

Northwest Arkansas Community College
(Science and Mathematics Division)

Discipline Code

PHYS

Course Number

1034

Course Title

Physics for Elementary Teachers

Catalog Description

PET is a one-semester introduction to physics course with curriculum and instruction designed as an activity-based, hands-on course for K-8 elementary education students and open to all education majors. The course emphasizes a student-orientated pedagogy in order to develop various physics concepts and the nature of science.

Prerequisites

None

Credit Hours

4 credit hours

Contact hours

45 lecture ,45 lab contact hours

Load hours

5 load hours

Semesters Offered

Fall

ACTS Equivalent

Grade Mode

A-F

Learning Outcomes

Students completing this course will:

- Recall and apply physics vocabulary, concepts, and laws consistent with courses taught nationally for a conceptual understanding of mechanics, electricity, magnetism, and light.
- Use scientific reasoning to comprehend and evaluate models pertaining to course content.
- Apply basic physics understanding to situations that model a physics concept or law.
- Properly use measuring devices, lab instrumentation and graphing techniques to test, analyze, and assess physics concepts and laws.

General Education Outcomes Supported

- Students develop higher order thinking skills.
- Students can achieve mathematical literacy.

Standard Practices

Topics list

- Motion and speed/time graphs
- Interactions and energy diagrams
- Conservation of energy and energy input/output diagrams
- Interactions and force diagrams
- Action-at-a-distance interactions
- Model of magnetism
- Electric circuit interactions
- Light interactions
- Learning and teaching science

Learning activities

- Courses must, at a minimum, cover the core learning outcomes for each topic. Faculty may add to these outcomes but may not omit any of them.
- Laboratory exercises should average between 2-3 hours a week and include measured data along with calculated values, graph(s) of linear relationship, experimental result, and error analysis.
- Proper use of lab equipment and enforcement of safety protocols is the responsibility of each faculty.
- Since developing student higher order thinking skills and achieving mathematical literacy are essential outcomes of this course, all instructors should include learning activities that develop these outcomes in their courses and identify them in course syllabi. Instructors should describe how these activities will be evaluated in their course syllabi and/or reflected in their gradebooks.

Assessments

- The final is a departmental comprehensive exam. Results of the departmental finals will be submitted to the coordinator as part of course outcome assessment. The test will cover a select number of the core learning outcomes, which will be provided as a study guide.
- Higher order thinking and mathematical literacy assessment will be reflected in the application of the laws of physics to the problem, along with the computational ability of the student to find the solution. Results are to be submitted to the coordinator to be used as part of the college's process to assess mastery of the general education outcomes.

Grading guidelines

- At least 50% of the grade should come from proctored work
- Homework should comprise approximately 20% of overall grade.
- Lab activities should comprise approximately 20% of the overall grade.
- Performance/attendance should comprise no more than 10% of overall grade

Last Revision Date: Spring 2022