

**SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES**

Sciences

Revision Date: 07-01-24

I. CATALOG DESCRIPTION

Course Number: PHYS2230
Course Title: General Physics 3 Laboratory
Pre/Co-requisite: PHYS2130 or equivalent
Catalog Description: Optional lab to accompany PHYS2130. Experiments will cover selected topics in atomic, solid state, and nuclear physics.
Credit Hours: 1.0
Class Hours: 0
Lab Hours: 30
Total Contact Hours: 30

II. COURSE OBJECTIVES: *Course will:*

- A. Review basic rules that govern nature from General Physics 3 (PHYS2130).
- B. Provide opportunities to observe and explore consequences of these rules.
- C. Present techniques for analysis of experimental data.
- D. Provide experience communicating experimental results, including written lab reports.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Identify and describe basic physical principles.
 - 2. Analyze and explain experimental data in terms of these principles, both conceptually and mathematically.
- B. General Education Learning Outcomes
 - 1. GELO #3: Critical Thinking & Problem Solving
 - Outcome: Collect, identify, interpret and analyze data.
 - Outcome: Synthesize information to arrive at reasoned solutions to problems.
 - Outcome: Evaluate the validity of arguments, alternatives, data, outcomes, and/or impacts of actions.
 - 2. GELO #5: Analytical, Quantitative, and Scientific Reasoning
 - Outcome: Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situations.
 - Outcome: Understand and create logical arguments supported by quantitative and scientific evidence and communicate those arguments in a variety of formats.
 - Outcome: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.
 - Outcome: Manipulate formulas, data sets, graphs, tables, etc. in a way to produce a meaningful outcome.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. Data analysis techniques, including curve fitting and formal error analysis
- B. Probability distributions
- C. Cosmic Rays and Pair Production
- D. Visible Spectroscopy of Blackbodies and Low-Pressure Gases
- E. X-ray Spectroscopy of Metals
- F. Semiconductor Devices
- G. Radioactivity and Radioactive Decay

V. INSTRUCTIONAL MATERIALS

- A.** Required Material:
1. Lab Manual, available at Campus Bookstore or on Canvas course page
- B.** Optional resources:
1. OpenStax University Physics, *University Physics Volume 3*. OpenStax CNX. Aug 2, 2018, <http://cnx.org/contents/af275420-6050-4707-995c-57b9cc13c358@10.1>.
 2. Knight, Randall D., *Physics for Scientists and Engineers, A Strategic Approach*, any edition, Addison-Wesley.

VI. METHODS OF PRESENTATION/INSTRUCTION

- A.** Methods of presentation will include a combination of the following:
1. Lectures
 2. Laboratory Experiments

VII. METHODS OF EVALUATION

- A.** Methods of evaluation will include a combination of the following:
1. Quizzes
 2. Written Lab Reports
 3. Final Exam
- B.** SCC GRADING SCALE:
- | | | | | | |
|----|--------|----|-------|---|------------|
| A+ | 95-100 | C+ | 75-79 | F | 59 or less |
| A | 90-94 | C | 70-74 | | |
| B+ | 85-89 | D+ | 65-69 | | |
| B | 80-84 | D | 60-64 | | |

VIII. SPECIFIC COURSE REQUIREMENTS

- A.** None.