

Course Syllabus

PHYS 2426

University Physics II (4001015403)

**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; experimental design, data collection and analysis, and preparation of laboratory reports.

**Semester Hours Credit:** 4

**Lecture/Lab Hours:** 3-3

**Prerequisite:** MATH 2414 and PHYS 2425

**Textbook(s):** *Physics for Scientists and Engineers with Modern Physics (9<sup>th</sup> edition)* ISBN: 9781305086333  
Access code for Webassign.net

**Student Learning Outcomes:**

Upon successful completion of this course, students will:

1. Articulate the fundamental concepts of electricity and electromagnetism, including electrostatic potential energy, electrostatic potential, potential difference, magnetic field, induction, and Maxwell's Laws.
2. State the general nature of electrical forces and electrical charges, and their relationship to electrical current.
3. Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields.
4. Apply Kirchhoff's Laws to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance.
5. Calculate the force on a charged particle between the plates of a parallel-plate capacitor.

6. Apply Ohm's law to the solution of problems.
7. Describe the effects of static charge on nearby materials in terms of Coulomb's Law.
8. Use Faraday's and Lenz's laws to find the electromotive forces.
9. Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
10. Articulate the principles of reflection, refraction, diffraction, interference and superposition of waves.
11. Solve real-world problems involving optics, lenses, and mirrors.
12. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
13. Conduct basic laboratory experiments involving electricity and magnetism.
14. Relate physical observations and measurements involving electricity and magnetism to theoretical principles.
15. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
16. Design fundamental experiments involving principles of electricity and magnetism.
17. Identify appropriate sources of information for conducting laboratory experiments involving electricity and magnetism.

**Evaluation Methods:**

Internet-based homework will be assigned twice per week except during weeks with official College holidays when there will be only one (1) homework assignment. The average of the student's scores on the homework assignments will represent 20% of the total numerical grade for the course and the graded laboratory reports will represent 20% of the total numerical grade for the course.

There will be two (2) major Internet examinations during the course. Each of these exams will represent 20% of the final score for the class. There will be an internet-based final examination that will represent 20% of the final score for the class.



**ADA Statement:** No qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the College District, or be subjected to discrimination by the College District. Nor shall the College District exclude or otherwise deny equal services, programs, or activities to an individual because of the known disability of an individual with whom the individual is known to have a relationship or association. 42 U.S.C. 12132; 28 CFR 35.130(g).

See at: [GL \(Legal\)](#)

**Special Needs Services:** Students with special needs, including physical and learning disabilities, who wish to request accommodations in this course should contact the Student Development Office as soon as possible to make arrangements; this should occur no later than the second week of class or as soon as the student has the documentation on the disability and requested accommodation per a certified medical or psychological professional. In accordance with federal law, a student requesting accommodations must provide documentation of disability to the Student Development Advisor.

For more information, contact: in Alice at [sdalice@coastalbend.edu](mailto:sdalice@coastalbend.edu); Beeville at [sdbeeville@coastalbend.edu](mailto:sdbeeville@coastalbend.edu); Kingsville at [sdkingsville@coastalbend.edu](mailto:sdkingsville@coastalbend.edu); and Pleasanton at [sdpleasanton@coastalbend.edu](mailto:sdpleasanton@coastalbend.edu).

**Academic Dishonesty:** Each student is charged with notice and knowledge of the contents and provisions of Coastal Bend College's rules and regulations concerning student conduct. All students shall obey the law, show respect for properly constituted authority, and observe correct standards of conduct. Scholastic dishonesty shall constitute a violation of these rules and regulations and is punishable as prescribed by Coastal Bend College Policies FLB (Local) and FM (Local). Scholastic dishonesty shall include, but not be limited to, cheating on a test, plagiarism, and collusion.

See at: [FLB \(Local\)](#) and [FM \(Local\)](#).

See the [Student Handbook](#) for further explanation of Scholastic Dishonesty.

**Copyright Law and Intellectual Property Rights Policy:** Copyright is the right of an author, artist, composer or other creator of a work of authorship to control the use of his or her work by others. Protection extends to literary works, musical works, dramatic works, pantomimes and choreographic works, pictorial and graphic works, sculpture, motion pictures and other audiovisual works, sound recordings and architectural works. Generally speaking, a copyrighted work may not be reproduced by others without the copyright owner's permission. The public display or performance of copyrighted works is similarly restricted. Generally, the unauthorized reproduction, performance or distribution of a copyrighted work is copyright infringement and may subject the infringer to civil and criminal



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Questions regarding this information should be directed to the Director of Library Services at: [library@coastalbend.edu](mailto:library@coastalbend.edu) or the Office of Marketing and Public Relations at: [socialmedia@coastalbend.edu](mailto:socialmedia@coastalbend.edu).

**Intellectual Property: Student /Third Party Works:** Rights to copyrightable or patentable works created by a student or a third party, that is, not a College District employee, shall reside with the author/ creator. Detailed information on Copyright Law and Intellectual Property Rights is available in Coastal Bend College Policy [CT \(Legal\)](#) and [CT \(Local\)](#).

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**NOTE:** The College website ([www.coastalbend.edu](http://www.coastalbend.edu)) serves as the main source with the most current version of the Coastal Bend College Board Policies and the Coastal Bend College Catalog.