University of Wyoming
PHYS 1110 Section 02
General Physics I, 4 credits
Lectures: CR 133; Labs: STEM 175; Discussions: ENG 2105; Exams: CR 133
Fall semester 2025

Class Times

Lecture: MWF 10:00–10:50, from 25 Aug 2024 to 5 Dec 2024 excluding university breaks.

Laboratory (You should be registered for *one* laboratory section): Sec 10: T 11:00 AM–12:50 PM; Sec 11: T 1:10–3:00 PM; Sec 12: T 3:10–5:00 PM; Sec 13: T 9:00–10:50; Sec 14: W 11:00 AM–12:50 PM; Sec 15: W 1:10–3:00 PM; Sec 16: W 3:10–5:00 PM.

Discussion (You should be registered for *one* discussion section): Sec 20: T 11:00–11:50 AM; Sec 21: T 3:10–4:00 PM; Sec 22: T 4:10–5:00 PM; Sec 23: W 12:00– 12:50 PM; Sec 24: W 2:10–3:00 PM; Sec 25: W 3:10–4:00 PM; Sec 26: R 11:00–11:50 AM.

Instructor

Richard Barrans, Ph.D., M.Ed., Assistant Lecturer, Physics and Astronomy
Physical Science Building room 116, no phone in office, rbarrans@uwyo.edu.
Office Hours: PS 116: M 3:10–4:10 PM, T 10–11 AM; F 11:00 AM–noon;
PS 234: T 7:00–8:00 PM

Teaching Assistants

Name	Office hour	Section(s)
Sami Alheeh		24
Sam Barber	M 10:30 AM–12:30 PM in PS 202	12, 15, 25
Mauricio Corona	R 10 AM–noon in PS 202	14
Palash Dhali	F 10 AM–noon in PS 202	10, 11, 21
Megan Frank	M noon–1 PM in ST 180; T 9–9:50 AM in PS 103	20
Taylor Juchau-Peraza	M 3–4 PM in PS 103	22
Jeremy LaFollette	T 10 AM–noon in PS 202	16, 23
Adekunle Ojelabi	M 10–11 AM in PS 132	26
Josh Wanninger	W 3–4 PM in PS 107; or book a time	13

Enrollment Restrictions

Prerequisite: MATH 1450, 1405 or equivalent. Students receiving credit for PHYS 1110 cannot receive credit for PHYS 1050, 1210 or 1310.

Course Description

General Physics I is the first semester of a two-semester introductory physics sequence without calculus. It is primarily intended for students aiming for careers in allied health

fields and others desiring insight into the physical world. This course is an introduction to the fundamental processes in our universe, including mechanics, gravity, fluids, and heat. Laboratory sessions will illustrate principles studied.

University Studies Program

This course fulfills the Physical and Natural World (PN) requirement of the 2015 University Studies Program. Physical and Natural World (PN) courses will help students understand the fundamental concepts of scientific and quantitative inquiry and develop the ability to understand the fundamental concepts of scientific and quantitative inquiry and develop the ability to understand the relevance of scientific, technological, and quantitative skills to contemporary society. Physical and Natural World (PN) courses will also develop and promote critical and creative thinking skills through active learning, inquiry of pressing issues, and individual and collaborative processing of ideas.

Student Learning Outcomes

Physics & Natural World Student Learning Outcomes

- Understand the principles of the scientific method.
- Formulate and test ideas through analysis and interpretation of the data.
- Use quantitative data analysis as the basis for making critical judgements and drawing conclusions.

Physics & Natural World Critical & Creative Thinking Student Learning Outcomes

- Separate facts from inferences and relevant from irrelevant information, and explain the limitations of information.
- Evaluate the credibility, accuracy, and reliability of conclusions drawn from information.
- Analyze one's own and others' assumptions and evaluate the relevance of context when presenting a position.

General Physics Student Learning Outcomes

- Explain and predict how interactions between objects affect their motion.
- Use principles of conservation to predict how objects behave.
- Construct and apply mathematical models to describe and explain physical phenomena.

Required Materials

Textbook: Serway and Vuille, **College Physics**, 11 Ed. Cengage, 2018, with WebAssign. Available via WyoCourses through StartRight+.

Grading Scale and Grading Policy

The final grade will be determined from cumulative points attained. Grading will be on a standard scale (90's = A, 80's = B, 70's = C, 60's = D, < 60% = F). Standards comprise 75% of the course grade, and labs comprise 25%.

