COURSE SYLLABUS

PHYS 2A General Physics (Laboratory) Syllabus

Spring 2026 (Updated on 1/13/2026)

Table of Contents

Instructor Information

Instructor Name: Pei-Chun Ho
Department: Physics
Email / Telephone: peiho@mail.fresnostate.edu / (559) 278-5990
Office: McLane 255 (Doorbell on McLane 254)

Student Support Hours: (days/times)

I. Monday & Wednesday at McLane 255: 12:15 PM – 1:15 PM
Tuesday & Thursday at McLane 162 or 255: 7:45 PM – 9 PM

Course Information

Course Modality: face-to-face
Course ID: PHYS2A-13-35491-2263
Units: 1 (combination of lab 1 unit and lecture 3 units, total units of PHYS2A 4)
Class Meeting Location & Time: McLane 174 & Th 11 AM – 1:50 PM
Canvas: fresnostate.instructure.com
Prerequisites:

II. **Course description**: This one-unit lecture course will introduce the experiments associated with fundamentals of classical Newtonian mechanics, the physics of fluids, and development of simple harmonic oscillations, which students learn from PHYS 2A.

III. In addition, the course fits into the curriculum General Education (G. E.) Breadth B1, which requires 3 hours of lecture and 3 laboratory hours each week. (catalog.fresnostate.edu).

IV. ♦ It is usually expected that students will spend approximately 2 hours of study time outside of class for every one hour in lecture. Since this is a 3-unit lecture class, you should expect to study an average of 2 hours outside of class each week.

Required Course Materials

I. PHYS 2A Laboratory Manual can be purchased at the University Bookstore. Please do so ASAP and well BEFORE the first lab session.
II. Students have to bring lab manual to each laboratory session.
III. Scientific Calculator (Graphing Calculator is "Not" allowed for this course).
IV. A Fresno Stat email account. Instructor will not respond to the emails not sent through the Fresno State system.

Course Specifics

This course will include assigned readings in your lab manual that should be completed **"before"** each lab. Prelab activities need to be completed **before** each session starts. During the lab session there will be typically a quiz at beginning of the session, short review of material, demonstration how to set up apparatus, and experiments and data analysis will be performed by students.

- **If you cannot make to a certain lab due to medical reason, you must contact your lab instructor with doctor's note the previous week before the start of the lab for any groups to make arrangement.**

Course goals: The main goal of the laboratory course will be to assist students in learning to describe, analyze, and predict the motions of objects that are large relative to atoms and moves at speed much slower than the speed of light by using Newtonian Laws. From actually performing the experiments and analyzing the data, students will be able to associate physics concepts with real-world phenomena and understand the application of the physics laws they learn in lectures.

Student Learning Outcomes: Students will develop a strong foundation to identify, analyze, and solve problems with physical models within the core driplines described in the textbook of College Physics, which are universally recognized as standards in undergraduate physics education.

Primary Learning Outcomes:

- Students will be able to analyze one-, two-, and three-dimensional linear and rotational motions of objects by using Kinematic equations.
- Students will be able to describe and analyze motions by using pictorial, tabular, graphical, and mathematical representations on an object's position, velocity, acceleration, and mechanical energy.
- Students will be able to apply Newton's three laws and free-body diagrams to analyze the net external force on an object and the resulting motion.
- Students will be able to apply conservation laws in Physics to simply analysis of motions.
- Students will be able to associate mechanical laws with nature phenomena, such as various linear and rotational motions, spring motion, mechanical energy conservation or dissipation, and simple harmonic motion.
- Students will be able to write a formal scientific report, which will benefit their future careers.

PHYS 2A along with PHYS 2AL is also a General Education (GE) course in the area B1, which is expecting students to understand and actively explore fundamental principles in the Physical Sciences and the methods of developing and testing hypotheses used in the analysis of the physical universe.

V. For the writing requirement for each PHYS 2A laboratory report is a minimum of 1,000 words of original writing.

General Education and Writing (APM 216)

GE Program ePortfolio Requirement for Students (APM 215).

