



PHYS 2425 - University Physics I Course Syllabus

State Approval Code 40.0801.54.03

Instructor Name Sayed Ali Khan

Semester/Year Fall 2025

Meeting Time and Location

Lecture: MW 9:10 -10:30 PM

Lab: MW 12:00 - 1:20 PM

Total hours per week 6

Alternate Operations During Campus Closure

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Panola College to move to altered operations. During this time, Panola College may opt to continue delivery of instruction through methods that include, but are not limited to: online learning management system (CANVAS), online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor Panola College's website (www.panola.edu) for instructions about continuing courses remotely, CANVAS for each class for course-specific communication, and Panola College email for important general information.

Student Basic Needs

Unexpected circumstances may arise, but Panola College offers various resources to support students. If you need mental health services or are facing challenges with transportation, affording class materials and supplies, or accessing food regularly—issues that may impact your class performance—please visit panola.edu/resources.

Class Attendance

Regular and punctual attendance of classes and laboratories is required of all students. When a student has been ill or absent from class for approved extracurricular activities, he or she should be allowed, as far as possible, to make up for the missed work. If a student has not actively participated by the census date, they will be dropped by the instructor for non-attendance. This policy applies to courses that are in-person, online, hybrid, and hyflex.

Attendance in online courses is determined by submission of an assignment or participation in an activity. According to federal guidelines, simply logging into a distance learning course without participating in an academic assignment does not constitute attendance. Distance learning is defined as when a majority (more than 50%) of instruction occurs when the instructor and students are in separate physical locations. Students must engage in an academic activity prior to the course census date.

When an instructor feels that a student has been absent to such a degree as to invalidate the learning experience, the instructor may recommend to the Vice President of Instruction that the student be withdrawn from the course. Instructors may seek to withdraw students for non-attendance after they have accumulated the following number of absences:

Fall or spring semesters:

3 or more class meeting times per week - 5 absences

2 class meeting times per week - 3 absences

1 class meeting per week - 2 absences

The student is responsible for seeing that he or she has been officially withdrawn from a class. A student who stops attendance in a class without officially withdrawing from that class will be given a failing grade; consequently, the student must follow official withdrawal procedures in the Admissions/Records Office.

Please note: Health Science and Cosmetology courses may require more stringent attendance policies based on their accreditation agencies. Please see the addendum and/or program handbook for further information concerning attendance.

Pregnant/Parenting Policy

Panola College welcomes pregnant and parenting students as a part of the student body. This institution is committed to providing support and adaptations for a successful educational experience for pregnant and parenting students. Students experiencing a need for accommodations related to pregnancy or parenting will find a Pregnancy and Parenting Accommodations Request form in the Student Handbook or may request the form from the course instructor.

Artificial Intelligence (AI) Course Policy

No use of Generative AI permitted.

This option assumes that all work submitted by students will be generated by the students themselves, whether they are working individually or in groups. Students should not have another person or entity do the writing of any portion of an assignment, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Panola College's standards of academic integrity.

Instructional Goals and Purposes

The purpose of this course is to provide students with a foundational understanding of the principles of classical physics, including mechanics, motion, forces, energy, momentum, and the laws of Newton. Emphasis is placed on both conceptual understanding and problem-solving skills. Through this course, students will engage with key scientific practices and develop critical thinking abilities aligned with core college student learning outcomes and the specific course learning objectives.

Learning Outcomes

Lecture:

Upon successful completion of this course, students will:

1. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
2. Solve problems involving forces and work.
3. Apply Newton's Laws to physical problems.
4. Identify the different types of energy.
5. Solve problems using principles of conservation of energy.
6. Define the principles of impulse, momentum, and collisions.
7. Use principles of impulse and momentum to solve problems.
8. Determine the location of the center of mass and center of rotation for rigid bodies in motion.
9. Discuss rotational kinematics and dynamics and the relationship between linear and rotational motion.
10. Solve problems involving rotational and linear motion.
11. Define equilibrium, including the different types of equilibrium.
12. Discuss simple harmonic motion and its application to real-world problems.

Lab:

Upon successful completion of this course, students will:

1. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
2. Conduct basic laboratory experiments involving classical mechanics.
3. Relate physical observations and measurements involving classical mechanics to theoretical principles.

- Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
- Design and simulate fundamental experiments involving principles of classical mechanics.
- Identify appropriate sources of information for conducting laboratory experiments involving classical mechanics.
- Development of skills like critical thinking, appropriate communication, team work, empirical and quantitative skills will be the focus of this course.

