SEWARD COUNTY COMMUNITY COLLEGE
COURSE SYLLABUS

I. TITLE OF COURSE: PS2505- Engineering Physics I

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

This course covers the basic principles of mechanics, heat and thermodynamics, wave motion and sound. Calculus is used as a tool in this course for discovering the laws of physics. 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.

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Pre-requisite: Calculus I, writing level of English Composition 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:

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

V. SCCC OUTCOMES

Students who successfully complete this course will demonstrate the ability to do the following SCCC Outcomes.

I: Read with comprehension, be critical of what they read, and apply knowledge gained to real life
II: Communicate ideas clearly and proficiently in writing, appropriately adjusting content and arrangement for varying audiences, purposes, and situations.
III: Communicate their ideas clearly and proficiently in speaking, appropriately adjusting content fand arrangement for varying audiences, purposes, and situations.
IV: Demonstrate mathematical skills using a variety of techniques and technologies.
V: 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 mechanics, heat and thermo-dynamics, and wave motion.
2. Use Calculus as a tool to solve problems of a physical nature.
3. Show an awareness of the beauty and logical nature of the physical laws
4. Demonstrate an understanding of the scientific idealogy.
5. Demonstrate an understanding of the SI unit system.
6. Use vector mathematics to solve physical problems.
7. Apply the first and second condition for equilibrium
8. Define velocity and acceleration.
9. Demonstrate an understanding of motion with constant acceleration.
10. State Newton's Laws of Motion and apply them to situations.
11. Demonstrate an understanding of the concepts of mass and weight.
12. Study laws of work and energy

13. Determine and account for frictional forces.
14. Define power.
15. Examine conservation forces.
16. Apply the concept of conservation of momentum.
17. Determine if collision is elastic or inelastic.
18. Work with center of gravity and center of mass.
19. Define angular velocity and angular accelerations to the concepts of motion.
20. Look at different frames of reference
21. Apply rotational dynamics to different situations.
22. Study rotational momentum and energy.
23. Understand gravity, and applications to celestial bodies.
24. Study the principles of Archimedes and Bernoulli as related to fluids.
25. Define heat and temperature.
26. Define specific heat capacity and the various modes of heat transfer.
27. State the first and second law of Thermo-dynamics and apply them to different situations.

VII. COURSE OUTLINE:

1. Mechanics
2. Wave Mechanics
3. Heat and Thermodynamics
4. Laboratory Experiment Topics

VIII. INSTRUCTIONAL METHODS:

1. Lecture
2. Demonstrations of concepts
3. Laboratory experiments
4. Class discussion
5. Video presentations

IX. INSTRUCTIONAL AND RESOURCE MATERIALS:

1. Textbook
2. Handout Information
3. Video Presentations
4. Laboratory and Various Laboratory Equipment
5. Electronic Calculator
6. Overhead Projector

X. METHODS OF ASSESSMENT:

1. SCCC Outcome #1 will be assessed and measured by comprehension of text reading assignments, a semester research project, and participation in class discussion.
2. SCCC Outcome #2 will be assessed through essay assignments and semester research project.
3. SCCC Outcome #3 will be assessed through class and laboratory discussions and research presentation.
4. SCCC Outcome #4 will be assessed through homework problems, exams, and laboratory data analysis.
5. 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.

Syllabus Reviewed: 10/11/2018 15:18:30