GE ePortfolio Assignment. The ePortfolio assignment for this course is to upload any of your best completed labs. Please upload this assignment to your **ePortfolio on Canvas** when it is completed. This assignment aligns with **Learning Outcomes** given in this syllabus. On the first page of your assignment, please indicate the Learning

Outcome with which the assignment aligns. If you have questions about the ePortfolio requirement, please email them to universityassessment@mail.fresnostate.edu.

Course Requirements/Assignments:

Policy on Prelab Activity

Each student must have the prelab activity finished when he/she arrives for the lab, otherwise the student will not be allowed to stay and do the lab activity, thus receiving a score of zero for that lab week. Without completing the prelab activity in advance, the student will be asked to leave the class. This policy will be strictly enforced. Each student must also finish the "Introduction and theoretical background" part of the lab report before coming to the lab, otherwise the student will receive "zero" point for this part of the lab report. Each student is required to show his/her prelab activity and introduction and theory to the lab instructor at the beginning of each lab session.

Lab Reports and Quizzes

Lab Reports

Standard Format and Required Contents of Scientific Report for PHYS 2AL

(0) Pre-Lab Activity (needed to be stamped at the beginning of the lab)
(I) Introduction and theoretical background:
(II) Data Collection and Report
(III) Data analysis and Graphs
(IV) Questions and Problems
(V) Conclusion
(VI) Pre-Lab Activity (needed to be stamped at the beginning of the lab)

Grade distribution for each lab report:

Grade of a lab report will be determined base on the following criteria:

Pre-Lab Activity	3/20
Introduction and theoretical background	3/20
Data Collection/Reporting, Units, Analysis, Graphs	6/20
Questions and Problems	4/20
Conclusions	4/20

- Each report must have a cover sheet attached, which will be provided to you by the instructor.
- All reports must be turned in before you leave the lab.
- There are no dropped labs, but if you miss a lab you can either make it up in a different lab section **with approval of both lab instructors**. Also there will be a make lab option for **one lab** during the final three days of the semester.

Quizzes

Six quizzes will be given during the semester starting in Week 4 (see lab schedule in this document).

Quiz will be given at the beginning of the lab session and will need to be completed within 10 mins. *No additional time will be allowed for those arriving late for the quiz.*

Your lowest quiz grade will be dropped so your score will be determine

Policy about Quizzes

Early or make-up quizzes will not be allowed.

Study Expectations

- **Prior to the Lab session.** Students are required to read and understand the pertinent section(s) in the lab manual before you come to the lab. Seek help from your instructor or the Physics Department tutors if you have questions about the lab or the lecture. In particular, you are expected to have read and understand the section on Laboratory Policy as well as the appropriate sections in the University Catalog.
- **Attendance to the lab is mandatory**. A student is not allowed to enter the lab room if he/she is more than 10 mins late for the lab and it will be counted as a missing lab. If a student misses more than two labs, he/she will automatically fail the course. Each student will submit one's own lab report at the end of each lab although some students will work in groups of two people (due to Covid-19). Students may not use any data or reports from other lab sessions or years or copy data from lab mates, which are not taken by the student's participation. If one does so, it will be considered as cheating and plagiarism. Anyone caught cheating and plagiarism will be dealt with in accordance to the Policies and Regulations as spelled out in University Catalog, **www.fresnostate.edu/catalog/**

There is also free Physics tutoring provided by the Learning Center: visit **https://studentaffairs.fresnostate.edu/lrc/**

Grading policy:

Grading (100%)

Reports:	70%
Quizzes	30 % (No final exam)

- You are allowed to waive "one" worst grade from lab reports
- Grade will "not" be curved. If you have questions about any quiz or lab report, you need to contact the instructor **within one week** you receive your graded quiz or lab report.
- **If you miss more than 2 labs (including the one dropped lab) you will automatically fail the course.**

Table 2 Distribution of Letter Grade to Percent and Points

Letter Grade	Percentage (%)
A	100 - 90
B	89.99 - 80
C	79.99 - 70
D	69.99 - 55
F	54.99 - 0

Course Policies & Safety Issues

Laboratory Behavior

Both the instructor and the students are to adhere to high standards of professionalism, common courtesy, and respect for others. Please refrain from the following behaviors, bearing in mind that if your behavior interrupts the class you may be asked to leave the class for the rest of the period:

