific examples of plagiarism:
 - Use of any passage of three words or longer from another source without proper attribution. Use of any phrase of three words or more must be enclosed in quotation marks (“example, example, example”).
 - Use of material from an uncredited source, making very minor changes (like word order or verb tense) to avoid the three-word rule.
 - Inclusion of facts, data, ideas or theories originally thought of by someone else, without giving that person (organization, etc.) credit.
 - Paraphrasing of ideas or theories without crediting the original thinker.” (2013 USH, Sect. 9.4).

For VM395 Summer 2017, **all** members of a team are accountable for each section of their team lab report. This means that if one member of a team has plagiarized in their contribution to a lab report, all members are in danger of receiving penalties for plagiarism. Proofread and edit one another’s work; this is standard procedure in professional lab reports! Do not consider your lab partners as independent writers. We have notified the Honor Council about this policy for this course specifically, so any appeals for plagiarism or other offenses caused by teammates will be difficult to appeal.

Grading

Lab assignments	(team & individual)	65%
* <i>Pre-lab assignment, in-lab performance, participation, safety, post-lab report quality</i>		
Final lab project	(team & individual)	13
* <i>Project performance, participation, safety, oral presentation quality</i>		
In-class assignments, participation	(team & individual)	12
End-of-term quiz (July 24)	(individual)	10
Total		100%

Your pre-lab must be completed on paper, in your own lab notebook, and submitted at the start of each lab section. Otherwise, submit your work electronically (lab write-up, report, presentation slides, etc.) via Canvas. Please use the file name *Vm395_SU2017_Lab#_TeamXX.file extension*).

Assignments must have your student IDs; we will not accept any assignment without one. All students whose names appear on the same document earn the same team grade for that assignment. *All students whose names appear on the same document are also subject to the same sanctions if Honor Code violations are found and proven.*

Attendance and participation in each Technical Communication class is MANDATORY for all students. Failure to attend class will affect your grade. Students who miss over 1/3 of the Technical

Communication classes cannot pass the course. To quote JI policy on leave/missed classes (2013 USH, Sect. 10.6.4):

- “An advance request for leave of absence is required if the student cannot attend the class due to illness or other reasons. Absence without approval will be regarded as skipping classes.”
- “A note that a student visited a medical facility is not sufficient excuse for missing an assignment or an exam. The note must specifically indicate that the student was incapable of completing an assignment or taking an exam due to medical problems and that this condition was sudden enough that it was impractical to contact the instructor in advance.”

In-Class Assignments, Presentations, and Participation

In-class exercises on both the engineering and technical communication aspects of the course may be assigned periodically throughout the semester. These assignments are designed to reinforce the student’s knowledge of the materials covered in class and to promote class attendance, discussion, and participation. Under normal circumstances, **if you are absent in the class when the exercises are assigned, you will NOT be able to make up for them.**

In-class, **voluntary participation** is particularly important. We will be noting, by name, those who show especially rigorous and assertive intellectual curiosity, as well as those with a lackadaisical or disruptive attitude in class.

For instance, **your participation as an audience member will be graded** during the end-of-term final project presentations. The purpose of these presentations is not only to showcase each team’s lab results, but also to generate discussion over each team’s experimental and analysis methods and procedures — a common practice in research and in industry — as well as critique on the presentation itself. To receive credit as an audience, you must actively give comments and ask questions to the presenters during or after their presentation. We will be on the lookout for audience members who are actively listening *and* for students who are not paying attention.

Lab Participation

- 1) **Lab participation in each lab section is MANDATORY for all students.** Lab attendance will be taken at the beginning of each lab section. If your request of absence is approved by the instructor, it is then your responsibility to inform the teaching assistants and make suitable arrangements with your teammates and classmates to attend another regularly-scheduled lab section. Failure to do so will earn you a failing grade for the course.
- 2) The course grade will reflect individual lab participation and lab safety awareness. A student’s grade may be reduced due to (a) *lack of participation* (such as late arrival to, or early departure, or absence from the lab section, or not contributing to the team), or (b) *inattention to safety rules*. Any conduct in contradiction to the lab safety rules or deemed “unsafe” by a lab technician or teaching assistant will reduce a student’s participation and safety grade, and may result in expulsion from the class.
- 3) **Plan your work and work your plan.** Use your lab time wisely — plan ahead, before arriving at the lab, on what you are going to do during that lab section.
Remember the *Six P’s*: **Proper Prior Planning Prevents Poor Performance.**
- 4) Each student is responsible for purchasing by themselves a lab notebook of ~B5-size (~176 mm×250 mm) or larger with minimum 80 sheets, *not spiral-bound*. You must complete all pre-lab assignments in this notebook, and bring it to every lab section to record all raw data, experimental conditions, equipment sketches, notes, and calculations. The notebook may be used only for this class. The course instructors may inspect your lab notebooks at any time and reduce your lab participation grade if your notebook is missing or incomplete.

Lab Conduct and Safety Rules

- 1) Each lab section lasts two to three hours. Students are free to leave early, but only upon completing the experiments. However, it is strongly advised that they stay for the remainder of the lab period to analyze the results, write them up, and plan the next steps. All analyses that are not completed in lab must be completed outside of the lab period.
- 2) Data files generated during the lab section must be saved and copied onto the students' personal computers for further analyses and for backup. **The data files will be deleted from the lab computers at the end of each lab section.**
- 3) **No eating or drinking is allowed in the laboratory.** Students are free to leave at any time to take short breaks (restrooms, drinks, etc.).
- 4) No phone call is allowed in the laboratory while the lab section is underway. If you have to answer a call on your mobile phone, please do so outside the lab.
- 5) **The laboratory workspace must be cleaned and restored to the same conditions as when the lab section began.**
- 6) Students must always be careful when operating lab equipment. Excessive force should never be applied. Please ask the teaching assistant or lab technician for assistance if unsure about the equipment or operating procedure, to avoid equipment damage as well as possible personal injury.
- 7) Eye protection must be worn at all times around any moving machinery. Safety goggles are available for use in the lab. Please check with the instructor, teaching assistant, or lab technician for assistance.
- 8) Care must be exercised when plugging in and using electrical equipment.