



NORTHWEST FLORIDA STATE COLLEGE

Course Syllabus

Course Name: General Physics with Calculus

Course Number: PHY2048C

Section: 10492

Credit Hours: 4

Instructor Name: Dr. Christopher Sweeney

Instructor Office Location: 350/209 Niceville Campus

Instructor Email: sweeneycnwfsc.edu

Course Curriculum

This calculus-based course serves as the first in a two-part series, covering topics like kinematics, dynamics, energy, momentum, rotational motion, fluid dynamics, oscillatory motion, and waves. Designed for science and engineering majors, the course integrates critical thinking, analytical skills, and real-world applications.

Goals

- Students will use critical thinking skills to appreciate the nature of modern, quantitative theories of the underlying principles governing the behavior of elements of the physical Universe.
- Students will become familiar with calculus-based treatments of point-masses in both one and several dimensions.
- Students will develop an understanding the Newtonian approach to Classical Mechanics.
- Students will learn the essentials of the rotational motion of rigid bodies.
- Students will gain an appreciation for the basics of periodic motion and its connection will rotational motion.

Objectives

Student Learning Outcomes:

- Students will solve analytical problems describing different types of motion, including translational, rotational, and simple harmonic motion.
- Students will apply Newton's laws, and conservation laws to solve analytical problems of mechanics.
- Students will identify and analyze relevant information presented in various formats such as graphs, tables, diagrams, and/or mathematical formulations.
- Students will solve real world problems using critical thinking skills and knowledge Developed from this course.

Student Expectations of the Course

In this course, students may expect:

- To be instructed by a professor credentialed with earned graduate research degree(s) in physics from regionally accredited institutions
- To be clearly informed of all course requirements and expectations
- To have an on-campus professor readily available in-person for consultation about the course

- To gain a comprehensive knowledge of introductory calculus-based Classical Mechanics

How Student Performance will be Measured

- Students will take one quiz, two regular examinations, and a final examination.
- Each examination will cover a topical portion of the course.
- The examinations are not comprehensive.
- Laboratory reports on assigned experiments will be submitted by students
- The final grade will be determined from the quiz, tests, final examination and laboratory reports.