- Coming to lab session late is not tolerable (no later than 5 minutes after a session starts).
- Using cell phones in class. Please turn off your phone before class.
- Disruptive behavior. This includes talking to others, reading newspapers, etc. Please be ready to attend to the subject of the class; if you are not motivated to learn please do not come and distract those who are motivated.
- Talking out of turn during laboratory instruction period. This can be rude and disruptive. However, I am very interested in what you have to say, and will be happy to entertain questions and comments if you wait your turn.
- Speaking to anyone in a rude or aggressive fashion or speaking of others in a disrespectful fashion.
- The University Policy on Disruptive Classroom Behavior is well worth reading and can be found in the Class Schedule and the Academic Policy Manual.

If you are absent from class, it is your responsibility to check on announcements made while you were away.

Audio/video recording of course lectures and the general guidelines for usage of electronic devices are not allowed in the lab session (Note: federal and state laws on student disability supersede your class policy on access to lecture/material). Also, if you allow recordings of course lectures, you need to make it clear that they are not to be shared with individuals who are not officially registered for the course and that they should be destroyed at the end of the semester.

Students with Disabilities

Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in University Center Room 5 (278-2811).

In addition to defining disruptive behavior and detailing formal procedures for dealing with it, the policy contains a useful description of the learning environment.

Late work and make-up work policy. Give your make-up work policy due to student absence. Finally, include your late work policy if that is separate from the make-up work policy, and make clear the requirements for attendance at the final examination and the impact on the student's grade. Please note that APM 232 requires that students be allowed to make up work missed during absences up to a single week for serious and compelling reasons that are documented. Therefore, a policy of "no late work" is out of compliance with the policy. APM 241 requires that these make-up policies be described in the syllabus.

Address safety issues if relevant. (labs, hazardous materials, shops, field work, etc.).

Fresno State has continually focused on the safety and well-being of our campus community by following state and local public health guidelines as well as California State University policies. Any COVID-19-related questions or concerns can be directed to campus Office of Environmental Health & Safety/Risk Management at 559.278.8422

Additionally, listed below are resources and quick links regarding updates on the coronavirus, campus and community resources, testing sites and more.

- Visit the Center for Disease Control (CDC) website for the latest updates on the virus
- For updated regarding the Fresno State campus community and response, click Fresno State Coronavirus Updates.

Please remember that the same student conduct rules that are used for in-person classroom instruction also apply for virtual/online classrooms. Students are prohibited from any unauthorized recording, dissemination, or publication of any academic presentation, including any online classroom instruction, for any commercial purpose. In addition, students may not record or use virtual/online instruction in any manner that would violate copyright law. Students are to use all online/virtual instruction exclusively for the educational purpose of the online class in which the instruction is being provided. Students may not re-record any online recordings or post any online recordings in any other format (e.g., electronic, video, social media, audio recording, web page, internet, hard paper copy, etc.) for any purpose without the explicit written permission of the faculty member providing the instruction. Exceptions for disability-related accommodations will be addressed by Student Disability Services working in conjunction with the student and faculty member.

The course policies that appear below are not required, though they reflect common student concerns and issues that arise at the Student Academic Petitions Committee. Responding to those that apply in the course syllabus has generally been found to be helpful.

Plagiarism Detection: The campus subscribes to Turnitin, a plagiarism prevention service, through Canvas. You will need to submit written assignments to Turnitin. Student work will be used for plagiarism detection and for no other purpose. The student may indicate in writing to the instructor that they refuse to participate in the

plagiarism detection process, in which case the instructor can use other electronic means to verify the originality of their work.

Course AI Policy: Use of Artificial Intelligence in my lab session and on assignments and lab reports are **NOT** allowed.

Dispute Resolution: If there are questions or concerns that you have about this course that you and I are not able to resolve, please feel free to contact the Chair of the department to discuss the matter.

