Course Title: PHYSICS A

Course No. 4357 **Grade level**: 9-12

Text and Resources:
N/A

Course Content: Key Content Standards and Course Objectives

The following objectives are based on the Grades 9-12 Physics standards:

1. **Motion and Forces:** Newton's laws predict the motion of most objects: problems involving constant and average speed (1-a), Newton's First Law (1-b), Newton's Second Law (1-c), Newton's Third Law (1-d), Universal Law of Gravitation (1-e), the effects of applying a force to an object perpendicular to the direction of its motion (1-f), theory of circular motion (1-g).
2. **Conservation of Energy and Momentum**: The laws of conservation of energy and momentum provide a way to predict and describe the movement of objects: calculation of kinetic energy (2-1), calculating changes in gravitational potential energy (2-b), solving problems with conservation of energy (2-c), calculating momentum (2-d,e,f), principles of conservation of momentum and energy (2-g).
3. **Heat and Thermodynamics:** Energy cannot be created or destroyed although in many processes energy is transferred to the environment as heat: heat flow and work (3-a,b), thermal energy (3-c, d), entrophy (3-e).

Investigation and Experimentation

Students will ask meaningful questions and conduct careful investigations addressing the content of the above Physics standards.

Course Description

Course Value: *One Semester

Credit Value: 1 – 5 credits

This course is designed for the advanced high school student. The instructor will direct the resources and guide the assignments.

Physics includes the study of motion, forces, energy, heat, waves, light, electricity, and magnetism. Physics focuses on the development of models deeply rooted in scientific inquiry, in which mathematics is used to describe and predict natural phenomena and to express principles and theories.

The Grades 9-12 Investigation and Experimentation Standards
are infused throughout the high school science curriculum and reinforce content. They form the foundation of science knowledge and allow students to make concrete associations between science and the study of nature, as well as to provide many opportunities to take measurements and use basic mathematics.

*Open entry/open exit

Methods of Study

1. Students will complete all activities assigned.
2. Students will participate in discussion with other class members and/or teacher.

Evaluation of Performance Standards

1. Students will complete all assignments with a minimum of 70% accuracy.
2. The supervising teacher will be satisfied with the quality of the student's work.
3. The student must receive a minimum score of 70% on a teacher assigned final evaluation.
4. Letter grade contracts are optional and require a higher level of performance.