Standards: Standards are specific skills that I recognize as evidence of mastery of the course content. The list of standards can be viewed on the course website at barransclass.com. The exams contain questions that probe your understanding of the standards assessed. Your performance on the questions probing a standard determines whether you satisfy the standard or not.

If you don't satisfy a standard on the first assessment, you automatically qualify to try again at the next scheduled retest. If you don't satisfy the standard at the retest, you may continue to retest, but you must meet with me or a designee to review the standard before each retest. I won't keep a record of which standards you have reviewed, just that you have done a review. Reviewing the necessary content is up to you.

There is no penalty for needing more than one try to satisfy a standard. Whenever a standard is satisfied, it receives full credit.

Labs: You must average **at least 60% on the labs** to pass the course. If your lab average is less than 60%, you will receive an F for the course regardless of your scores on the standards.

A note about grades: Your grade in this course reflects your performance over a 15-week period on a limited set of contrived evaluations. It does not reflect your worth as a person or what I think of you. Because of the scope of this course, and because it comprises only a small fraction of your college career, your grade is not a prediction of your future success nor an evaluation of your career potential. In short, please do not suffer by making more of your grade than it really is.

General Requirements and Expectations

Attendance Policy

Attendance is expected in lectures. There is no explicit grade for attendance in lecture or discussion, however. Attendance in lab is required to receive credit for the lab. If you have an excused absence from lab, you may attend another lab session in the same week. Otherwise, contact your instructor to arrange a make-up lab for you or to pro-rate the lab.

It you are absent without excuse from an exam or retest, you receive zero credit.

Lecture

Since ideas and definitions from the text will be used freely in class, please read and study the assigned chapters before class. I will avoid presenting the exact examples in your text. Instead, class meetings are for addressing the difficult points in the text as well as for helping to place the readings "in the big picture." The more actively engaged you are in class, the better you will learn and perform. Hence, there will be frequent conceptual questions posed in class—questions that you will be expected to discuss with your neighbors.

Lab

Labs are held every academic week except for Thanksgiving week and the last week of the semester. The lab periods in the last week of the semester are reserved for making up excused labs.

The lab activities are to be completed entirely in lab. Scoring is all-or-nothing: either you get full credit for a lab, or you don't. You should always be able to get full credit, though: if your lab instructor tells you that something is incorrect or missing, just fix it before you leave. Most labs include a pre-lab exercise: complete it before the lab and bring it to lab with you. It must be approved by your instructor before you begin the lab work.

Discussion

In discussion section, you will work physics problems under the guidance of a teaching assistant. This provides an opportunity to practice problem-solving with immediate expert feedback—a valuable learning activity! Discussions are not required, but they are encouraged.

Homework

The assignments will be posted online via the WebAssign platform. Students are encouraged to work together, but each student must submit their own work. The deadline for each homework will be indicated, typically in a week. The submission deadlines typically won't be at midnight. Don't fret if you miss a deadline: homeworks don't count toward your course grade, and they should be accessible until the end of the term.

"Inclusive access" to the textbook and WebAssign is available with StartRight+. You should be able to access WebAssign assignments directly through Assignments in WyoCourses. Notify me immediately if you can't, so that I can find a fix or a work-around.

Exams and retests

Exams and retests will be closed book and closed notes. You may use a calculator. You are permitted to bring one 8.5"×11" note sheet with information on both sides to an exam, and a 3"×5" index card to a retest (one card per standard).

If you have a conflict with an exam time, make prior arrangements with the instructor.

Internet

Course information and lecture slides will be accessible through WyoCourses. Supplemental materials, such as lecture slide shows, worksheets, and labs, can also be accessed directly at my website, www.barransclass.com, in case the links in WyoCourses are missing or incorrect.

Required Participation Outside of Class Meetings

Mid-term examinations and standards retests are scheduled for Thursday evenings 5:10–7:00 PM in CR 133. Let me know as soon as possible of any conflicts you encounter; I'll do my best to accommodate you.

To retest on a standard after its first scheduled retest, you must meet with the instructor or a designee to review the material. This can be during office hours or at another arranged time.

Final Exam Date

Monday, December 8, set by the registrar. If you are not able to attend the final exam as scheduled, notify me before the Thanksgiving break to arrange an alternative.

Classroom Behavior Policy

Students are expected to respect others' opinions and abilities, and to help each other during group work activities. Personal attacks, offensive language, name-calling, and dismissive gestures are not warranted in a learning atmosphere. As the instructor, I have the duty to dismiss anyone interfering with a student's opportunity to learn from the classroom, study sessions, exams, office hours, electronic forums, and other areas where such behavior occurs.