Course Content

This course will encompass the following material to be divided into three sections. The outcomes of both the section of lecture and laboratory will be covered. SLOs are covered throughout the entire semester.

Lecture	Laboratory
Chapter 1: Introduction, Measurement and estimation	Scientific Method, measurement, Length, mass, time
Chapter 2: Kinematics, motion in 1-D	Measurement of displacement, velocity, and acceleration due to gravity
Chapter 3: Kinematics, motion in 2-D and 3-D, vectors Chapter 4: Newton's Laws of Motion	Projectile motion, and vectors addition with force table, graphically, and analytically
Chapter 5: Friction, Circular Motion, Drag Forces	Co-efficient of static friction, co-efficient of kinetic friction, and simulation of these.
Chapter 6: Gravitation	Acceleration due to gravity and its dependence on various factors.
Chapter 7: Work and Energy	Work energy theorem
Chapter 8: Conservation of Energy Chapter 10: Rotational motion	Law of conservation of energy with pendulum, and object rolling from certain height
Chapter 9: Linear momentum	Collision, conservation of linear momentum, and energy
Chapter 11: Angular momentum Chapter 12: Static Equilibrium	Equilibrium, center of mass, and torque
Chapter 13: Fluids:	Behavior of fluids, and Archimedes Principle
Chapter 14: Oscillations	Simple pendulum, and mass attached to a spring
Chapter 17: Temperature, Thermal Expansion, and the Ideal Gas Law Chapter 18: Kinetic Theory of Gases Chapter 19: Heat and the First Law of Thermodynamics Chapter 20 – Second Law of Thermodynamics	TM thermal expansion, heat transfer, and molar specific heat of solids

Methods of Instruction/Course Format/Delivery

Students will learn through lecture and reading, as well as through work on homework, labs, and exams. Additional methods may be used as opportunities present themselves.

Major Assignments/Assessments

The following items are assigned and assessed during the semester and used to calculate the student's final grade.

Assignments

Assignments

Homework assignments + Class assignments: There will be two types of assignment the homework assignments which will be numerical problems and conceptual questions related to each section to challenge you to gain a deeper understanding of the course material. Homework will be turned in and graded utilizing Mastering Physics. Also, there will classwork assignments which will be consider students response in class and the instructor will ask assess various activity such as asking for concept, discussion and solving of numerical problems.

Assessments

Assessments

Lab: The "lab" material will consist of problems completed in class and lab reports to be written outside of class. The lab rubrics will be discussed in the first lab session.

Quiz: There will be a quiz after three chapters, the chapters that make up each unit exam will be posted in your Canvas course. Unit exams will be given throughout the semester.

Exams: There will be three exams in the whole semester which will allow only answer sheets, pen, and scientific calculator.

Course Grade

The grading scale for this course is as follows:

- A=90-100%
- B=80-89%
- C=70-79%
- D=60-69%
- F=< 60%

Course Grading Information:

- Lab 25%
- Quizzes 20%
- Homework assignments + Class work assignments 30%
- Exams 25%

Texts Materials, and Supplies

1. Young and Freedman. 2019. Modified Mastering Physics with Pearson eText - Standalone Access Card for University Physics with Modern Physics in SI Units 15th Edition. Pearson Education, New York, NY.
2. A "scientific" calculator: This means something that can handle exponents, trig functions, hyperbolic trig functions, and logarithms.

Required Readings

Young and Freedman. 2019. Modified Mastering Physics with Pearson eText - Standalone Access Card for University Physics with Modern Physics in SI Units 15th Edition. Pearson Education, New York, NY.

Recommended Readings

NA

Other

- Courses conducted via video conferencing may be recorded and shared for instructional purposes by the instructor.
- For current texts and materials, use the following link to access bookstore listings: <https://www.panolacollegestore.com>.
- For testing services, use the following link: <https://www.panola.edu/student-services/student-support/academic-testing-center>.
- The Accommodations & Disability Support (A&DS) Office at Panola College provides and facilitates support services and accommodations for students with disabilities. The A&DS office works under the federal guidelines included in Section 503 of the Rehabilitation Act of 1973 and the American with Disabilities Act. Please contact the Accommodations & Disability Support (A&DS) Office located in the Charles C. Matthews Student Center or go to <https://www.panola.edu/disabilitysupport> for more information.
- Withdrawing from a course is the student's responsibility. Students who do not attend class and who do not withdraw will receive the grade earned for the course.
- Student Handbook: <https://www.panola.edu/> (located on at the bottom under student)