Grace Christian School

**HONORS PHYSICS**

**Syllabus**

**GRADE:** 12 **DATE:** August 2020

**BASIC TEXTS:**

Required Textbook: Egolf, R. T. & Seeley, Richard A., ***Physics, 3rd edition.*** Greenville, SC: BJU Press, 2010.

Required Lab Book: Egolf, R. T. & Santopietro, R., ***Physics Lab Manual, 3rd edition***. Greenville, SC: BJU Press, 2010.

**OVERVIEW:** Physics is the study of forces acting on matter. Topics will include velocity, acceleration, all forces, vectors, projectile trajectories, the laws of motion and planets, rotational motion, simple machines, friction, work and power, momentum, harmonic motions, wave behavior, thermodynamics, kinetics, fluid mechanics, magnetism and electricity, optics and wave behavior, relativity, and nuclear physics. Also gained will be practical experiences with laboratory equipment and procedures.

Required Background: Algebra II is required as a pre-requisite for this course.

**MAJOR TOPICS & SKILLS:**

FIRST QUARTER

1. Foundations of Physics

2. Measurement

3. Motion in One Dimension

4. Vectors & Scalars

SECOND QUARTER

1. Motion in a Plane

2. Applying Newton’s Laws / Friction

3. Dynamics

THIRD QUARTER

1. Electric Charge / Fields

2. Electrodynamics

3. Magnetism / Electromagnetism

4. Circular Motion

5. Fluid Mechanics

*Paper on film in class on Big Bang*

FOURTH QUARTER

1. Periodic Motion

2. Waves

3. Work, Energy and Conservation

4. Momentum

5. Expansion, Heat, Thermodynamics

6. Relativity

7. Quantum / Nuclear Physics