

Physics 240

University Physics I

Fall 2021

Lecture:

Face to Face: M, F 11:00 -11:50 AM A113 Science,
Asynchronous Online via Canvas on Wednesday.

Discussion:

Section 1: M 12:00-12:50pm A112 SCI
Section 2: M 3:00-3 :50 pm A112 SCI

Lab:

Section 1: Th 8:00-10:50 B104 SCI
Section 2: Tu 9:00-11:50 B104 SCI

Brad Hinaus
Office: B107 Science
Phone: 715-254-5141 (cell)
Zoom Address:
Email: bhinaus@uwsp.edu

Office Hours:

M 2-3,
T 12-1, 3-4
W 2-3
Th 11-12

Office Hours

You can stop by my office at the times listed above or make an appointment. I warn you that I wander during office hours. Feel free to send me a text if I am not there. If you know you are coming, let me know. If you would like to meet via Zoom, send me a text and we can meet at our class Zoom Address for our meeting.

Zoom Address: <https://wisconsin-edu.zoom.us/j/99652946308>

Text

“Physics for Scientist and Engineers” by Serway and Jewitt 10th Edition available at the bookstore for rental

Except for the text book, most items will be available on Canvas or Handouts

Contents:

Briefly we will study, motion in one and two dimensions, forces, energy, rotational motion, and waves.

Learning Outcomes for Physics 240

Ideas about the concepts of motion, mechanics and waves will be presented both mathematically, visually, and conceptually in lecture and the laboratory. During the semester there will be three main goals:

1. Become a better a problem solver. This means you will be able to:
 - Describe and analyze problems both qualitatively and quantitatively in various representations (words, diagram, graphs, equations, etc.)
 - Correctly apply appropriate principles and concepts to a problem

- Construct solutions by solving successive sub-problems.
 - Check solutions for non-sense answers and make an appropriate statement of answer.
2. Make a connection between the conceptual, mathematical, and experimental aspects of physics. This means you will be able to:
- Interpret concepts in multiple representations (i.e. words, diagrams, graphs, equations, etc.)
 - Solve problems using numbers and variables
 - Explain how and why a concept applies to a specific situation or problem.
 - Design simple experiments and prove they work
 - Analyze and interpret data taken from experiments
3. Explain how physics applies to everyday life. This means you will be able to:
- Explain how physics applies to the body, scientific instruments, and medical instruments.
 - Describe how the concepts of physics apply to common devices and everyday events.

Department of Physics Learning Outcomes for Physic's Majors

- **(Problems Solving)** Integrate conceptual reasoning, critical thinking skills, mathematical skills, and principles from both theoretical and applied physics courses to explain and solve problems related to the physical processes in nature, applied mechanics, applied electronics, and those appropriate for the education setting.
- **(Experiments)** Investigate a problem experimentally by identifying the problem, developing an appropriate experiment, collecting reliable data, quantitatively analyzing results, determining uncertainties and probable errors, and drawing justifiable conclusions.
- **(Communication)** Communicate effectively within the profession by writing clearly and concisely and by articulating clearly.

UWSP Natural Sciences GEP Learning Outcomes

- Explain major concepts, methods, or theories in the natural sciences to investigate the physical world.
- Interpret information, solve problems, and make decisions by applying natural science concepts, methods, and quantitative techniques.
- Describe the relevance of aspects of the natural sciences to their lives and society.

My Teaching Philosophy

I think the college classroom should reflect basketball practice. Mentally picture what basketball practice looks like or individual music lessons. What do you see? Its active, people (the learners) are moving around and doing things. Players or instrumentalists don't spend 100% of their time watching their coach or teacher draw diagrams on a whiteboard and talk continuously. They spend a good portion of their time working on the skills with each. That is what I want us to do, work on our skills and

analysis abilities during class *with each other*. Will we eliminate the lecture? No, but I hope to reduce the amount of time in that mode so we can practice and ask questions.

While we practice these, my expectation is that every student gives an honest good faith effort while time is given during class. At times, these may be collected and graded on an effort basis. These scores will be included as a part of homework score.

Inclusivity Statement

It is my intention that students from all backgrounds are well served in this course. Backgrounds can include gender, race, orientation, age, disability, religion, culture, and other ways a person identifies. Other backgrounds that give students various perspectives of this course are their current mathematical abilities, their developing problem-solving abilities, past courses, life experiences growing up, classroom environments they have experienced, preferred learning style and more. In this course, it is expected that each other's thoughts and comments be respectfully listened to and/or responded to during class, lab, and discussion. It is also expected during the course times, that students work to assist each other in the learning process.

To help you with difficulties of this class, I am available in scheduled office hours and meeting by appointment. In past semester's I have had standing 1-hour meetings with individual students each week. I am welcome to those. If you would like to hear a different perspective, the STEM Drop-in tutoring is available in CBB 190 (see below) If you have suggestions for me on how to make this class more inclusive between instructor/student and student/student interactions or activities, please let me know.

