

MERRIMACK COLLEGE  
Department of Civil Engineering

**GEN 2012L: MECHANICS II LAB (Mechanics of Materials Lab)**

Laboratory Syllabus, Spring 2017

## I. Laboratory Information

### Laboratory instructor:

*Name:* James Kaklamanos, Ph.D. (“Professor Kaklamanos” or “Dr. K.”)

*Office:* Mendel 123

*Email:* KaklamanosJ@merrimack.edu

*Phone:* (978) 837-3401

*Office hours:* Mon. 12:30–1:30 p.m. and 5–6 p.m.; Wed. 12:30–1:30 p.m.; and by appointment

### Teaching assistant (TA):

*Name:* Mr. Jared Peterson (“Jared”)

*Office:* Mendel 351

*Email:* PetersonJ@merrimack.edu

*Office hours:* Tues. and Thurs., 2–4 p.m.; and by appointment

### Lab details:

*Name:* GEN 2012L: Mechanics II Lab (Mechanics of Materials Lab)

*Meeting times and location:*

- Lab sections A and B (a.k.a. M1 and M2, respectively): Mon. 2–4:50 p.m., Mendel 140/141
- Lab sections C and D (a.k.a. W1 and W2, respectively): Wed. 2–4:50 p.m., Mendel 140/141
- Lab meetings for the two concurrent sections (M1, M2 and W1, W2) will occur in one of two ways: (1) back-to-back meetings within the same three-hour block (M1/W1 from 2–3:20 p.m., and M2/W2 from 3:30–4:50 p.m.), or (2) meetings for the full block in alternate weeks (M1/W1 for the entire block during one week, and M2/W2 for the entire block during the following week). The specific details for your section are provided in the lab schedule within this document. All sessions will begin in Mendel 140.

*Lab website:* <<https://blackboard.merrimack.edu>>

### Purpose:

The purpose of GEN 2012L is for you to gain hands-on experience with experiments for evaluating the behavior of engineering materials, and to gain practice with the mechanics concepts learned in lecture. You will conduct laboratory tests to measure the strength of materials, and analyze, evaluate, and communicate experimental data from these tests.

*Please refer to your course syllabus for GEN 2012 for more information about the course details, topics, policies, and schedule. This laboratory syllabus is a supplemental document.*

## II. Policies and Assessment

**Attendance and participation:** Attendance and active participation at all scheduled laboratory activities (nine throughout the semester) is mandatory. If you have a schedule conflict on a particular day, then you must make arrangements to attend one of the other laboratory sections (with the same activity scheduled) by emailing Jared Peterson. If you do not attend any section, then you will receive a zero on that laboratory assignment. If you miss two or more laboratory activities in this fashion, then you will receive an automatic F for both the lab portion of

GEN 2012 as well as the course as a whole. If you have an extended illness or other emergency that will prevent you from attending any of the sections for a given activity, please visit the Hamel Health and Counseling Center and have them send me a note directly.

**Professionalism:**

Professional behavior is expected in all aspects of this lab, as professionalism is an essential characteristic of your future as a practicing engineer. Unprofessional behavior may negatively detract from the laboratory environment and the learning experience of other students, and will not be tolerated. On each instance that you engage in unprofessional behavior, I will immediately deduct one or more points off your grade for the corresponding lab assignment. Continued unprofessional behavior may result in dismissal from the lab. Examples of unprofessional behavior may include, but are not limited to:

- Arriving to lab late or leaving early (except for emergencies).
- Using mobile technology or personal electronic devices (e.g., cell phones, tablets, laptops, etc.) during lab sessions. (Turn your cell phone off and place it out of sight before the beginning of the session, unless you receive my prior consent due to an extenuating circumstance.)
- Using derogatory, vulgar, or insulting language.
- Unsolicited talking.
- Sleeping.

Remember that professional behavior extends to electronic communication as well. I will not reply to any emails that are unprofessional and/or lack a subject, salutation, body, and signature.

**Late assignments:**

Lab submissions are due prior to the beginning of class on the due date (Fridays); once class has begun, you will receive zero credit. Late submissions will not be accepted in this course, as they are usually not accepted in engineering practice. All assignments should be submitted in hard-copy form.

