Lab Syllabus

Point of contact:

Lab Director  Dr. Marc Weber  
Office  Webster Hall Room 527  
Office hours  M,W,F 10:00 am to 11:00 am  
            (walk-in are always welcome)  
Phone  335-7872  
Email  physics.labs@wsu.edu

Prerequisites: MATH 107 or 108 (trigonometry) with a grade of C or better, a minimum ALEKS math placement score 75%, or passing MATH 140, 171, 202, or 206. Algebra/trigonometry-based physics; topics in mechanics, wave phenomena, temperature, and heat; oriented toward non-physical science majors.

Learning goals: To experimentally probe concepts learned from the classroom and related materials; to reduce settings from the natural world to basic testable configurations; to carry out the tests, analyze the observations and conclude by comparing results to initial hypotheses; to document the activities in lab-notes, sketches, and diagrams; to acquire data with various sensors and computer support; to analyze results with Excel and other software and fit them with linear regression tools; to record results and findings; to compose formal reports; to work with a lab partner; to manage limited time allotted for each experiment.

Disability: Reasonable accommodations are available for students with documented disabilities. If you have a disability and need accommodations to fully participate in the lab or the lecture, call or visit the Access Center (Washington Building Room 217, Phone: 335-3417, e-mail: access.center@wsu.edu, URL: http://accesscenter.wsu.edu). All accommodations must be approved through the Access Center. Notify both your lab director and the lecture instructor during the first week of lecture concerning any approved accommodations. Late notification may cause the requested accommodations to be unavailable.

Campus Safety: Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the “Alert, Assess, Act,” protocol for all types of emergencies and the “Run, Hide, Fight” response for an active shooter.

URL: https://oem.wsu.edu/emergency-procedures/active-shooter
tive shooter incident. Remain ALERT (through direct observation or emergency notification), ASSESS your specific situation, and ACT in the most appropriate way to assure your own safety (and the safety of others if you are able). Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI’s Run, Hide, Fight video (URL: https://oem.wsu.edu/emergency-procedures/active-shooter/) and visit WSU Safety: URL https://oem.wsu.edu/about-us/.

Academic Integrity: Academic dishonesty, including all forms of cheating, plagiarism, and fabrication, is prohibited as defined in the Standards of Conduct for Students, WAC 504-26-010(3) (URL: http://apps.leg.wa.gov/WAC/default.aspx?cite=504-26-010). The instructor reserves the right to take appropriate action. A failing grade in the class may result. Incidents of academic dishonesty will be referred to the Office of Student Conduct. If you have any questions about what is and is not allowed in this course, you should ask the course instructors before proceeding.

A partial list of prohibited conduct appears in Washington Administrative Code (WAC) Section 504-26 (http://apps.leg.wa.gov/wac/default.aspx?cite=504-26). Of special importance to the laboratories is the false reporting of data, experiment results, information, or procedures. The data and results in your lab notebook and reports must result from your own work in the current semester. Reporting data acquired by others (including your lab partner if you did not contribute) or in previous semesters is academically dishonest. Fabrication of results, information, or procedures, and sabotaging other students’ work is also prohibited. Likewise, sharing information about the end-of-semester lab exam with students yet to take the exam is prohibited. Violations of this policy will affect your lab grade and may be reported to the Student Conduct Committee as instances of academic dishonesty.

Attendance, conduct, exams, evaluation, grading

Attendance: Attendance is mandatory. Summer classes are conducted in a very condensed time frame. Missing a lab results in a zero score for that lab. Make-up labs are not granted. In lieu, the two lowest scoring lab grades will be dropped.

Student conduct: Academic integrity is expected of all students (see above). During the experiments students are expected to work in teams of two. The lab partners will jointly carry out all lab activities and at times may even share data among all stations in the room. Data and graphs should be printed out in duplicate or saved for each of the team. However, data analysis and evaluation and reporting in lab-notes or formal reports will be an individual activity. For more information regarding lab notes and reports, refer to the “Lab Work, Notes and Reports” section immediately following the syllabus.

The lab work is conducted in small teams. We expect students to be on time to labs and lab exams and to mute their cell phones for the duration. Being late may drag your lab-partner’s grade down. Many physics concepts are subtle, and even the most intelligent students make mistakes. In this environment, it is important that students be willing to ask questions if they don’t understand what their lab partners say or do. To this end, we require that students and teaching assistants alike avoid behavior that discourages communication. This includes threats and insults. Students who
repeatedly disrupt lab may be directed to leave the room and may receive a zero grade for that week’s lab.

Once the lab is complete, students are expected to tidy up and leave the station as they found it.

Submission of work for evaluation: Records (i.e. the lab-notes) of work completed during lab, including tutorials, must be turned in to your teaching assistant before you leave the room. At times students may be permitted to complete assignments after the lab session. Work completed after lab must be turned in to the TA no later than at the start of the next session. Failure to turn in lab-notes will result in low scores.

Exam: An exam is administered during the last week before the lecture final exam within your regularly scheduled laboratory section. Do not skip the exam. This is the time to demonstrate your record keeping skills. The exam may include any experimental techniques, methods of data analysis, and/or concepts covered during the semester. You may need to refer to your graded lab work for the current semester and the lab manual during the exam. You may not refer to the textbooks or other references. Work on the exam is individual (no lab partners). Bring your calculator.

