

**University of Arkansas - Fort Smith
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Fort Smith, AR 72913
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General Syllabus

PHYS 2831 College Physics II Laboratory

Credit Hours: 1

Lecture Hours: 0

Laboratory Hours: 2

Prerequisite or corequisite: PHYS 2823 College Physics II

Effective: 2018~2019

I. Course Information

A. Catalog Description

Basic experiments demonstrating physical principles of electricity, magnetism, light, and modern physics.

B. Additional Information

This course and its companion lecture course provide the second four semester hours in a sequence of eight that majors in most biological fields should take. Majors in physics, chemistry, and engineering should take the eight hours of Engineering Physics.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Use certain experimental apparatus proficiently.
2. Express the measurements determined from the instruments.
3. Determine the required quantities from these measurements.
4. Answer questions concerning the concepts demonstrated by the experiments.
5. Write reports that convey the content and conclusions of experiments.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will identify a problem or issue and will research, evaluate, and compare information from varying sources in order to evaluate authority, accuracy, recency, and bias relevant to the problems/issues. The student will generate

solutions/analysis of problems/issues evaluated and will assess and justify the solutions and/or analysis.

Communication Skills (written and oral)

Students will communicate proficiently. The student will compose coherent documents appropriate to the intended audience and effectively communicate orally in a public setting.

Ethical Decision Making

Students will model ethical decision-making processes. The students will identify ethical dilemmas and affected parties and will apply ethical frameworks to resolve a variety of ethical dilemmas.

Global & Cultural Perspectives

Students will reflect upon cultural differences and their implications for interacting with people from cultures other than their own. The students will demonstrate understanding or application of their discipline in a global environment and will demonstrate how their discipline impacts or is impacted by different cultures.

III. Major Course Topics

- A. Electric Field Mapping
- B. Ohm's Law--Voltmeter, Ammeter
- C. Joule's Law
- D. Wheatstone Bridge
- E. Construct a Voltmeter
- F. Construct an Ammeter
- G. Ray Tracing
- H. Alternating Current Circuits
- I. The Charge on an Electron
- J. Magnetic Fields
- K. Focal Length of Lenses
- L. Index of Refraction with a Prism Spectrometer
- M. Diffraction Grating
- N. Index of Refraction of Air