California Maritime Academy
Department of Sciences and Mathematics
PHY 200L, Engineering Physics I Lab, Fall Spring, 2019

Instructor:	Cynthia Trevisan
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Office Hours:	Tue: 1:00 –2:00 PM or by appointment.
Class Days/Time:	Section 3 (class # 1105): Tue 9:00 - 10:50 AM
Classroom:	LAB 213
Course Prerequisites:	MTH 210
Course Co-requisite:	PHY 200

Brightspace

Copies of the course materials such as the syllabus, lab worksheets, major assignment handouts, etc. may be found on Brightspace, which is the course management software used for Cal Maritime courses. You are responsible for checking Brightspace for course updates at least once a week. To access Brightspace, go Cal Maritime's homepage, and then go to the Menu tab. You will find Brightspace on the right-hand side of the last column (Resources). Click on 'Brightspace' and sign in with your Cal Maritime credentials. You will see this course along with the other courses you are presently enrolled in.

Course Description

PHY 200L is a laboratory physics course designed to enhance the conceptual learning of physics by adding visual and tactile components through hands-on experience. It is a co-requisite of PHY 200.

Student Learning Outcomes (SLO)

Upon successful completion of this course, students will be able to:

- Apply the scientific method and employ scientific reasoning to problems in physics.
- Recognize the fundamental concepts of mechanics.
- Use theories, principles and models to describe and predict the outcome of an experiment.
- Apply mathematical and computational techniques associated with laws of physics.
- Use computational and problem-solving skills as tools for specific engineering applications.
- Successfully apply new concepts and techniques to practical problems in science and engineering.

Student Learning Objectives

- Demonstrate familiarity with laboratory equipment and its use.
- Perform data collection using experimental devices to gain a physical sense of basic theories, models and principles of physics.
- Recognize the need for precise and accurate measurements.
- Apply the scientific method when analyzing results from measurements, computation of physical quantities and interpretation of data.
- Recognize the limitations of experimental procedures and apply scientific reasoning in the interpretation of measurements and computed values.
- Work in small groups and discuss findings with others.
- Write laboratory reports to describe the laboratory equipment, experiment and findings.
- Communicate findings and scientific reasoning used to solve problems in physics to the class.

Lab Manual

Some of the worksheets you will use are based on work originally created by Cal Maritime Professors J. Punglia and K. W. Dobra. Experiments and worksheets, however, undergo constant evolution, so these documents are frequently modified. In addition, as new devices become available, we create new worksheets, some of which are currently under construction. All worksheets you will use will be available for download from the course website on Brightspace.

Laboratory Conduct / Material Requirements

- Please bring to every class either a print out of the week's lab worksheet, a calculator (can be a phone app) and writing implements. Alternatively, you can bring an electronic device (laptop, tablet) that will allow you to access the lab worksheet and record the measurements you will make during the lab session.

- Please do not touch the laboratory set-up until we go over the proper procedure. Please be on task and follow all safety instructions.

Library Liaison

Librarian Amber Janssen (ajanssen@csum.edu) is the library liaison for Engineering Technology, Mechanical Engineering, Marine Transportation, and Sciences and Mathematics. Please contact Librarian Janssen if you need library consultation materials or services associated with this lab.

Classroom Protocol

Students will work in groups of 2 or 3 to perform experimental measurements using the lab equipment provided in class and following the guidelines of each week's worksheets. You will be expected to turn in a hard copy lab report for every experiment performed. The lab report can be written individually or by the group. If you choose to turn in a group lab report, please turn in only one copy per group.

Attendance and Late Work Policy

Attendance is mandatory. If you know that you will need to miss a lab, please try to attend a different lab section that same week (either a PHY 100L or a PHY 200L section). You will find a schedule of all lab sections offered in Brightspace and in the lab (Lab 213). It is not possible to make-up for labs in any other way.

Students should communicate with their instructor as soon as possible if they are unable to complete an assignment or attend a lab. For extenuating circumstances, late work may be accepted for partial credit at the discretion of the instructor.

Dropping and Adding Classes

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops are available on the campus website.

Students should be aware of the current deadlines and penalties for adding and dropping classes. Please see the Registrar's page for more information.

Course Evaluation Method and Grading Policy

Attendance, Preparation and Participation (20% of Final Grade):

Students will receive a grade every class for timely attendance (2pts), for coming prepared (4pts), and for actively participating in class (4pts). Coming prepared includes bringing a print out of the lab worksheet to be used in class, a calculator and writing implements (or an electronic device with access to the week's worksheet), as well as having read the worksheets before coming to class.

