



General Physics I Lab  
PHYS 2051  
Fall 2022  
August 29<sup>th</sup> – December 18<sup>th</sup>  
Wednesday  
(9:00am – 11:40am Sect. 1)  
(12:00pm – 2:40pm Sect. 2)  
LAB – AC 303  
**NO FINAL – unless you want one...**

Welcome to PHYS 2051 – General Physics I Lab!

We will be using standard lab practices

- Experimental goals will be presented at the BEGINNING of each in-class laboratory assignment.
- You will be given the rest of the period to meet these goals and record your observation for all laboratory assignments.
- The laboratory assignments will be due on their assigned dates on the course’s Blackboard site.

\*\*The lecture (PHYS 2050) is a separate course

### INSTRUCTOR INFORMATION

**Instructor:** Nathan J. Dawson  
**Email:** [ndawson@hpu.edu](mailto:ndawson@hpu.edu)  
**Office:** AC 311A  
**Office Phone:** 236-7909  
**Office hours:** Tues 10:15am – 11:15am, Thurs 10:15am – 11:15am

### COURSE INFORMATION AND REQUIREMENTS

**Course meeting times and location:** All classes will meet in **AC 303 (Hawaii Loa Campus)**. Both sections meet Wednesday. Section 1 meets between 9:00am – 11:40am and section 2 meets between 12:00pm – 2:40pm.  
**Required Resources:** Lab assignments in Microsoft Word format are available online in the Course Contents page of Blackboard and PDF versions are available at <http://www.nathandawson.org/phys2051.html>.

### COURSE DESCRIPTION

**Course Description:** This is the laboratory component of PHYS 2050. A physics lab is where the basic behavior of reality is studied by proscribing and conducting properly constructed experiments. Experiments in kinematics and dynamics will be conducted and recorded. The scientific method will be discussed in instructor and student discourse.

**Prerequisite:** Completion of or concurrent enrollment in PHYS 2050.

**Method of Instruction:** This is a hands-on laboratory course

**Learning Outcomes:**

By the end of the course, students should be able to:

- Follow experimental procedures laid out for them.
- Describe the physics of basic mechanical systems.
- Communicate scientific observations.
- Demonstrate competency with scientific set up and mathematical relationships.
- Learn to evaluate the quality of science being performed by a third party.

## ASSESSMENT, GRADING SCHEME, and COURSE SCHEDULE

There are 12 labs, all related to carrying out experiments concerning the lecture material. Your grade will be based on the cumulative score of all laboratory assignments. The points assigned to each completed laboratory assignment/worksheet are provided in the schedule. There are a total of 200 points. Therefore every 1 point is equivalent to 0.5% of the final cumulative score.

### Grading scale:

<b>A</b>	92 – 100%
<b>A–</b>	90 – 91%
<b>B+</b>	87 – 89%
<b>B</b>	82 – 86%
<b>B–</b>	80 – 81%
<b>C+</b>	77 – 79%
<b>C</b>	72 – 76%
<b>C–</b>	70 – 71%
<b>D</b>	60 – 69%
<b>F</b>	0 – 59%

