WRHS Science Curriculum
Syllabus

Course Name: Science Explorations and Interactions III **Grade Level: 11**

Course Description:

Science Explorations and Interactions III is the final course of a three-year sequence. Students will expand upon previous concepts in mechanics (including machines and movement.) as well as an introduction to electricity and light, including reflection, refraction. Earth, space, weather and natural resources are also studied in greater detail, as is the periodic table of the elements. An ecological unit is a large part of the second semester.

Links to Student Expectations:

- All students will develop skills to utilize technology to gather, to evaluate, to assimilate, and to present information.
- All students will utilize critical thinking skills to identify and to provide resources to solve a problem.
- All students will be able to make decisions and solve problems using logical processes (e.g., scientific method, induction, deduction, syllogism, etc.)
- All students will develop skills to promote a sense of confidence in tackling the rigors of standardized tests such as the required MCAS and optional AP, SAT.

Interdisciplinary Connections:

Science Explorations III is a course that utilizes a variety of skills that have direct relationships to biology, chemistry, physics, and earth science as well as mathematics. Furthermore, the relationships between the sciences and daily life are stressed using concrete examples.

I. Essential Questions for Course

- How do organisms acquire and use energy?
- How are nutrients digested physically and chemically?
- How are impulses transmitted and measured?
- How was the Universe formed and how is it changing?
- What is the structure of the Earth and how is it changing?
- What are the basic types of simple machines?
- How do living things interact with their environment?

II. Student Objectives

- Energy and Living Systems
  - To explain how plants produce food from sunlight.
  - To explain how food is broken down for energy.
- Nutrition and Digestion
  - To explain the names and functions of the major nutrients needed by living things.
  - To follow the path of food through the digestive system.
- Vibration, Waves and Sound
  - To know and measure the basic types and parts of waves.
  - To demonstrate how waves relate to sound.
- Universe, Stars and Planets
  - To understand how the universe was formed.
  - To describe the life of a star.
- Plate Tectonics & Mapping the Earth's Surface
  - To demonstrate an understanding of basic plate tectonics.
  - To explain various methods that can be used to map the Earth's surface.
- Simple Machines
  - To list the major types of simple machines and explain how they function.
  - To show how simple machines have application to every day life.
- Organisms and Their Environment
  - To know the levels of organization in an ecosystem.
  - To explain the interrelationship between living things in an ecosystem.

III. Suggestions for Instruction

- Brief Lectures
- Discussions
- Oral reviews and summaries
- Textbook reading-(Coordinated Science 1 & 2 [Cambridge] and Biology [Merrill])
- Worksheets
- Individual or small group laboratory experiments
- Videos
- CD ROM Interactive Activities

IV. Suggestion for Assessment

- Written assessments (with a variety of question types)
- Laboratory experiments
- Classroom presentations
- Individual long-term projects

V. Curriculum

- Energy and Living Systems
- Nutrition and Digestion
- Vibration, Waves and Sound
- Universe, Stars and Planets
- Plate Tectonics & Mapping the Earth's Surface
- Simple Machines
- Organisms and Their Environment

VI. Lesson Extensions

- Possible small individual or small group projects to extend the materials presented in class.