Chair's name: Doug Singleton
Department name: Physics
Chair's email: dougs@mail.fresnostate.edu
Department phone number: (559) 278-5281

Intellectual Property: All course materials, including but not limited to the syllabus, readings, quiz questions, exam questions, and assignments prepared by the instructor are property of the instructor and University. Students are prohibited from posting course materials online (e.g., Course Hero) and from selling course materials to or being paid for providing materials to any person or commercial firm without the express written permission of the professor teaching this course. Doing so will constitute both an academic integrity violation and a copyright violation. Audio and video recordings of class lectures as well as images of chat or messages shared during course sessions are prohibited unless I give you explicit permission in advance. Students with an official letter from the Services for Students with Disabilities office may record the class if SSD has approved that service. Otherwise, recordings of lectures are included in the intellectual property notice described above. These provisions exist regardless of the modality of the course. That is they apply to in-person, hybrid and online courses.

Student Ratings of Instruction: In the final weeks of the semester, you will be asked to complete a short survey to provide feedback about this class. The primary goal of student ratings is to help your instructor improve the class. Feedback will also be reviewed by the department chair and the college dean. You will be given 15 minutes of class time to complete student ratings. Please offer feedback honestly and thoughtfully. Your participation is appreciated. You can access your student rating surveys and get more information at Fresno State Student Ratings for Instruction (SRI)

University Policies

Students with Disabilities: Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in the University Library, Room 1202 (278-2811).

Financial Aid Satisfactory Academic Progress Standards and Appeals Process: https://studentaffairs.fresnostate.edu/financialaid/policies/sap/index.html

The following University policies can be found on the web at:

- Adding and Dropping Classes
- Cheating and Plagiarism
- Computers
- Copyright Policy
- Disruptive Classroom Behavior
- Honor Code
- Title IX

Fresno State is committed to fostering a safe, productive learning environment for all students. Title IX and CSU policy prohibit discrimination on the basis of sex, which includes sexual harassment, domestic and dating violence, sexual assault, sexual exploitation, and stalking. We understand that sexual violence can impact a students' *ability to be successful* in the learning environment. We encourage students who have experienced sexual misconduct *to seek information on where to report from any member of our faculty or staff in order to ensure that the university can provide students with the necessary resources and supportive measures.*

As an instructor, I have a mandatory reporting responsibility as a part of my role. It is my goal that you feel comfortable sharing information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings. I will seek to keep the information you share private to the extent possible. However, I am required to report any information I receive regarding sexual misconduct or information about a crime that may have occurred during your time at Fresno State.

Students can report incidents of alleged sexual misconduct to either or both of the following resources:

Office of Compliance and Civil Rights | occr.fresnostate.edu | 559.278.5003
Fresno State Police Department | fresnostate.edu/police | 559.278.8400

Students can also report other incidents of discrimination or harassment to:

Office of Compliance and Civil Rights | occr.fresnostate.edu | 559.278.5003

Students can access *confidential support* from two separate resources on campus:

Counseling Services | studentaffairs.fresnostate.edu/health/counseling | 559.278.2734
Survivor Advocacy Services | fresnostate.edu/survivoradvocate | 559.278.6796

Pregnancy or Related Conditions:
Pregnant Students *or those with related conditions should contact the Title IX Coordinator in the Office of Compliance and Civil Rights for assistance. The Title IX Coordinator can coordinate specific actions to prevent sex discrimination and ensure the student's equal access to educational programs or activities.*
Office of Compliance and Civil Rights | occr.fresnostate.edu | 559.278.5003

Parent scholars *provides information on priority registration and other support for parenting students.*
Services for Students with Disabilities *can also provide assistance with* accommodations.

If you have concerns and you are unsure who to contact, please visit the Concern & Action Guide.

Emergency Information: In the event of an emergency, everyone in the campus community becomes a partner in the response. To ensure you are prepared and remain calm you must make yourself familiar with campus protocols. To contact the Fresno State Police Department call 559.278.8400 from your cell phone or 911 from a campus phone. Prior to an emergency, assess your environment for options depending on the emergency. Identify all possible exit routes, in an emergency always use the closest most safe exit. Once you exit the building go to the predetermined evacuation assembly point, if that is unavailable then go to an open safe space away from the emergency. Identify where and how you can secure yourself inside if you need to shelter in place or hide from a threat. Be prepared to help guide those around you and assist individuals who may be in need. Additional information can be found at www.fresnostate.edu/emergency

University Services

The following University services can be found on the web at:

- Associated Students, Inc.
- Students with Disabilities
- Dream Success Center
- Library
- Learning Center Information
- Student Health and Counseling Center
- Academic Success Coaching
- Survivor Advocacy
- Writing Center
- Project Rebound

Laboratory Schedule

(May be given as a separate document)
Following are schedules showing class meeting dates for Spring 2026 for Monday and Wednesday courses, Monday, Wednesday, and Friday courses, and Tuesday and Thursday courses.