Electronic Devices

If you have a cell phone or any other personal audio equipment, ensure that it does not make noise or cause a distraction during class. Laptops and tablets are permitted for note-taking and class activities. To protect the privacy of your fellow students, no unauthorized video or audio recording during class is allowed. If you require recording for accommodation of disabilities, work with Disability Support Services and me to accommodate your needs.

Diversity

The University of Wyoming values an educational environment that supports students of all backgrounds and viewpoints. Diversity of viewpoints is considered a resource for learning. Topics may be difficult, not only intellectually but emotionally; however, discussions are essential to meeting the course's student learning outcomes and assisting students in developing problem-solving and critical-thinking skills. During all conversations, respect and civility are of utmost importance.

Disability Support

The University of Wyoming is committed to providing equitable access to learning opportunities for all students. If you have a disability, including but not limited to physical, learning, sensory or psychological disabilities, and would like to request accommodations in this course due to your disability, please register with and provide documentation of your disability as soon as possible to Disability Support Services (DSS), Room 128 Knight Hall. You may also contact DSS at (307) 766-3073 or udss@uwyo.edu. It is in the student's best interest to request accommodations within the first week of classes, understanding that accommodations are not retroactive. Visit the DSS website for more information at: www.uwyo.edu/udss. Once UDSS informs me of the accommodations appropriate for you, I will implement them.

Academic Dishonesty Policiy

Academic honesty develops respect between faculty and students, ensures fair and effective grading, and creates an environment that fosters learning. Although I encourage you to study with other students, any assignments, exams, and lab submissions must represent your own work.

Academic dishonesty will not be tolerated in this class. Academic dishonesty means anything that represents someone else's ideas as your own without attribution. It is intellectual theft—stealing—and includes (but is not limited to) unapproved assistance on examinations, plagiarism (use of any amount of another person's writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person's academic dishonesty is also considered academic dishonesty and will be treated identically. Cases of academic dishonesty will be treated in accordance with UW Regulation 2-114. The penalties for academic dishonesty can include, at my discretion, an "F" on an exam, zero credit for a standard without the right to retest, or an "F" in the entire course.

Physics is fun. Involvement in a case of academic dishonesty is not fun.

AI Technology

Students are permitted to use advanced automated artificial intelligence or machine learning tools on assignments in this course if that use is properly documented and credited. For example, text generated by ChatGPT-3 should include a citation such as "Chat-GPT-5. (YYYY, Month DD of query). "Text of your query." Generated using OpenAI. https://chat.openai.com/" Material generated using other tools should follow a similar citation convention.

Duty to Report

UW faculty are committed to supporting students and upholding the University's non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, we encourage you to report it. While you may talk to a faculty member, understand that as a "Responsible Employee" of the University, the faculty member MUST report information you share about the incident to the university's Title IX Coordinator (you may choose whether you or anyone involved is identified by name). If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are people who can meet with you. Faculty can help direct you or you may find info about UW policy and resources at http://www.uwyo.edu/reportit.

You do not have to go through the experience alone. Assistance and resources are available, and you are not required to make a formal complaint or participate in an investigation to access them.

Green Dot Program at UW

Here at The University of Wyoming, we are committed to reducing and preventing power-based personal violence such as sexual assault, relationship violence, and stalking. Green Dot is a bystander intervention program to reduce these forms of violence with one thought; If everyone does one thing, no one will have to do everything. A Green Dot is your choice at any moment to make campus safer by promoting safety for everyone and letting others know that you will not tolerate violence. A Green Dot is any behavior, choice, word or attitude that sends a clear message that:

1. Violence is not okay with you, and
2. Everyone is expected to do their part.

Additional information on Green Dot training and resources are available at http://www.uwyo.edu/greendot/.

Substantive changes to syllabus

Information in the syllabus was, to the best knowledge of the instructor, correct when distributed at the beginning of the term. All deadlines, requirements, and course structure are subject to change if deemed necessary by the instructor. If any changes to the syllabus become necessary, students will be notified in class and on WyoCourses. Please check your university email daily.

