ARKANSAS TECH UNIVERSITY

General Education Course Objectives and Learning Outcomes

Course Name: Algebra-Based Physics II

Course Number: PHYS 2024 & 2010

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Department: Physical Sciences

COMMON COURSE OBJECTIVES AND STUDENT LEARNING OUTCOMES THAT ARE OR WILL BE LISTED ON THE SYLLABUS OF EVERY SECTION OF THIS COURSE:	
Course objectives:	This course is a survey course that introduces laws of electricity and magnetism at the introductory level. Students also learn different phenomena related to light and some introductory concepts in modern physics.
Student learning outcomes:	Students completing PHYS 2024 and PHYS 2010 will be able to • Solve problems in electrostatics, electric fields and electric potential • Understand the notion of electric current and electric circuits and use Ohm's law to describe simple circuits • Use Kirchhoff's rules to solve problems in more complicated circuits • Comprehend the magnetism phenomenon and its combination with electricity through electromagnetism and its applications in AC circuits • Use electromagnetism laws to describe how electromagnetic waves are generated • Understand and apply geometric and wave properties of light to different phenomena • Become familiar with concepts in modern physics including special relativity and quantum physics
ADHE ACTS INFORMATION FOR THIS COURSE (IF APPROPRIATE)	
ACTS Course number:	PHYS 2024 (when taken with PHYS 2010)
Copy the ACTS course objectives and learning outcomes:	General Description: Continuation of Algebra/Trigonometry-Based Physics I (Physics 2014). Topics include electricity and magnetism, light and optics, and modern physics. Lab required. This is an algebra and trigonometry-based physics course and it is strongly recommended that the student should have completed both College Algebra and Algebra/Trigonometry-Based Physics I with a "C" or better. Expected Student Learning Outcomes: The student will use algebra and trigonometry in order to be able to explain, describe, discuss, recognize, and/or apply knowledge and understanding of the following: • Electrostatics • Electric fields, potential, and energy • Current and resistance • DC circuits • Magnetism • Induction • Electromagnetic waves • Selected topics in modern physics

	• Physical optics • Light • Geometric optics

WHICH ATU GENERAL EDUCATION GOALS DOES THIS COURSE FULFILL? (NO MORE THAN TWO)

- ☐ Communicate effectively
  - Written communication
  - Oral communication
- ☐ Think critically
- ☐ Develop ethical perspectives
  - Diversity
  - Empathy
  - Leadership
- ☐ **Apply scientific and quantitative reasoning**
  - Scientific reasoning
  - Quantitative reasoning
- ☐ Apply the value of the arts and humanities
- ☐ Practice civic engagement

DESCRIPTION OF HOW THIS COURSE MEETS THE GENERAL EDUCATION GOALS CHOSEN ABOVE (TO BE INCLUDED ON THE SYLLABUS OF EVERY SECTION OF THIS COURSE)

In this course (lab and lecture), students are introduced to basic principles of electricity, magnetism and optics that govern the physical world. The students practice applying the concepts and using scientific and quantitative reasoning and to solve problems, make predictions or describe the outcomes. Students are also introduced the basic concepts in modern physics.