

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

Science

Revision Date: 07-01-23

I. CATALOG DESCRIPTION

Course Number: PHYS1017

Course Title: Technical Physics

Prerequisite(s): MATH1050 or equivalent or higher.

Catalog Description: Introductory algebra and trigonometry based physics with an emphasis on applied problems. Topics covered includes: properties of matter, forces, vectors, equilibrium, 1-dimensional & 2-dimensional kinematics, rotational motion, simple harmonic motion, simple machines, waves, heat & temperature.

Semester Credit Hours: 3

Class Hours: 30

Lab Hours: 30

Total Contact Hours: 60

II. COURSE OBJECTIVES: *Course will:*

- A. Identify and describe basic physical principles.
- B. Provide opportunities to observe and explore consequences of these principles.
- C. Analyze, explain & solve physical problems in terms of these principles.
- D. Provide opportunities to practice formulating logical conclusions from these rules (conceptual problem solving).
- E. Provide opportunities to practice using these rules to solve problems mathematically.
- F. Provide students with the physics skills necessary to be successful in solving problems which are applied to real world situations.

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 and solve physical problems in terms of these principles.
- 3. Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situation.
- 4. Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.

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: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.

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

- A. Kinematics
- B. Newton's Laws
- C. Concurrent & parallel forces
- D. Simple machines
- E. Rotational motion
- F. Matter
- G. Fluids
- H. Thermodynamics
- I. Waves

V. INSTRUCTIONAL MATERIALS

- A. Suggested Text(s):
 - 1. Ewen, D., Schurter, N., Gunderson, Eric P., *Applied Physics*, 11th edition, Prentice-Hall, 2012. ISBN-13: 978-0134159386 or ISBN-10: 0134159381, or equivalent text.
 - 2. Giambattista, Alan, *College Physics: With an Integrated Approach to Forces and Kinematics*, 5th edition. ISBN: 978-0-07-351395-9.
 - 3. A copy of the suggested text is retained in the library (LRC).

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lectures
 - 2. Small group discussions
 - 3. Demonstrations
 - 4. Laboratory exercises
 - 5. Short video presentations & analysis

VII. METHODS OF EVALUATION

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

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

None