Student Resources:

- DISABILITY SUPPORT SERVICES: udss@uwyo.edu, 766-3073, 128 Knight Hall, www.uwyo.edu/udss
- COUNSELING CENTER: uccstaff@uwyo.edu, 766-2187, 766-8989 (After hours), 341 Knight Hall, www.uwyo.edu/ucc
- ACADEMIC AFFAIRS: 766-4286, 312 Old Main, www.uwyo.edu/acadaffairs
- DEAN OF STUDENTS OFFICE: dos@uwyo.edu, 766-3296, 128 Knight Hall, www.uwyo.edu/dos
- UW POLICE DEPARTMENT: uwpd@uwyo.edu, 766-5179, 1010 E. Ivinson Ave., www.uwyo.edu/uwpd
- STUDENT CODE OF CONDUCT WEBSITE: www.uwyo.edu/dos/conduct
- UW TUTORING RESOURCES: https://www.uwyo.edu/step/index.html

Tentative Schedule

Date	Topic (Standard)	Textbook Reading
08/25	Working with units (1, 2)	1.1–1.7
08/27	Describing motion (3–5)	1.11–2.3
08/29	Free fall	2.4
	Lab 1: Measurement	
09/01	**Labor Day—No class**	
09/03	Trigonometry, vectors (6, 7)	1.8–1.10
09/05	Kinematics in two and three dimensions	3.1
	Lab 2: Motion graphs	
09/08	Ballistic trajectories (8, 9)	3.2–3.3
09/10	Kinematics practice	
09/11	**Quiz 1 5:10–6:00 PM, CR 133**	
09/12	Newton's laws (10–13)	4.1–4.2

Date	Topic (Standard)	Textbook Reading
	Lab 3: Vectors	
09/15	Forces (14–16)	4.3–4.5
09/17	Newton's first and second law problems (12, 17)	4.6
09/19	Inclined coordinates, two-body problems (18, 19)	4.7
	Lab 4: Projectile launcher	
09/22	Uniform circular motion (20, 21)	7.3.2–7.4
09/24		
09/25	**Exam 1 5:10–7:00 PM, CR 133**	
09/26	Simple machines, work, and power (22, 23)	5.1, 5.7
	Lab 5: Atwood machine	
09/29	Kinetic energy, potential energy (24, 25)	5.2–5.5
10/01	Conservation of mechanical energy (26)	5.6
10/03	Conservation of energy practice	
	Lab 6: Conservation of mechanical energy	
10/06	Impulse and momentum (27–29)	6.1–6.7
10/08	Elastic collisions	6.3
10/09	**Retesting 5:10–7:00 PM, CR 133**	
10/10	Collisions in two dimensions (30)	6.4
	Lab 7: Pendulum challenge	
10/13	**Semester Break—No class**	
10/15	Angular kinematics (31)	7.1–7.2
10/17	Torque, statics, center of mass (22, 33)	8.1–8.3
	Lab 8: Collisions	
10/20	Newton's 2nd for rotation, moment of inertia (34, 35)	8.4
10/22		
10/23	**Exam 2 5:10–7:00 PM, CR 133**	
10/24	Rotational work and energy (36)	8.5
	Lab 9: Torque and angular acceleration	
10/27	Angular momentum (37, 38)	8.6
10/29	Gravity, orbits, Kepler's laws (39, 40)	7.5
10/31	Simple harmonic motion (41)	13.3–13.4
	Lab 10: Hooke's law springs	

Date	Topic (Standard)	Textbook Reading
11/03	Pendulums (42)	13.5
11/05	Mechanical waves (43)	13.7–13.9
11/06	**Retesting 5:10–7:00 PM, CR 133**	
11/07	Wave interference; standing waves (44)	13.10–13.11
	Lab 11: Standing waves	
11/10	Sound waves, intensity, decibel scale (45)	14.1–14.4
11/12	Doppler effect (46)	14.5–14.6
11/14	Sound interference, beats, harmonics (44)	14.8–14.13
	Lab 12: Entropy	
11/17	Heat and temperature, thermal expansion (47, 48)	10.1–10.3
11/19	Internal energy, specific heat, latent heat	11.1–11.5
11/20	**Exam 3 5:10–7:00 PM, CR 133**	
11/21	First law of thermodynamics, pV work (49)	12.1–12.3
	Lab 13: Heat	
11/24	Entropy (50)	12.5
11/26	**Thanksgiving Break—No class**	
11/28	**Thanksgiving Break—No class**	
	Thanksgiving Break—No lab	
12/01	Heat engines, efficiency (51)	12.4
12/03	Practice	
12/04	**Retesting 5:10–7:00 PM, CR 133**	
12/05	Exam review	
	Lab make-up week	
12/08	**Final exam 7:00–9:00 PM location TBD**	