### Course Schedule: (Student learning objectives for each chapter are assessed on the respective labs)

<b>Date</b>	<b>Topic</b>	<b>Activities &amp; Assignments</b>
<b>08/31</b>	Overview of expectations; safety; regular assignments; excused absences	<b>[20 points]</b> Syllabus, safety agreements
<b>09/07</b>	Units, precision, accuracy, uncertainty, graphical analysis	<b>LAB 01</b> – Measurement, uncertainty, propagation of error, graphing, & linear regression
<b>09/14</b>	binning, variation, reference, control	<b>LAB 02</b> – Darts, statistics, and the normal distribution
<b>09/21</b>	Motion in two dimensions	<b>LAB 03</b> – Projectile motion
<b>09/28</b>	Frames, Vectors and Newton's 1 <sup>st</sup> law	<b>LAB 04</b> – Forces as vectors
	<i>Deadline is beginning of lab 09/28</i>	<b>[45 points]</b> Turn in consolidated lab worksheet (1-3)
<b>10/05</b>	Static and dynamic friction	<b>LAB 05</b> – Friction
<b>10/12</b>	Work done by gravity	<b>LAB 06</b> – Work and Kinetic Energy
<b>10/19</b>	Kinetic energy, spring potential energy	<b>LAB 07</b> – Conservation of mechanical energy
	<i>Deadline is beginning of lab 10/19</i>	<b>[45 points]</b> Turn in consolidated lab worksheet (4-6)
<b>10/26</b>	Conservation of linear momentum	<b>LAB 08</b> – Elastic and inelastic collisions
<b>11/02</b>	Torque and moment of inertia	<b>LAB 09</b> – Torque and rotational motion
<b>11/09</b>	Conservation of angular momentum	<b>LAB 10</b> – Angular momentum
	<i>Deadline is beginning of lab 11/09</i>	<b>[45 points]</b> Turn in consolidated lab worksheet (7-9)
<b>11/16</b>	Simple Harmonic Motion	<b>LAB 11</b> – Spring-mass oscillations
<b>11/23</b>	Thanksgiving break	<b>No Laboratory</b>
<b>11/30</b>	Standing waves, sound, and resonance	<b>LAB 12</b> – Resonant waves in pipes
<b>12/07</b>	<i>Deadline is beginning of lab 12/07</i>	<b>[45 points]</b> Turn in consolidated lab worksheet (10-12)

## INSTRUCTOR POLICIES AND EXPECTATIONS

### Attendance and Participation:

- One must attend to do each lab.
- Each student will keep their own lab journal (or electronic journal) containing data taken from each experiment in either the format from the provided worksheets or another scientifically acceptable format.
- Participation will be assessed throughout the lab by interaction with the instructor. When asked: "What have you discovered?" or "What have you learned?" A response is required.

**Instructor availability:** I will be available in my office after each laboratory. If this is not an option, students are encouraged to visit any of the four office hours and send emails to me using [ndawson@hpu.edu](mailto:ndawson@hpu.edu). I will check email at least once per day and respond as necessary within 48 hours. If you do not receive a response in this time-frame, please assume that I did not receive the email and inquire again.

**Make-up Work:** All absences, periods of time when a student is unable to complete course work due to a reason such as illness, military duty, or family emergency, must be coordinated with the instructor. **Up to three** online supplementary laboratory assignments will be allowed to substitute in-class laboratory assignments for **excused** absences. Students should make every effort to notify the instructor **PRIOR** to the absence. But if you can't (or don't), please notify the instructor as soon as possible after the absence. This record of absences will be important if an **incomplete** grade and course extension are necessary due to extended absences during the course. Contact me.

**Late Work:** Assigned work is due as noted on the schedule. Labs will be docked 1 point (out of 20 total points) for each day late.

**Mask policy:** Masks are optional. You are not required to wear a mask in this class. Policy subject to change if new recommendations are provided by the Department of Education during the semester.

**Withdrawal:** If you need to make any changes to your registration, including withdrawing from or adding courses, return to your HPU advisor for assistance.

For specific deadlines regarding dropping the course with a withdrawal "W" grade and with no GPA penalty, but possible loss of some or all of the tuition. Pay particular attention to the dates associated with withdrawing from the course. It could determine whether you get any tuition back in the event you need to drop the course.

**Incomplete:** Students who are unable to complete course requirements due to circumstances beyond their control (e.g. Military duty, illness, natural disaster ...) can make a written application to me with documentation for an incomplete "I" grade and complete the course requirements after the end of the course.

**Extra Credit:** **There is no extra credit for this course.**

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**Academic Honesty:** All Students are expected to adhere to the University's policies regarding academic honesty. The policy of Hawai'i Pacific University is clear regarding academic dishonesty. Any student, who cheats on an academic exercise, lends assistance to others during an examination, or who hands in, as a completed assignment, work that is not his or her own will be penalized. The ultimate penalty is suspension from the University. The term "academic exercise" includes all forms of work submitted for points, grades, or credit. Please see the Student Handbook for the full policy at [www.hpu.edu/studenthandbook](http://www.hpu.edu/studenthandbook).

