

## Syllabus

**Course:** Physics Lab 170, Section 007, mechanics, Spring 2022  
**TA:** Joshua Oliver  
**Email:** joliv@hawaii.edu  
**Lecture:** Thursday, 12:00-2:50PM  
**Office Hours:** TBD  
**Zoom link:**  
<https://zoom.us/j/4847201552?pwd=OXFxYXp5SkpNUUJmS2hOaUJ4di9SZz09>  
**Meeting ID:** 484 720 1552  
**Passcode:** B6JpT9  
**Website:** <http://go.hawaii.edu/32P>  
**Text:** The lab manual can be downloaded from the website listed above.

### Mode of Instruction:

- The course is conducted in “Hybrid Split-Class” format. This means the following:
  - The section is split up into team A and B before the first class meeting. The TA will let you if you are in team A or team B by email. You will stay in team A or B for the whole semester and cannot change from one team to the other.
  - Team A and B will conduct experiments in-person in alternating weeks.
  - During the non-in-person weeks, the corresponding team will be provided with asynchronous online materials (worksheets and videos).
  - Please refer to the table at the end of the syllabus to find out when you have to attend in-person.

### Student learning outcomes:

- To understand the importance of experiments as the basis of the scientific method.
- Better understand physics concepts covered in lecture by seeing their application in experiments.
- To obtain experience in the techniques employed by scientists in all fields for analyzing data and drawing conclusions from "real world" experiments.
- Reporting results in a scientific fashion.

### Prerequisites and withdrawal rules:

- As a strict prerequisite, the corresponding lecture has to be taken concurrently or before. It is not possible to take the mechanics and E&M labs concurrently (even if you have taken both lectures before). No exceptions will be made.
- As a consequence, if you decide to withdraw from the corresponding lecture you also have to withdraw from the corresponding laboratory course.

### What to expect:

- In-person weeks:
  - Every student is expected to attend all of their assigned in-person days.
  - Teaching assistants will hold 30-45min lectures about the experiment, including theory, setup, and data analysis. It is expected that the students interact a lot and ask questions.
  - For the remaining ~2h, the students will conduct the experiments and start the

data analysis. Every student will work on their own experimental setup. Students should pay close attention to the instructions of the TA and the lab manual. Careful experimentation will result in better data. If something is unclear the TA is ready to help.

- Every lab is 2:50h long. You are expected to be on time and you are expected to stay until the end of the lab and to not leave early. If you finish early work, start working on the assignment.
- Nobody should leave without the TA signed data tables.
- Asynchronous online weeks:
  - Students are provided with theoretical and experimental instruction videos. It is also expected that the students read the lab manual. Links to all materials are posted on the website.
- The weekly assignment covers a few theoretical questions and focuses on data analysis and data interpretation. The in-person team for a certain week will analyze their own data and the online team will analyze a pre-recorded data set.
- Each student has to submit their own solutions to the worksheets for all experiments. Please see rules on academic dishonesty below.
- Please also see the rules for late submissions below.

### **Worksheet:**

Each worksheet will have questions on the following:

- Objective of the experiment
- Theory behind the experiment
- Experimental procedure
- Data analysis
- Discussion and conclusion

Solutions are due one week after the scheduled in-person time. The solution should be prepared as a **typed out** document and submitted on laulima as a pdf:

- Start with writing the experiment's title.
- List the date you are writing the solution.
- Use the titles and subtitles from the worksheet to structure the solution.
- Data analysis:
  - Conduct the data analysis in SciDAVis:
    - Make sure all axes have labels.
    - Make sure all axes have units.
    - Make sure graphs have titles.
    - Make sure graphs have error bars.
  - Calculations
    - Show all non-trivial calculations.
    - Show all error propagation calculations.

- Make sure all calculations have units.
- **It is okay to handwrite the calculations. However, these handwritten calculations have to be included in your typed report in a reasonable way:**
  - Scan or take a high-resolution, well-lit photo of the handwritten calculation.
  - Crop the photo and insert into the solution document.
  - Ensure that the inserted image has a high enough resolution and is not blurry.
  - Ensure that the font size of the insert handwritten solution is roughly the same as the rest of the document.
  - Illegible handwritten parts will be marked as zero.
- Worksheets have to be submitted on Laulima as a single **pdf** file. Typical text processing software should be used (word, libreoffice, google doc). The pdf file needs to be submitted before the deadline date.
- Penalties for late worksheets:
  - 1 week late – 15% off
  - more than 1 week late → **The solution will not be accepted and will count as 0%.**

### **Grading:**

Final grades will be curved over all sections. The typical outcome over all sections is approximately 25% A, 40% B, 35% C and below. Every experiment carries the same weight for the grade calculation.

### **Office hours:**

Every week, the teaching assistant will offer at least 1h of online office hours via zoom. Students from both the in-person and online teams are encouraged to join.

### **Academic dishonesty:**

- No cheating or copying is allowed. Every student has to submit their own solution. Students are explicitly not allowed to use solutions from past semesters (in whatever way obtained) and submit them as their own.
- You can exchange ideas about the assignments with classmates, but you have to work out your own solutions. It is not permitted that students share solutions among each other. For example, every student has to write their answer in their own words and have to prepare their own graphs.
- A student who was caught cheating would be given a zero for the whole assignment (may also lead to a direct failure of the course).
- Also, be warned that websites that provide solutions to the course assignments can provide instructors with the information who accessed the content and at what time. Using third-party websites that provide solutions to the course assignments is not allowed.
- Cheating incidents will be reported to the Office of Student Conduct.
- Furthermore, it is not allowed to upload the course materials that were shared with you (lab manuals, worksheets, and all other materials) to third-party websites that are potentially illegally monetizing the materials.

