

**San José State University**  
**Department of Physics and Astronomy**  
**Physics 50, General Physics: Mechanics Laboratory, Spring 2018**

**Course and Contact Information**

**Instructor:**

**Office Location:**

**Telephone:**

**Email:**

**Office Hours:**

**Class Days/Time:**

**Classroom:** Science 305 or 307

**Prerequisites:** Completion of Math and English Remediation or a post baccalaureate; 3 or better on AP Calculus test or 'C' or better in Math 30 or Math 30P or Math 30PL.

**Faculty Web Page and MYSJSU Messaging (Optional)**

The Physics 50 Lab Syllabus can be found by following the link from <http://physics.sjsu.edu>. You are responsible for maintaining contact with your lab instructor by checking with the messaging system through [MySJSU](http://my.sjsu.edu) at <http://my.sjsu.edu> and/or Canvas. Make sure that your email does not put anything from the sjsu.edu domain into your spam folder.

**Course Description**

Physics 50 is a calculus-based treatment of particle kinematics and dynamics, work, energy, momentum, rotational motion, equilibrium, and simple harmonic motion. The laboratory component meets for 2 hours and 50 minutes once a week during the 15-week semester. Successful completion of the course (at least C) requires 70% or better in both lecture and lab.

**Course Goals**

All accredited engineering degree programs in the US must include two semesters of calculus-based physics. Quantitative problem solving is the central skill of this course and to your major. The overall goal for Physics 50 Laboratory is for you to learn how to collect, analyze and visually display your data, and to use your data to figure out quantitative relationships relating various physical quantities.

## Course Learning Outcomes (CLO) (Required)

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

1. Conduct themselves safely and according to proper etiquette for a laboratory setting
2. Use scientific equipment such as force sensors, photogates, and accelerometers to collect experimental data and take measurements of physical quantities.
3. Make useful plots of the data collected with this equipment.
4. Identify the sources of error and uncertainty in their measurements.
5. Describe the motion of objects using physics terminology and concepts, such as velocity, acceleration, force, kinetic and potential energy, momentum and torque.
6. Assign the proper units and significant digits in the data you collect and the calculations you perform using those data.
7. Relate physics concepts to these lab activities and to physics problems.
8. Predict the behavior of simple mechanical systems.

## Required Text

### Lab manual

The lab manual is required. You can purchase the lab manual for \$10 in the Physics Clubroom, in Science 239.

## Course Requirements and Assignments

Every time your lab meets, there will be an assignment to be turned in at the end of the lab period. If the activity was an experiment, there is a short write-up that includes your data, calculations, graphs, and answers to some questions. If the lab activity was a problem set (as occurs before exams), then there will be a few problems to write up and turn in for a grade. You should keep an eye on the time to make sure you have enough time to finish the write-up and clean up your lab bench.

### Final Examination

There is no final exam for the lab portion of Physics 50. The final exam for the course will occur in the room assigned for your lecture. Check your lecture syllabus for final exam dates and times.

## Grading Information

### Determination of Grades

There will be three main components of your lab grade:

1. Half of your lab grade consists of write-ups that are turned in at the end of lab. You must give answers in complete sentences that convey what the original question was. All plots must have legible axes, figure captions, titles, units, etc. that describe exactly what is in the plot. Sources of uncertainty and experimental error must be identified and discussed.
2. A quarter of your lab grade will be determined by quizzes (pre-labs, proficiency quizzes, etc)
3. A quarter of your lab grade is based upon your participation in the lab. Basic lab etiquette is outlined in the next section (Classroom Protocol).

Every student must register for the lab and earn a grade of at least 70% in lab during the same semester as the lecture course. It is required that you take and pass both the lab and the lecture in the same semester – if you fail either the lecture or the lab you will have to repeat both lecture and lab regardless of your grade in the lecture or lab.

## Classroom Protocol

Laboratory experiments require specialized equipment and training. Safety regulations require that instructors be present in the lab while students are present. Therefore, you must attend your lab section as scheduled, even if it's "just a problem set" that week. Attending lab in a different section, or doing the lab after hours, is strictly prohibited. All material that constitutes your lab grade will be conducted during your assigned lab time and all work must be turned in by the end of your lab. It is critical that all work be finished in time to clean up your work space and return it to its original condition for the next lab session to start on time.

You may have one absence from lab and not have it count against your grade. A second missed lab is grounds for a WU in the course. You must meet with your lecture instructor to figure out how to proceed if you miss a second lab. It may be excusable depending on the nature of your absence and your performance in the course to date, but it will still count as a 0 for that assignment. If you miss two labs and one exam, this is a WU in the course, no exceptions. If you miss three labs, this is a WU in the course, no exceptions.

Being on time, not being in a hurry to leave early, having a good attitude, being helpful to your fellow students, being respectful, leaving your work space in as good, or better, condition than you found it, conducting yourself safely in the lab – these are just a few of the expectations that must be met to receive a good score on participation.

You should check the schedule and read through the lab manual before you come to lab.

Here are the basics of good lab etiquette (these apply to all labs, not just this one):

- Do not eat or drink in lab (you may have a water bottle or candy bar but consume these in the hallway)
- Do not use your mobile device or laptop in lab, unless it is something that pertains to the lab activity
- Do not work on things not related to the lab activity while in the lab
- Put your belongings by the windows; do not leave them on the floor or in the way of the lab activity
- Be on time, do not leave early, and do not leave the lab for more than a quick water or bathroom break
- Turn your lab write-up in at the end of lab
- Leave your workstation in as good or better condition that you found it – it should be ready for the next lab section to come in and get started, even if it was a mess when you came in.
- Be helpful and respectful to your fellow students and to the instructor, be a positive effect on the learning environment.
- Share the tasks equally with your lab partner. Everyone should write up their own paper to turn in.

## University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

## Physics 50, General Physics: Mechanics, Fall 2017, Lab Schedule

*This schedule is subject to change with fair notice. You will be notified via MySJSU email and/or Canvas system if there are any changes. Be sure your email does not redirect bcc's to your spam folder. Set permissions to accept all email from the sjsu.edu domain.*

### Course Schedule

Date	Topics, Readings, Assignments, Deadlines
1/24 – 1/30	Lab A: Sig figs, error & accuracy. Finding Jupiter's mass using a ruler
1/31 – 2/6	Lab B: Adding vectors using the force table
2/7 – 2/13	Lab C: Measuring the acceleration due to gravity
2/14 – 2/20	Lab D: Newton's Laws
2/21 – 2/27	Lab E: Review for Exam 1 (see your lecture syllabus for exam dates)
2/28 – 3/6	Lab F: Friction lab
3/7 – 3/13	Lab G: Work & Energy problem set (Chapter 6)
3/14 – 3/20	Lab H: Work and energy lab
3/21 – 4/3	Lab I: Momentum lab
4/4 – 4/10	Review for exam 2 (see lecture syllabus for exam days)
4/11 – 4/17	Lab J: Ballistic pendulum lab
4/18 – 4/24	Lab K: Rotational kinematics problem set.
4/25 – 5/1	Lab L: Angular momentum lab
5/2 – 5/4	Lab M: Rotational dynamics problem set (please note that not all lab sections will do this problem set. MTW labs should work on these problems if there is time, or for homework)
5/7 – 5/11	Lab N: Statics and equilibrium lab. Monday, May 14 lab should meet for review, etc