

General Physics I

PHYS - 2110

Fall Semester, 2025

Instructor Info.

Dr. Jiong Liu, Email: jliu@cedarville.edu

Office: ENS 204

Office Hours: M-Th: 2:00 pm – 2:50 pm, F: 12:00 pm – 12:50 pm

Phone: Office: ext. 3897

Classroom: Milner 105, 1:00 pm - 1:50 pm M, W, F

Lab Room: ENS 236

Lab Time:

Section 1 3:00 pm – 4:50 pm M

Section 2 3:00 pm – 4:50 pm Tu

Textbook

University Physics Vol.1 (2018), by Ling, Sanny and Moebs (ISBN: 978-1-938168-27-7).
We will cover Chapters 1 – 12, 15-16. If time allows, Chapters 13-14, 17. ([Free access](#))

For the laboratory, you will be using the provided handouts.

Co or Prerequisite: MATH 1720 (Calculus II)

Course Description:

4 Credits

Basic concepts of mechanics using calculus. This is the first of a three-semester sequence intended for students in the physical sciences and engineering programs. Topics include linear and rotational motion in three dimensions, oscillatory motion, gravitation, fluid mechanics and basic concepts of wave motion. Three lectures and one two-hour laboratory per week.

Prerequisites or Co-enrolled: MATH-1720 Calculus II or permission of instructor. (Fee: \$100)

Objectives:

Theory/Concepts: The student will be able to recall physical principles related to motion, Newton's Laws, conservation principles, oscillators and waves. In addition he/she will apply these principles by solving a wide range of physics problems using the appropriate mathematical techniques.

Analysis: The students will develop problem-solving skills and be able to analyze problems related to motion, Newton's Laws, conservation principles, oscillators and waves.

Laboratory: The student will be able to analyze concepts related to motion, Newton's Laws, conservation principles, oscillators and waves by comparing them to observed phenomena and testing them in the laboratory setting.

Community: The student will reflect on the beauty of God's creation as found in physics and apply their understanding to serve God and others. (Psalm 8:3-4)

Grading

Assignments	Grade	% Grade
3 Unit Exams (100 pts each)	300	30.00%
1 Final Exam (comprehensive)	150	15.00%
Quizzes (20 pts each, best 5 of 6 quizzes)	100	10.00%
Pre- and post-assesment (points for participation)	50	5.00%
WebAssign (~15 pts, ~5 problems/chapter, 15 chapters)	232	23.20%
Laboratory (14 pts each, 4 pts/pre-lab and 10 pts/post-lab)	168	16.80%
Total	1000	100.00%

Grade Scale	
>= 93%	A
[90 - 93) %	A-
[87 - 90) %	B+
[83 - 87) %	B

[80 - 83) %	B-
[77 - 80) %	C+
[73 - 77) %	C
[70 - 73) %	C-
[67 - 69) %	D+
[63 - 67) %	D
[60 - 63) %	D-
< 60%	F
* "[,)" means ">= and <".	

NOTE: A passing grade in the lab is a prerequisite to passing the course. An F on the labs means an F for the course. **DO NOT** ignore the labs.

Though no "curving" of the final grade will be done, I reserve the option of raising a student's final grade due to their good attitude, class participation, and marked improvement during the semester.

Topics

The topics will be covered during the course of the semester and timing of these topics is reflected in the schedule.

Exams

3 unit exams and one comprehensive exam will be given during the course of the semester. Though each unit exam only covers material from the previous unit exam, there is a building of concepts, which will show up in later exams. Problems on the exam will be similar to problems which exist in the textbook and on the quizzes. The final exam is comprehensive and will be similar to the unit exams except for length.

Quizzes

6 quizzes are scheduled during the semester. These will give you a chance to see how I ask questions and will prepare you for the unit exams. Only the 5 highest quizzes will be kept for a grade. Therefore, the lowest quiz of the semester will not be included in your grade for the semester. If you miss a quiz due to an unexcused absence, it will be recorded as a zero and, therefore, will be your lowest quiz for the semester.

WebAssign:

For each chapter there will be a WebAssign assignment worth 5-6 points, except for the last two chapters, which are combined into a single assignment. When a chapter is completed in class, the appropriate assignment will be available through WebAssign. You will have at least two days to complete this assignment. In some cases more time is allowed. You need to check the due date by logging into WebAssign. If the assignment is not completed by the due date, you may request an extension with a late penalty. Depending on how late the extension is, the penalty may be up to 50%, off the value of the assignment. See my late policy.