Evaluation: The class grade is composed of 75% from the lecture and 25% laboratory section. See your instructor regarding the lecture component. The experiments include

- 1 introductory tutorial with up to 20 points,
- lab notes from 12 experiments with up to 100 points each with options for bonus points such as homework
- 1 final laboratory exam with up to 100 points.

Each will be scored on a 0 to 100 scale. The lowest two scoring lab notes from experiments will be dropped. Not attending a laboratory experiment or not submitting lab-notes results in a zero score for that lab. Sum up the 10 highest scoring labs and add all bonus points. Cap this at 1000, the maximum lab score. There will be no curving. The teaching TA may not be the person grading your lab.

Grading: The grades are compiled as follows: For each component item (first column) a maximum number of points are given (second column). They contribute to the lab grade according to column 3 (lab only) and the overall grade in the class (column 4).
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<table>
<thead>
<tr>
<th>item</th>
<th>max. points</th>
<th>lab grade%</th>
<th>class grade %</th>
<th>comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>tutorial</td>
<td>50</td>
<td>4</td>
<td>1</td>
<td>1st session</td>
</tr>
<tr>
<td>10 of 12 labs</td>
<td>1000</td>
<td>76</td>
<td>19</td>
<td>10 highest scoring labs</td>
</tr>
<tr>
<td>tutorial &amp; labs</td>
<td>1050</td>
<td>80</td>
<td>20</td>
<td>labs of 12 plus bonus</td>
</tr>
<tr>
<td>lab exam</td>
<td>100</td>
<td>20</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>laboratories</td>
<td>100</td>
<td>25</td>
<td>75</td>
<td>see lab director</td>
</tr>
<tr>
<td>lecture</td>
<td>n/a</td>
<td>n/a</td>
<td>75</td>
<td>see instructor</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td></td>
<td>100</td>
<td>total grade</td>
</tr>
</tbody>
</table>

By Physics and Astronomy Department policy, should the lab grade fall below 50% lab grade, the student will receive a failing F grade as the class grade independent of lecture performance. In the other end of the scale, should the lab grade be 80% lab grade and higher but the student fails the lecture, he/she may choose to "carry over" the lab grade when the course is retaken. In addition a high laboratory grade in excess of 80% lab grade. To take advantage of this option, the student must notify the lab director no later than the first week of the semester that you are repeating the course. 100-level labs cannot substitute for 200-level labs.

Questions regarding grades on lab assignments need to be discussed with your teaching assistant within two weeks of receiving the graded material (earlier at the end of the semester). Final lab grades will be posted on the bulletin board on the 3rd floor of Webster Hall. To affect the lab grade submitted to your instructor, changes must be made by Friday morning of Final Exam week. Errors that affect your physics course grade will be corrected after final grades are submitted to the Registrar, if necessary.

Safety resources

General information on campus safety is posted at the Campus Safety Plan. Information on how to prepare for potential emergencies is posted on the Office of Emergency Management web site. Safety alerts and weather warnings are posted promptly at the WSU Alerts site. Urgent warnings that apply to the entire University community will also be broadcast using the Campus Outdoor Warning System (speakers mounted on Holland Library and other buildings) and the Crisis Communication System (e-mail, phone, cell phone). For this purpose, it is important to keep your emergency contact information up to date in MyWSU. To enter or update this information, click the “Update Now!” link in the “Pullman Emergency Information” box on your MyWSU home page.

Safety information that applies to the laboratories appears in the Lab Manual. Your teaching assistant will also present any safety information that applies to the current laboratory at the beginning of the laboratory. Students are expected to conduct themselves responsibly and take no unnecessary risks. Students who disobey the safety instructions will be directed to report to the lab director. All accidents and injuries must be reported promptly to your teaching assistant.

An Emergency Guide is posted by one door of each lab room. If faced with an emergency, follow the "Alert, Assess, Act," protocol: Remain ALERT (through direct observation or emergency notification), ASSESS your specific situation, and ACT to ensure your own safety and the safety
of those around you. In case the fire alarm sounds, leave the building promptly in an orderly fashion. If you are not on a ground floor, use the stairs. Do not use the elevators. After exiting the building, gather across from the basketball court behind Waller Hall (down the hill, south of Webster Hall, see Figure 1) with the other members of your lab. A representative of the Department of Physics and Astronomy will tell you when it is safe to re-enter the building. If this does not happen before the end of the lab period, you are free to leave for your next class. If the emergency involves an active shooter, your options are to RUN, HIDE, or FIGHT (https://www.youtube.com/watch?v=5VcSwejU2D0). Each lab room door can be locked from inside in case of a lock down.

Figure 1. Physics and Astronomy assembly point. In case of a fire alarm, exit the building and gather at the basketball court behind Waller Hall. Use the stairs. Do not use the elevators in case of fire. A department representative will tell us when it is safe to re-enter the building.

Changes

The lab director reserves the right to correct errors in the syllabus and to modify lab schedules and room assignments. The lab director has delegated some authority to modify assignments and due dates to your teaching assistant. This helps ensure that you are graded according the criteria stated during your lab meeting.