*Table 5 Spring 2026 Tent**ative Course Schedule: Thursday PHYS 2A Laboratory***

Week	Date	Topic of PHYS 2A Laboratory	Quiz #
2	Thurs., Jan 22	**No Lab** due to Martin-Luther-King-Jr.-Day Monday	
3	Thurs., Jan 29	Introduction to 2AL Policies	
4	Thurs., Feb 5	**Lab 1:** Distance and Displacement	
5	Thurs., Feb 12	**Lab 2:** Introduction to Motion	**Quiz 1**
6	Thurs., Feb 19	**No Lab** due to President-Day Monday	
7	Thurs., Feb 26	**Lab 3:** Vector Addition	**Quiz 2**
8	Thurs., Mar 5	**Lab 4:** Newton's 2nd Law	
9	Thurs., Mar 12	**Lab 5:** Energy and Power	**Quiz 3**
10	Thurs., Mar 19	**Lab 6:** Conservation of Linear Momentum	
11	Thurs., Mar 26	**Lab 7:** Centripetal Acceleration	**Quiz 4**
12	Thurs., Apr 2	**No Lab** due to Spring Break	
13	Thurs., Apr 9	**Lab 8:** Forces and Torques in Equilibrium	
14	Thurs., Apr 16	**Lab 9:** Archimedes Principle	**Quiz 5**
15	Thurs., Apr 23	**Lab 10:** Specific Heat	
16	Thurs., Apr 30	**Lab 11:** Simple Harmonic Motion	**Quiz 6**
17	Wed., May 6	Last Day of Instruction **No Lab**	

1) Prior to the lab session

You are required to read and understand the pertinent section(s) in the lab manual before you come to the lab. Seek help from your instructor or the Physics Department tutors if you have questions about the lab or the lecture. In particular, you are expected to have read and understood the section on Laboratory Policy as well as the appropriate sections in the University Catalog

2) Finish your lab reports and hand them in before you leave

a) This is advantageous from your point of view in that you will not have to spend a lot of time preparing a cosmetically attractive, extensive lab report. However, you

should put in more time in preparation so that you can finish comfortably in 2 hours and 50 mins.
b) Check any procedure you are unsure of with the TA. You will have to repeat procedures which are incorrect.
c) All partners must write up their own reports - you will find that having your personal report will facilitate studying for subsequent quizzes.

3) Lab Reports

a) See the first few pages of the laboratory packet for suggestions about report organization!
b) You do not need to prepare your own cover page. A cover page will be provided to you at each lab.
c) You do not have to reproduce theory which is presented in the lab manual. Derivations are not necessary unless called for.
d) Your data sheet must include all data with appropriate units.
e) When doing repetitive calculations, only one must be shown explicitly.
f) Answer all questions and solve all problems.
g) Try to estimate uncertainties and calculate errors when called for. If your calculator will perform linear regressions, read your instruction manual so that you can do them.

4) Graphing

a) When graphing F vs. C, F is plotted on the y-axis and C on the x-axis.
b) Estimate the range of the variables you're plotting before you start so that you end up with reasonably scaled axes.
c) Label both axes, specify the units, and title your graph.
d) Do all graphing requested on engineering paper (or better). If available, use the laboratory computer for plotting data.

5) Significant Figures

Generally, you will be able to use at least three significant figures legitimately.

Table 6 Finals Week Schedule

Finals week	Days	Dates
Final Exam Preparation & Faculty Consultation Days:	Thursday and Friday	May 7-8
Final Semester Examinations	Monday – Thursday	May 11-14
No Final Exam for PHYS 2A Lab		