

SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES
Sciences
Revision Date: 07-01-20

I. CATALOG DESCRIPTION

Course Number: PHYS2130
Course Title: General Physics 3
Prerequisite(s): PHYS2120 or equivalent
Catalog Description: Calculus-based continuation of PHYS2120. The course provides a basic introduction to modern physics, including relativity, quantum mechanics, atomic, solid state, and nuclear physics. Emphasis will be placed on both concepts and mathematical problem solving. The course is taught in an interactive style that integrates lecture and small group activities into one combined session.
Credit Hours: 4.0
Class Hours: 60
Lab Hours: 0
Total Contact Hours: 60

II. COURSE OBJECTIVES: *Course will:*

- A. Introduce basic rules that govern nature.
- B. Provide opportunities to observe and explore consequences of these rules.
- C. Provide opportunities to practice formulating logical conclusions from these rules (conceptual problem solving).
- D. Provide opportunities to practice using these rules to solve problems mathematically.

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 physical problems 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 ideas presented in writing, media, speech, or artistic presentations.
 - Outcome: Evaluate the validity of arguments, alternatives, data, outcomes, and/or impacts of actions.
 - Outcome: Acquire and integrate knowledge and construct relationships across disciplines.
 - 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. Relativity
- B. Quantum Mechanics
- C. Atomic Physics, including lasers
- D. Solid State Physics, including semiconductor devices
- E. Nuclear Physics

V. INSTRUCTIONAL MATERIALS

- A. Suggested Text(s):
 - 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.
- B. Other Resources:
 - 1. None.

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lectures
 - 2. Small group discussions
 - 3. Demonstrations
 - 5. Collaborative problem solving
 - 6. Videos

VII. METHODS OF EVALUATION

- A. Methods of evaluation typically include a combination of the following:
 - 1. Quizzes
 - 2. Class participation
 - 4. Homework
- 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.