

SYLLABUS
PHYSICS 2426
University Physics II

Western Texas College

- I. Basic Course Information
 - A. Course Description: Principles of physics for science, computer science, and engineering majors, using calculus, involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics. Laboratory experiments supporting theoretical principles covered involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics; experimental design, data collection and analysis, and preparation of laboratory reports.
 - B. Any required prerequisites: Students must make a C or better in Physics 2425 (University Physics I) and Math 2414 (Calculus II).
 - 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
 - A. Articulate the fundamental concepts of electricity and electromagnetism, including electrostatic potential energy, electrostatic potential, potential difference, magnetic field, induction, and Maxwell's Laws.
 - B. State the general nature of electrical forces and electrical charges, and their relationship to electrical current.
 - C. Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields.
 - D. Apply Kirchhoff's Laws to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance.
 - E. Calculate the force on a charged particle between the plates of a parallel-plate capacitor.
 - F. Apply Ohm's law to the solution of problems.
 - G. Describe the effects of static charge on nearby materials in terms of Coulomb's Law.
 - H. Use Faraday's and Lenz's laws to find the electromotive forces.
 - I. Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
 - J. Articulate the principles of reflection, refraction, diffraction, interference and superposition of waves.
 - K. Solve real-world problems involving optics, lenses, and mirrors.
 - L. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
 - M. Conduct basic laboratory experiments involving electricity and magnetism.

- N. Relate physical observations and measurements involving electricity and magnetism to theoretical principles.
 - O. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
 - P. Design fundamental experiments involving principles of electricity and magnetism.
 - Q. Identify appropriate sources of information for conducting laboratory experiments involving electricity and magnetism.
- III. Testing Requirements – **Online Students Only**
- A. Students are required to have their midterm and final proctored by an approved proctoring 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 8 lab assignments. Students are not allowed to take the final exam until at least 5 unit write-ups are completed.
 - C. There will be a midterm exam.
 - D. 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) with Master Access*, 14th edition, Young and Freeman ISBN 9780133978216. Additional textbook is optional. ISBN 9780321973610.
 - B. **LabPaq kit will be REQUIRED.** You will need to purchase the LabPaq kit: **LP-2236-PK-01, Code: PK- 1**. Please contact the WTC Bookstore.
 - C. Calculators: Required.
- VII. 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
- VIII. Topics for this course

ELECTROMAGNETISM

- A. Electric Charges and Electric Fields
- B. Gauss's Law

- C. Electric Potential
- D. Capacitance and Dielectrics
- E. Current, Resistance and Electromotive Force
- F. Direct-Current Circuits
- G. Magnetic Field and Magnetic Forces
- H. Sources of Magnetic Field
- I. Electromagnetic Induction
- J. Inductance
- K. Alternating Current
- L. Electromagnetic Waves

OPTICS

- 13. Nature and Propagation of Light
- 14. Geometric Optics
- 15. Interference
- 16. Diffraction

Last Modified: May 29, 2018