**Missed Worksheet Submissions:**

- To receive credit for a late submission, a student must inform (email or call) their TA before or immediately after missing a submission deadline and produce a doctor's note or any other evidence. If this is not the case the student receives 0% for the late submission.
- **Only one worksheet submission can be missed.** A second missing worksheet will result in failing the course.

**Schedule:**

Day of experiment	In-person team	Online team	Experiment
			<b>Group 2</b>
1/27		A&B	1 General Course Information/2 Dimensional Analysis and Linearization
2/3		A&B	3 Introduction to Vectors/4 Introduction to Error Calculation
2/10		A&B	5 The Mathematics for Handling Errors
2/17	A	B	7 The Normal Distribution with Darts
2/24	B	A	9 Gravitational Acceleration on an Inclined Plane
3/3	A	B	8 Gravitational Acceleration with a Pendulum
3/10	B	A	11 Conservation of Energy and Momentum in a Collision
3/24	A	B	10 Conservation of Energy with a Pendulum
3/31	B	A	13 Moment of Inertia of a Wheel
4/7	A	B	12 Natural Oscillations with a Spring
4/14	B	A	15 Driven Oscillations
4/21	A	B	14 Bulk Modulus of Air

**Statement on Disability: KOKUA Program**

If you have a disability and related access needs, please contact the KOKUA program (UH Disabled Student Services Office) at 956-7511, [KOKUA@hawaii.edu](mailto:KOKUA@hawaii.edu), or go to Room 013 in the Queen Lili'uokalani Center for Student Services. Please know that I will work with you and KOKUA to meet your access needs based on disability documentation.

**Academic Integrity and Ethical Behavior: Office of Judicial Affairs**

Cheating, plagiarism, or other forms of academic dishonesty are not permitted within this course and are prohibited within the System-wide Student Conduct Code (EP 7.208). Examples include: fabrication, facilitation, cheating, plagiarism, and use of improper materials. Any incident of suspected academic dishonesty will be reported to the Office of Judicial Affairs for review and possible adjudication. Additionally, the instructor may take action in regards to the grade for the deliverable or course as they see fit.

**Title IX**

The University of Hawai'i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know experiences any of these, UHM has staff and resources on campus to support and assist you. Staff also can direct you to resources in the community. Here are some of your options:

If you wish to remain **ANONYMOUS**, speak with someone **CONFIDENTIALLY**, or would like to receive information and support in a **CONFIDENTIAL** setting, contact:

**Office of Gender Equity**

The Office of Gender Equity offers direct services to victims and survivors of sexual harassment and sexual assault. Services offered include crisis screening and assessment, case referral, safety planning and risk assessment.

**Paxon Chang (available Tuesdays, Wednesdays, and Fridays)**

Telephone: (808) 956-9499

Email: [geneq@hawaii.edu](mailto:geneq@hawaii.edu)

Queen Lili'uokalani Center for Student Services 210

2600 Campus Roa

Honolulu, HI 96822

Website: <https://blog.hawaii.edu/genderequity/>

**UH Confidential Advocacy**

The UH Confidential Advocates provide confidential advocacy services and case management to victims\* of sex discrimination and gender-based violence (including sexual harassment, gender-based harassment, dating and domestic violence, stalking, sexual exploitation, and sexual assault) who are involved in the University system on O'ahu.

**Natalia Villegas**

Telephone: (808) 341-4952

Email: [nataliat@hawaii.edu](mailto:nataliat@hawaii.edu)

Pop in/Walk in Services:

Join Zoom Meeting: <https://hawaii.zoom.us/my/hccmanoaadvocate>

Mondays: 1PM – 3:30 PM

Tuesdays: 9:30 AM – 12 PM

Wednesdays 9:00AM – 11:00AM

Thursdays 4:30PM – 6:30PM

### **Student Parents At Mānoa (SPAM)**

Student Parents At Mānoa (SPAM) seeks to increase the visibility of and resources for student parents at UH Mānoa as they pursue education while parenting. SPAM staff provide advocacy, support, and referrals for pregnant and parenting students to help them succeed in their educational goals.

### **Teresa Bill**

2600 Campus Road  
Queen Lili'uokalani Center for Student Services 211  
Honolulu, HI 96822  
(808) 956-8059  
[gotkids@hawaii.edu](mailto:gotkids@hawaii.edu)  
<http://manoa.hawaii.edu/studentparents/>

### **Counseling and Student Development Center (CSDC)**

The Counseling and Student Development Center (CSDC) offers support to UHM students, staff, and faculty to assist with personal, academic, and career concerns. All services are confidential and most are free of charge for Mānoa students. They also offer free consultation to faculty and staff on personal and student-related issues as well. CSDC office hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday. They also offer immediate walk in appointments for urgent or emergency/crisis services during their regular daily hours.

### **Queen Lili'uokalani Center for Student Services 312**

2600 Campus Road  
Honolulu, HI 96822  
(808) 956-7927  
[uhmcsdc@hawaii.edu](mailto:uhmcsdc@hawaii.edu)  
[www.manoa.hawaii.edu/counseling](http://www.manoa.hawaii.edu/counseling)

### **University Health Services Mānoa (UHSM)**

[The University Health Services Mānoa](#) (UHSM) is staffed by physicians, nurse clinicians, nurses, and other support staff, and offers a wide range of medical services and programs to UH Mānoa students, with many of the services also available to UH Mānoa faculty and staff and students from other UH campuses. Services include general medical care on a walk-in basis; women's health, sports medicine, psychiatry, and dermatology clinics by appointment; pharmacy and clinical laboratory; and student training, employment and volunteer opportunities.

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Honolulu, Hawaii 96822  
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[www.hawaii.edu/shs/](http://www.hawaii.edu/shs/)