Laboratory Report (80% of Final Grade): Each student or group will write a lab report for every experiment performed. The lab report should include the following sections:

I - Summary (5pts)
States the theory of principle tested.
Explains the experimental set-up.
Gives results of the experiments.
Discusses possible sources of error.
Is clearly legible and well written.

Ideally typed and half page length minimum.

II – Data (5pts)
All necessary fields are filled in.
Sample calculations are provided.
Only the correct number of significant figures is used.
Units are labeled.
All is neat and legible.

III – Graphs (Only Selected Labs) (5pts)
Neatly handwritten or computer plotted.
Graph scaled appropriately.
Graph with title and labeled x-axis and y-axis.
Best fit line (if the lab calls for it).

IV – Questions (5pts)
Correctly answered.
Answer explained fully.
Answers are neat and legible.

If all sections are not complete before the end of the class, students may bring the complete lab report the following class. *No work will be accepted past the beginning of the next laboratory period.*

Rubrics for All Categories

EXCELLENT – 100% of pts: Complete and fully meets expectations.
FAIR – 75% of pts: Complete, but parts are unclear or contain inaccuracies.
POOR – 50% of pts: Incomplete, with significant errors.
ABSENT – 0% of pts: Missing entirely or completely inaccurate.

Course Grade:

A = 94 – 100
A^- = 90 – 93
B^+ = 87 – 89
B = 84 – 86
B^- = 80 – 83
C^+ = 77 – 79
C = 74 – 76
C^- = 70 – 73
D = 60 – 69
F = 0 59

No Lab Dates:

01/15/19	(ASCSU / Martin Luther King Jr. Day)
03/05/19	(Spring Break)
03/12/19	(Gap Week)
04/02/19	(Cesar Chavez Holiday)
04/22/19	(Last Week of Class / Finals Week)

University Policies

Academic integrity

Students should know and understand the University's Academic Integrity Policy. Your own commitment to learning, as evidenced by your enrollment at Cal Maritime and the University's integrity policy, require you to be honest in all your academic course work. Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified.

Campus Policy in Compliance with the American Disabilities Act

California Maritime Academy is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations are encouraged to contact Siobhan Case, Disability Services Office (DSO) in the Student Engagement & Academic Success Center via email scase@csum.edu, preferably within the first two weeks of class. The DSO is located in Laboratory Building Room 102. For more information, see our website: http://www.csum.edu/web/seas/disability-services

Student Technology Resources

Computer labs for student use are detailed below. Please see the postings outside the labs to see when classes are scheduled for these locations. Otherwise, hours are listed as below.

Lab Name	Location	Hours
Classroom Computer Lab	Classroom Building Room 105	24/7 Access via Portpass.
Lab 101	Laboratory Building Room 101	Open while building is open.

Student Engagement & Academic Success (SEAS) Center

SEAS is available to all students for learning, testing and accommodations for a variety of services including wrap-around accessibility support. Services provided through the SEAS Center include:

- Reduced distraction testing spaces
- Tutoring
- Access to assistive Technologies/Software
- Proctored testing
- Accessibility coordination with other departments on campus

PHY 200L / Engineering Physics I Lab, Spring Semester 2019, Course Schedule

The following is a tentative course outline. The schedule and logistics of the course is subject to change. Announcements about any changes will be made in class. Students are responsible for keeping themselves informed about assignments, announcements and topics covered during any missed classes.

Week	Experiment
1 (1/08)	Lab 1 – An Introduction to Physics Lab (Syllabus and Pocketlabs)
2 (1/15)	Martin Luther King Jr. Day. **No Lab**
3 (1/22)	Lab 2 - Linear Motion: Position, Velocity, Acceleration
4 (1/29)	Lab 3 - Composition and Resolution of Vectors
5 (2/05)	Lab 4 - Measuring Gravity with a Pendulum
6 (2/12)	Lab 5 - Projectile Motion
7 (2/19)	Lab 6 - Frictional Forces
8 (2/26)	Lab 7 - Archimedes' Principal
9 (3/05)	Spring Break. **No Lab**
10 (3/12)	Gap Week. **No Lab**
11 (3/19)	Lab 8 - Conservation of Energy with Two Objects
12 (3/26)	Lab 9 - Ballistic Pendulum and Collisions
13 (4/02)	Cesar Chavez Day. **No Lab**.
14 (4/09)	Lab 10 - Uniform Circular Motion
15 (4/16)	Lab 11 – Torque and Equilibrium.
16 (4/23)	Last Week of Class / Finals Week. **No Lab**.
17 (4/30)	Final Exam week. **No Lab**.