**Grading:**

- Your laboratory average is worth 15% of your final course grade for GEN 2012. There will be six laboratory experiments throughout the semester. The assignments for Laboratory Experiments 1, 2, 5, and 6 will be submitted in the general lab assignment format (data presentation and analysis [calculations, tables, and figures], and answers to specified questions), and will each be worth 10 points. The assignments for Laboratory Experiments 3 and 4 will be formal laboratory reports, and will each be worth 15 points. Your laboratory average will be computed by summing your total earned points divided by the total number of possible points.
- Laboratory assignments will be completed in groups of three students, but smaller groups (i.e. individually or in pairs) are permissible. For groups composed of multiple students, all students will receive the same assignment grade.
- In order to pass this course, you must demonstrate mastery of the material presented in lab, and this means that your laboratory assignment average must be greater than 60%. Note that it will be virtually impossible to pass the course if you miss more than one lab assignment. All assignments must be submitted on time in order to earn credit.

**Lab honor code:**

- Canon 6 of the National Society of Professional Engineers (NSPE) Code of Ethics states that “Engineers shall conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.” This means that acts of academic dishonesty are unprofessional, unacceptable, and will not be tolerated.
- It is unacceptable to copy the work of another laboratory group; such behavior will be grounds for academic disciplinary action, including, but not limited to: zero credit for the assignment in question, a failing grade for the course, suspension from the College, or dismissal from the College. It is also unacceptable to look at prior students’ work that has not been made directly available by the instructor.

- Collaboration is allowed on lab assignments, but all assignments must be written up independently by each group. If you consult with any of your classmates or anyone else, you must indicate their names on the cover sheet of your laboratory assignment.
- Students must carefully review the Merrimack College Academic Integrity Code (AIC) available at [http://www.merrimack.edu/about/offices\\_services/office-of-the-provost/academic-integrity-code.php](http://www.merrimack.edu/about/offices_services/office-of-the-provost/academic-integrity-code.php).

**Americans with Disabilities (ADA) Policy:** If you have a disability that may have some impact on your work in this lab and for which you may require accommodations, please see me and the Accessibility Services Office so that such accommodations may be arranged. For more information, please visit their website at [http://www.merrimack.edu/academics/academic\\_support/academic\\_success\\_center/accessibility-services.php](http://www.merrimack.edu/academics/academic_support/academic_success_center/accessibility-services.php).

**General comments:** I look forward to working with you throughout the semester, and I encourage you to ask questions and be engaged in the lab. Please do not hesitate to drop by office hours, call me, or send me an email if you ever have any questions or concerns. Also, please inform me of any personal circumstances or issues that I should know about. When in doubt, it is always better to keep me informed throughout the semester rather than waiting until the end.

### III. Laboratory Schedule (Tentative)

There will be nine activities held during the lab block throughout the semester; six of these are laboratory experiments, and three of these are workshops. This calendar is presented in two formats: by week and by activity; the four laboratory sections are listed as M1 (A), M2 (B), W1 (C), and W2 (D).

**Table 1. Laboratory Schedule by Week**

Week No.	Lab Activity	Sections	Meeting Dates (Mon, Wed)	Lab Assignment Due (Fri)
1	Lab Introduction and Orientation; Review of Statics	All *	Jan. 23, 25	
2	Lab Experiment 1: Stress and Strain	M1, W1	Jan. 30, Feb. 1	
3	Lab Experiment 1: Stress and Strain	M2, W2	Feb 6, 8	Lab Exp. 1 (M1, W1): Feb. 10
4	Lab Experiment 2: Axial Tension and Compression	M1, W1	Feb. 13, 15	Lab Exp. 1 (M2, W2): Feb. 17
5	Lab Experiment 2: Axial Tension and Compression	M2, W2	Feb. 21†, 22	Lab Exp. 2 (M1, W1): Feb. 24
6	Lab Experiment 3: Torsion	M1, W1	Feb. 27, Mar. 1	Lab Exp. 2 (M2, W2): Mar. 3
7	Lab Experiment 3: Torsion	M2, W2	Mar. 6, 8	
8	Lab Experiment 4: Bending Strength of Beams	M1, W1	Mar. 20, 22	Lab Exp. 3 Report (all): Mar. 24
9	Lab Experiment 4: Bending Strength of Beams	M2, W2	Mar. 27, 29	

