Physics 11 Course Outline

Physics 11 is an introductory course and is meant to prepare students for Physics 12 as well as university level Physics. It is a mathematical science in which students will develop the capacity to think critically. Students will work both individually and collectively to analyze and solve problems of a scientific nature. With hands on activities and learning scientific processes, students should develop a positive attitude toward science. The following topics will be studied during the course of the semester.

Skills, Methods, and Nature of Physics

- Major branches of physics
- Experimental processes (labs)
- Scientific notation, significant figures, unit conversions
- Graphing and formula manipulation

Kinematics

- Distinguish between scalar and vector quantities
- Learn and apply concepts related to distance, displacement, speed, velocity, and acceleration
- Learn and apply concepts related to projectile motion

Forces and Newton's Laws

- Learn and apply concepts such as mass, force, weight, friction, and inertia
- Universal gravitation
- Hooke's law, spring constant, change in length
- Newton's 3 laws of motion

Momentum

- Learn and solve problems related to momentum, impulse, one dimensional systems
- Law of conservation of momentum
- Collisions and explosions

Energy

- Learn and solve problems related to work, potential and kinetic energy, and power
- Law of conservation of energy

Special Relativity **

- Michelson – Morley experiment, special theory of relativity, speed of light constancy
- Time dilation, length contraction, mass increase
- Energy and mass equivalence

Wave Motion and Geometrical Optics **

- Wave properties, equation, phenomena, conditions
- Visible light
- Law of reflection, mirrors
- Lenses (convex and concave)

Nuclear Fission and Fusion **

- Fusion and fission reactions
- Chain reaction, critical mass, and moderator
- Different types of nuclear reactors

**** as time permits**