Miami Dade College

Course Description

PHY3802L Intermediate Physics Laboratory | 1.00 Credits

This is a laboratory course consisting of a series of experiments related to intermediate courses in classical mechanics, waves, thermodynamics, electromagnetism, and modern physics. The student will learn skills in the design, performance and reporting of physics experiments as well as reinforcing concepts learned in the corresponding physics courses. Prerequisites: PHY2048L, PHY2049L, PHY3504

Course Competencies:

Competency 1: The student will demonstrate knowledge, comprehension, and application of laboratory techniques by:

1. Handling laboratory equipment according to operating instructions and safety guidelines.
2. Recording data in a laboratory notebook in a clear, organized manner, following accepted guidelines.
3. Obtaining results with appropriate precision and accuracy.
4. Performing appropriate statistical analysis of experimental results.

Learning Outcomes:

1. Critical Thinking
2. Information Literacy
3. Computers/Technology Usage

Competency 2: The student will demonstrate knowledge, comprehension, and the ability to analyze and apply the experimental process by:

1. Reporting experimental results in accordance with accepted guidelines.
2. Contrasting experimental results to theoretical predictions.
3. Explaining the nature and magnitude of the experimental errors incurred.
4. Focusing the scope of experimental conclusions to that justified by experimental results

Learning Outcomes:

1. Critical Thinking
2. Information Literacy
3. Computers/Technology Usage

Competency 3: The student will demonstrate knowledge, comprehension, and the ability to analyze the underlying physical concepts of experiments by;

1. Applying theoretical principles to design, conduct, and interpret experimental procedures in a scientific setting.
2. Analyze the underlying physical concepts of experiments by evaluating the experimental results, identifying patterns, discrepancies, and potential sources of error, and drawing valid conclusions based on scientific evidence.
3. Investigating the interrelationships between variables, formulating hypotheses, and designing experiments to test specific scientific hypotheses and theories.

Learning Outcomes:

1. Critical Thinking
2. Information Literacy
3. Computers/Technology Usage

Competency 4: The student will perform experiments consistent with an understanding of the underlying physical concepts.

1. Writing correctly formatted lab reports that evidence understanding of the underlying concepts

Learning Outcomes:

1. Critical Thinking

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2. Information Literacy
3. Computers/Technology Usage

Competency 5: The student will demonstrate knowledge and comprehension of experimental design

1. Adjusting experiment design as circumstances require.
2. Critiquing a published experiment in physics or one of the experiments done in class, emphasizing its design.
3. Designing an experiment related to a relevant physics concept in accordance with accepted guidelines.

Learning Outcomes:

1. Critical Thinking
2. Information Literacy
3. Computers/Technology Usage