

**SEWARD COUNTY COMMUNITY COLLEGE
COURSE SYLLABUS**

I. TITLE OF COURSE: PS2515 - Engineering Physics II

**II. COURSE DESCRIPTION: 0 or 5 credit hours
3 credit hours of lecture and 2 credit hours of lab per week.**

This course covers the basic principles of electricity and magnetism, and light using calculus as a tool. For each unit of credit, a minimum of three hours per week with one of the hours for class and two hours for studying/preparation outside of class is expected.

Pre-requisite:
PS2505 Engineering Physics I

III. PROGRAM AND/OR DEPARTMENT MISSION STATEMENT:

The Science Program at SCCC provides opportunities to improve and enhance each student's understanding and comprehension of the natural world through a variety of courses and experience to develop a scientifically literate citizen.

IV. TEXTBOOK AND MATERIALS:

Giancoli, Physics for Scientists and Engineers with Modern Physics. 4th edition

V. SCCC OUTCOMES:

- 1: Read with comprehension, be critical of what they read, and apply knowledge gained to real life
- 2: Communicate ideas clearly and proficiently in writing, appropriately adjusting content and arrangement for varying audiences, purposes, and situations.
- 3: Communicate their ideas clearly and proficiently in speaking, appropriately adjusting content and arrangement for varying audiences, purposes, and situations.
- 4: Demonstrate mathematical skills using a variety of techniques and technologies.
- 5: Demonstrate the ability to think critically by gathering facts, generating insights, analyzing data, and evaluating information

VI. COURSE OUTCOMES:

1. Demonstrate a basic understanding of light, electricity and magnetism.
2. Use calculus as a tool to solve problems of a physical nature.
3. Show an awareness for the logic and consistence of the physical laws of the universe.
4. Demonstrate an understanding of the scientific ideology.
5. Demonstrate the use of coulomb's principle.
6. Define capacitance.
7. Define concept of electric current.
8. Solve simple circuits using Kirchhoff's rules.
9. Demonstrate how magnetic fields and moving charges interact.

10. Demonstrate the use of Ampere's law.
11. Solve field properties around a moving charge.
12. Have a knowledge of the workings of the voltmeter, ammeter, and the potentiometer.
13. Demonstrate understanding of the magnetic properties of matter.
14. Understand electromagnetic induction.
15. Solve simple alternative current circuits.
16. Demonstrate understanding of the wave nature of light.
17. Demonstrate knowledge of the principle of refraction and the transmission of energy by light waves.
18. Understand diffraction of light and Young's experiment.
19. Demonstrate knowledge of the principles of reflection and refraction.
20. Gain an understanding of mirrors and lenses by using ray diagrams.
21. Develop an understanding of the diffraction grating and resolving power of optical instruments.

VII. COURSE OUTLINE:

1. Static Electric Charge
2. Electric Current
3. Magnetic Fields
4. Electromagnetic Waves
5. Speed of electromagnetic waves
6. Radiation of electromagnetic waves
7. Maxwell's equations
8. Nature of Light
9. Interferences and Diffraction
10. Polarization

VIII. INSTRUCTIONAL METHODS:

1. Lecture
2. Demonstrations
3. Class discussions
4. Laboratory experiments

IX. INSTRUCTIONAL AND RESOURCE MATERIALS:

1. Text
2. Handouts
3. Laboratory and various laboratory equipment
4. Calculator

X. METHODS OF ASSESSMENT:

SCCC Outcome #1 will be assessed and measured by comprehension of text reading assignments, a semester research project, and participation in class discussion.

SCCC Outcome #2 will be assessed through essay assignments and semester research project.

SCCC Outcome #3 will be assessed through class and laboratory discussions and research presentation.

SCCC Outcome #4 will be assessed through homework problems, exams, and laboratory data analysis.

SCCC Outcome #5 will be assessed through discussions, laboratory analysis and research experiments.

XI. ADA STATEMENT:

Under the Americans with Disabilities Act, Seward County Community College will make reasonable accommodations for students with documented disabilities. If you need support or assistance because of a disability, you may be eligible for academic accommodations. Students should identify themselves to the Dean of Students at 620-417-1106 or going to the Student Success Center in the Hobble Academic building, room 149 A.

XII. CORE OUTCOMES PROJECT:

The learning outcomes and competencies detailed in this course outline or syllabus meet, or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents

KRSN: PHY2030

Syllabus Reviewed: 10/30/2018 14:28:56