<u>Grading</u>	
Homework	16.6% of total grade
Four Exams	66.8% of total grade
Labs	16.6% of total grade

<u>Grading Scale as a Percentage of Total Points</u>	
A	93-100
A-	90-92.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	77-79.9
C	73-76.9
C-	70-72.9
D	60-69.9
F	00-59.9

Examinations

Four examinations will be given during the semester. Three exams will be given during a class or lab period during the semester, and the fourth exam will be given during the final examination period. Missing an exam will earn a grade of 0 (zero).

Homework

Homework will come in a variety of flavors. My expectation is that everyone receives 100% on the homework. This is your effort grade. If you start your assignments in a

timely manner, you will have ample opportunity to ask me or tutors questions until you get them correct.

- **Traditional** homework will be assigned from the end of the chapter. These will be mostly problems to work out mathematically and some short answer problems. These will be assigned during class and posted on Canvas. The assignments will be turned in via Canvas by scanning your handwritten work into a **single document** and submitting via Canvas.
- **Lecture Quizzes** - These will be short, usually multiple-choice questions based on the lecture and administered through Canvas. They are mostly conceptual or simple calculation type questions but require a fundamental understanding of the material. You should have unlimited trials for each assignment. **My expectation is that you get them all correct with an understanding why each answer is correct.** Although it would be simple enough to cycle through every answer to get a score of 100% without thinking about the questions, this method adds nothing to advance learning and should be avoided.
- **In Class Assignments** – From time to time, I will bring activities to do in class that you will turn back in. You will be graded on these mostly for effort. These cannot be made up.

Late Homework Policy-

- Traditional Homework - It is not late until I grade what the class handed in on the due date. After that it is consider late, I will grade it with a poor attitude and multiply your score by 0.75.
- Lecture Quizzes - Need to be completed before the exam is given on the unit that covers that material.
- In Class Assignment - No make ups.

Laboratory

Labs are usually done in groups of two or four. The focus of some of the labs is mostly concept development with a small focus on actual measurements, while other labs are purely experimental with the goal of measuring a particular parameter. Each lab is graded out of 10 points which is a combination of your group score and your individual score. The group score comes from work done during the lab period (usually 6 or 7 points). The individual score comes from an individual quiz at the end of lab which is done to ensure each student has taken *personal* responsibility for their own learning.

Attendance:

Attendance will not be kept. Attendance is not required for lecture or discussion, but **attendance is required when examinations are given. Attendance is required every time that you will be graded. That means you must attend all examinations and all laboratory periods.** Make up work will only be accepted for excused absences. Excused absences include a death in the immediate family, an illness with a note from a doctor, PA, NP, or Health Services, a conflict with religious observances, military duties, or an event where you officially represent the University of Wisconsin – Stevens Point (i.e. sporting events, artistic events) and the event directly conflicts with the test or lab. **All excused**

absences must be approved before the day missed with appropriate documenting materials. All unexcused absences will automatically earn a grade of zero (0).

Religious Conflicts with Scheduled Class Time

In accordance with the University of Wisconsin policy, any potential conflict between class work and religious observances must be made known to the instructor within the first two weeks of class. The student must notify the instructor of the specific days and dates of specific religious observances for which the student seeks relief from academic requirements.

Tutoring

The Tutoring-Learning Center (TLC) offers **FREE** tutoring to support you in your STEM classes. The tutors are UWSP students who have done well in their classes and who are here to share their successful study habits and content knowledge to help others succeed. Discussing concepts and practicing problems together clarifies and solidifies knowledge, and the tutors are eager to study with you. If you have questions about the schedules or would like to make an appointment, please visit the TLC in ALB 018 (library basement), email (tlctutor@uwsp.edu), or call (715) 346-3568.

