Physics (Science)

Elective – Year – 12
Prerequisites: Algebra II

Course Description

Physics is a study of the relationship between matter and energy, created and designed by our God. The student will be introduced to a variety of the physical laws of nature through lecture and experimentation. Physics is a rigorous course with a strong emphasis on mathematical problem solving.

Course Goals

The Christian teacher will:

1. aid the student in discovery of the laws and principles of nature which reflect the order of God's creation
2. help the student find practical application for the concepts presented
3. help the student develop an inquiring attitude and logical approach to problem solving
4. help the student master practical laboratory techniques and skills

Course Objectives

The student should be able to:

1. work productively in small and large groups
2. analyze data collected in field experiments
3. read and analyze information from graphs
4. logically approach and solve problems
5. identify the interrelationship between science and math

Course Outline

1. Physics Basics
    a. Physics Toolkit
2. Mechanics
    a. Representing Motion
    b. Accelerated Motion
    c. Forces in One Dimension
    d. Forces in Two Dimensions
    e. Motion in Two Dimensions
    f. Gravitation
    g. Momentum and Its Conservation
    h. Energy, Work, and Simple Machines
    i. Energy and Its Conservation
3. Waves and Light
    a. Vibrations and Waves
    b. Sound
    c. Fundamentals of Light

Instructional Strategies

A number of different teaching approaches are used. These include: lecture, cooperative learning activities, laboratory experiences, demonstrations, video presentations, computer simulations, calculator-based data collection, and independent research. Students will be assigned readings as well as conceptual and application problems in each chapter. Laboratory work will be done to both introduce and reinforce concepts as equipment and time allows.

Grading Methods

1. All assignments are due at the beginning of each class unless indicated otherwise.
2. Assessments will be complete through daily work, quizzes, tests, laboratory experience and reports, and projects.
3. Semester Grades are determined on a straight point system of all homework, quiz, and test assignments.

Student Materials

1. Physics textbook
2. Scientific calculator
3. 3 ring binder, loose-leaf paper, or spiral notebook
4. protractor
5. pencil (required for all tests and quizzes)

Classroom Procedures

1. **Tardies** – A student not in the classroom when the bell rings is considered tardy.
2. **Make-up Work** – Students who are absent due to illness will have two days to complete missed assignments (i.e. tests, quizzes, labs, etc.) Students who miss class for appointments or other pre-arranged activities or meetings are expected to complete missed assignments that day. In the event of difficulties, always speak with the instructor.
3. **Behavior** – Students are expected to conduct themselves as sanctified Christians at all times.