As you do the assignment, take care to use the proper number of significant digits, proper units and signs. I will give you three tries to get the right answer. If the question is multiple choice, you will not get credit if you exhaust all the possible answers before your three tries are completed. I recommend that you work through the WebAssign problems on a separate sheet of paper and then enter the answer when you are done. That way if you don't understand why the answer is as it is, you can bring your work to my office and we can go over it together. A number of the problems from WebAssign are from your textbook. However, the numerical values may be different. Go by the information provided by WebAssign and do not rely on answers from the back of the textbook. You should not use these assignments as your only problem solving practice, but in conjunction with the non-graded homework problems. Treat the WebAssign assignments as open book quizzes.

Links to assignments are available in Canvas. Just click on the link and it will take you to WebAssign. The first time you access WebAssign it may ask you to activate an access key. The access key can be purchased at that time. If you purchased a multiple semester access key in the spring, it should be usable for this course. If you have problems activating WebAssign, contact Cengage's support services.

Homework

Homework is the key to being successful in physics. If you become proficient at solving the homework problems, you will do well in the course. WebAssign provides a means of having graded homework. Non-graded homework problems are listed below and will provide a sample of problem types that you should be able to solve for the class. Solutions to the non-graded problems are available on the class web site.

You are encouraged to work together when doing non-graded homework. Forming a study group will give you accountability to stay current on the course material, provide input when you get stuck on solving problems and provide an opportunity to clarify your thinking about physics as you explain a problem to others.

Laboratory

The laboratory sessions are considered a vital part of this course. So much so that an F on the labs means an F for the course. You must have a passing grade on your labs in order to pass the class.

Calculator Policy

You have been given a scientific calculator for use in your General Physics sequence (I, II, & III). You are expected to use this calculator for quizzes and exams in these classes. If you forget to bring this calculator to a quiz or exam, an extra calculator will be provided with a grade penalty as determined by the instructor. If you lose your calculator or it is no longer in working condition, you are responsible for obtaining your own replacement calculator of the same type. For this particular class, the first time you forget your calculator for a quiz or exam, there will not be a penalty. However, if there is no extra calculator prepared by me, you will need to do the calculations by hand. Borrowing from your classmate during the exam-taking is prohibited.

Late Work

Late work will be accepted with a penalty. Late projects and labs will be docked 10% if turned in within the first week and 20% thereafter. If late work is turned in during finals week 50% of the value of the homework will be docked unless it falls under the category of being within the first week. (Note: The penalty for late work is different than the WebAssign late penalty. In the case of WebAssign, you need to request an extension on the assignment.)

Attendance

Attendance will be taken each day of class. Though it does not get recorded as a grade, it will be to your benefit to be present for class. One example is that a missed quiz will be recorded as a zero unless the absence is excused. Also material will be presented differently than in the book since I will endeavor to illustrate some of the

physical principles, generate discussion about issues related to physics and include Biblical perspectives on these physical principles. Faithful attendance also demonstrates a good stewardship of the time and money with which God has entrusted you.

Open Door Policy

I have one hour per day scheduled for office hours. You may also drop by my office at any other time whether it is class related or not. As long as I am present in my office and I do not have any pressing work that needs to be done, I will meet with you. I am privileged to have this ministry at Cedarville University. Whether you recognize it or not, God has put me in your life this semester to minister to you.

In Case of Illness

If you have to miss the class due to illness, please email me ahead so your absence will be marked as excused. I will work with you to make up any missed material, assignments, quizzes, exams, or labs.

Conclusion

Use this semester in physics well. Physics is not purely knowledge, facts, or information, but a skill. You need to practice this skill correctly in order to become proficient with it. 2 hours of study outside of class for each hour in class is recommended to be successful in this class. If you are weak in your calculus and problem-solving skills, you may need to invest even more time.

I hope your appreciation for physics will grow during this semester, even though it will require a sustained amount of effort. Physics is a foundation for all other sciences since it attempts to quantify how this universe works from the largest to the smallest scales. The basic laws and structure present in the universe were created and are maintained by God (Col. 1:17) and provide illustrations of God's majesty and power.