Week No.	Lab Activity	Sections	Meeting Dates (Mon, Wed)	Lab Assignment Due (Fri)
10	Combined Loadings Workshop	All	Apr. 3, 5	
11	Exam Review	All	Apr. 10	
—	<i>No lab meetings †</i>	—	<i>Apr. 17, 19</i>	Lab Exp. 4 Report (all): Apr. 21
12	Lab Experiment 5: Buckling of Columns	All	Apr. 24, 26	
13	Lab Experiment 6: Deflection of Beams	All	May 1, 3	Lab Exps. 5, 6 (all): May 5

\* For weeks listed “All”, Sections M1 and W1 will meet from 2–3:20 p.m. on their respective day, and Sections M2 and W2 will meet from 3:30–4:50 p.m. on their respective day.

† Due to the Presidents’ Day holiday, note that a Monday lab schedule will be followed on Tuesday, Feb. 21. Also note that labs will not meet during the week of Easter (Apr. 17, 19).

**Table 2. Laboratory Schedule by Activity**

Lab Activity	Meeting Dates/Times				Assignment Due Dates		Assignment Type
	Sec. M1	Sec. M2	Sec. W1	Sec. W2	Sections M1/W1	Sections M2/W2	
Lab Introduction and Orientation; Review of Statics	Mon. Jan. 23 2p	Mon. Jan. 23 3:30p	Wed. Jan. 25 2p	Wed. Jan. 25 3:30p	—	—	—
Lab Experiment 1 *: Stress and Strain	Mon. Jan. 30 2p	Mon. Feb. 6 2p	Wed. Feb. 1 2p	Wed. Feb. 8 2p	Fri. Feb. 10	Fri. Feb. 17	General lab assignment
Lab Experiment 2: Axial Tension and Compression	Mon. Feb. 13 2p	Tues. Feb. 21 2p	Wed. Feb. 15 2p	Wed. Feb. 22 2p	Fri. Feb. 24	Fri. Mar. 3	General lab assignment
Lab Experiment 3: Torsion	Mon. Feb. 27 2p	Mon. Mar. 6 2p	Wed. Mar. 1 2p	Wed. Mar. 8 2p	Fri. Mar. 24	Fri. Mar. 24	Formal laboratory report
Lab Experiment 4: Bending Strength of Beams	Mon. Mar. 20 2p	Mon. Mar. 27 2p	Wed. Mar. 22 2p	Wed. Mar. 29 2p	Fri. Apr. 21	Fri. Apr. 21	Formal laboratory report
Combined Loadings Workshop	Mon. Apr. 3 2p	Mon. Apr. 3 3:30p	Wed. Apr. 5 2p	Wed. Apr. 5 3:30p	—	—	—

Lab Activity	Meeting Dates/Times				Assignment Due Dates		Assignment Type
	Sec. M1	Sec. M2	Sec. W1	Sec. W2	Sections M1/W1	Sections M2/W2	
Exam Review	Mon. Apr. 10 2p	Mon. Apr. 10 3:30p	Mon. † Apr. 10 2p	Mon. † Apr. 10 3:30p	—	—	—
Lab Experiment 5 *: Buckling of Columns	Mon. Apr. 24 2p	Mon. Apr. 24 3:30p	Wed. Apr. 26 2p	Wed. Apr. 26 3:30p	Fri. May 5	Fri. May 5	General lab assignment
Lab Experiment 6 *: Deflection of Beams	Mon. May 1 2p	Mon. May 1 3:30p	Wed. May 3 2p	Wed. May 3 3:30p	Fri. May 5	Fri. May 5	General lab assignment

\* For Lab Experiments 1, 5, and 6, please bring a USB flash drive with you to lab, as they will be necessary for data collection.

† On the week of April 10, students in the Wednesday sections will attend lab on Monday if their schedules permit.