STEM Tutoring – Fall 2021

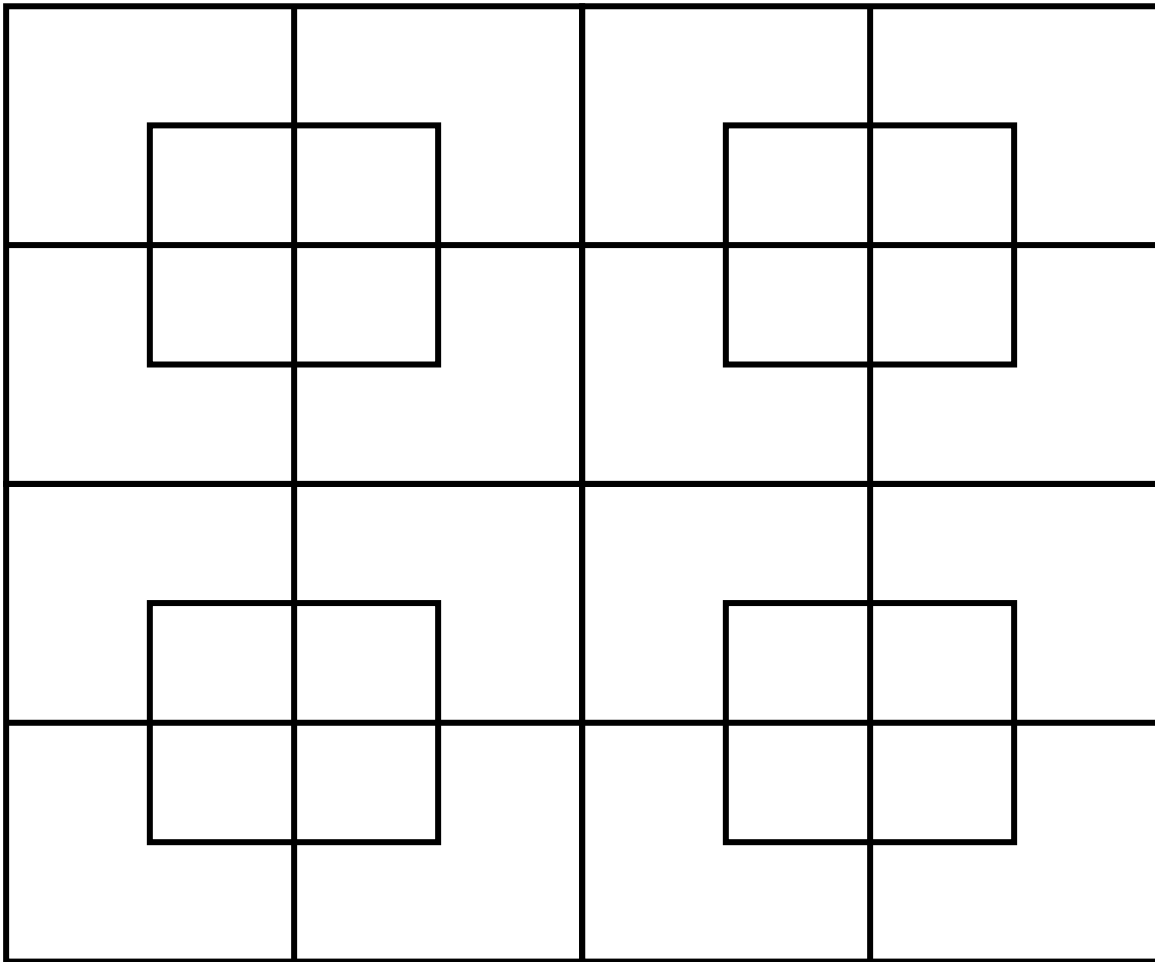
What	Location	Schedule	Cost
STEM Drop-In Tutoring	CBB 190	No appointment needed – stop by when tutors are available: https://www.uwsp.edu/tlc/Pages/dropInTutoring.aspx .	Free
STEM One-on-One Tutoring	ALB 018	By appointment. Visit ALB 018 (library basement) to make a request or complete online request form here: https://www.uwsp.edu/tlc/Pages/request-math-science-tutoring.aspx .	Free

“(Physics) Success is 1% inspiration, 98% perspiration, and 2% attention to detail.” *Phil’s-osphy*, by Phil Dunphey

Tentative Schedule

Week	Date	Topic	Lab
1	7/2	Ch. 2 Syllabus, Velocity	No Lab
2	7/7	Ch. 2 1D Motion	Graphing, Curve Fitting, Tables of Motion
3	7/13	Ch. 3 Vectors, Ch. 4 2D Motion	Measuring Acceleration
4	7/20	Ch. 4 2D Motion	
5	7/27	Ch. 5 Laws of Motion	Test 1 Bungee Jumping Barbie, Force Plate
6	10/04	Ch. 6 Circular Motion and Applications	Friction and Drag Forces
7	10/11	Ch. 7 Energy	Winter Wonderland
8	10/18	Ch. 8 Conservation of Energy	Conservation of Energy on Inclined Plane
9	10/25	Ch. 9 Momentum and Collisions	Test 2 Collisions (Conceptual)
10	11/1	Ch. 10. Rotation of Objects	Conservation of Momentum
11	11/8	Ch. 11. Angular Momentum	Measuring Moment of Inertia on an Incline
12	11/15	Ch. 12. Static Equilibrium	Equilibrium Calculations
13	11/22	Ch. 13. Gravitation /Ch. 15 Oscillations	No Lab Thanksgiving
14	11/29	Ch. 16 Waves Motion	Test 3 Stringed Instruments
15	12/6	Ch. 17 Standing Waves	

Final Exam (Test 4) Th Dec. 16 2:45-4:45 A113 SCI



Squares

Net Force

Jars

Monte Hall