## TECHNICAL SUPPORT AND TUTORING OPTIONS

**Bookstore:** Books are available at the HPU Bookstore at the campus where this course is offered (Downtown or Hawaii Loa) and online (all campuses) at [www.hpu.bncollege.com](http://www.hpu.bncollege.com). Rentals and eBooks are available for many of the course materials. You can contact the HPU Bookstore at 808.544.0290 if you have any questions.

**Accessibility Services (ADA Accommodations):** Under the Rehabilitation Act of 1973 (Section 504), the Americans with Disabilities Act Amendments Act 2008 (ADAAA), and Title III (Public Accommodations) Hawai'i Pacific University does not discriminate against individuals with disabilities. Any student who feels he/she may need an accommodation based on the impact of a disability is invited to contact Accessibility Services at HPU (808-544-1197); by email at [access@hpu.edu](mailto:access@hpu.edu), or at Waterfront Plaza, Tower 6, Suite 440, 500 Ala Moana Blvd. This is a necessary step in order to ensure reasonable accommodations in a course. Students are not expected to disclose their specific disability to the professor; Accessibility Services will provide a letter for an instructor explaining the accommodations and NOT the nature of the disability. If you would like to discuss other concerns, such as medical emergencies or arrangements in the event of an emergency evacuation, please make an appointment to talk with Accessibility Services as soon as possible.

**Counseling & Behavioral Health Services (CBHS):** CBHS provides current HPU students with free and confidential psychological counseling. Sometimes the stress of school along with personal issues can be too much to handle. CBHS provides the opportunity for students to discuss any personal problems or concerns and explore solutions. Appointments can be scheduled by phone at 808-687-7076 or in person at the Downtown campus at WP6-402. Office hours are Monday–Friday, 8:00 a.m. to 5:00 p.m.

**HPU Libraries & Learning Commons:** HPU Libraries provides services and resources to serve the research needs of the HPU community. Print books, periodicals, and audiovisual materials are available at the Library at Waterfront (WP6-302) and at Atherton Library at the Hawai'i Loa Campus. Online resources, such as articles, eBooks, and streaming videos, are available from the library's homepage at [hpu.edu/libraries](http://hpu.edu/libraries). Off-campus access to online content will prompt users to input their MyHPU credentials. Students can stop by the reference desk at any library location for research assistance. Librarians are also available over the phone (808.544.1133), via email ([reference@hpu.edu](mailto:reference@hpu.edu)), and through the Libraries' 24/7/365 online chat service ([hpu.on.worldcat.org/chat/librarian](http://hpu.on.worldcat.org/chat/librarian)). To schedule a research consultation with a subject specialist, visit [hpu.libcal.com/appointments](http://hpu.libcal.com/appointments).

**Military Veteran Center (MVC):** MVC has one part-time mental health provider from the Veterans Administration who offers confidential psychological counseling to military veterans. Sometimes, the transition from military to civilian life, managing school, and other personal issues can be challenging. MVC has an onsite provider at the downtown campus (PL 200) and appointments can be scheduled by phone at 808-763-7470. Office hours are Monday–Thursday, 8:00 a.m. to 5:00 p.m.

**Security and Safety:** Help keep our campus safe and secure. For emergency situations, call 911; for non-emergencies, contact HPU security (808-544-1400). Timely reports of observations to security and the police can go a long way in preventing future crimes. Also, HPU security provides transportation or a walking escort at the Hawaii Loa campus, and a walking escort on the Downtown campus for anyone walking alone on foot to any university parking lot, facility or city bus stop. Call 808-236-3515 (Hawaii Loa) and 808-544-1400 (Downtown)--a security officer will be sent to your location. To receive critical information via text messaging, update your mobile number with Rave Alert <http://phone.hpu.edu>, HPU's emergency text program. Go to HPU Security for more about campus security and emergency preparedness.