

Syllabus
Physics 2325 - Lecture
University Physics I
Western Texas College
2020 - 2021

- I. Basic Course Information
 - A. Course Description: Fundamental principles of physics, using calculus, for science, computer science, and engineering majors; the principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics; and emphasis on problem solving.
 - B. Any required prerequisites: Students must make a C or better in Math 2413 (Calculus I).
 - C. Online course content is administered through the college's learning management system (LMS), Moodle, also called eCampus. A link to eCampus can be found on my.wtc.edu and to Moodle (the big M with a graduation cap) on the college's home page, www.wtc.edu.
- II. Student Learning Outcomes
 - 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.
- III. Testing Requirements – **Online Students Only**
 - A. Students are required to have their midterm and final exam proctored by an approved testing organization.
 - B. Students are allowed to use their book, notes and calculator while testing. Students are NOT allowed to use cell phones or access the internet during the exam.
- IV. Major Course Requirements
 - A. There will be 4 major chapter exams.
 - B. There will be a midterm exam.
 - C. There will be a comprehensive final exam.
- V. Grading System
 - A. See the First Day Handout for the percentages of the average in this course and the letter grade breakdown for the final grade.
- VI. Information on Books and Other Course Materials

- A. **Online access required for all classes** – MasteringPhysics contains *University Physics* (e-book), 15th edition, Young and Freedman ISBN - 978-0135206348. Additional textbook is optional. ISBN 978-0135159552. Contact the WTC Bookstore.
 - B. Calculators: Required.
- VI. Other Policies, Procedures and important dates. Click this link <http://www.wtc.edu/publications.html> then on the appropriate catalog to find the following information.
- A. Campus Calendar
 - B. Final exam schedule
 - C. How to drop a class
 - D. Withdrawal information
 - E. Student Conduct/Academic Integrity
 - F. Class Attendance
 - G. Students with disabilities
- VII. Topics for this course
- MECHANICS
1. Units, Physical Quantities, and Vectors
 2. Motion Along a Straight Line
 3. Motion in Two or Three Dimensions
 4. Newton's Law of Motion
 5. Applying Newton's Laws
 6. Work and Kinetic Energy
 7. Potential Energy and Energy Conservation
 8. Momentum, Impulse and Collisions
 9. Rotation of Ridged Bodies
 10. Dynamics of Rotational Motion
 11. Equilibrium and Elasticity
 12. Fluid Mechanics
 13. Gravitation
 14. Periodic Motion
- WAVES and ACUSTICS
1. Mechanical Waves
 2. Sound and Hearing
- THERMODYNAMICS
1. Temperature and Heat
 2. Thermal Properties of Matter
 3. The First Law of Thermodynamics
 4. The Second Law of Thermodynamic