Murrieta Valley Unified School District **Board Submission: April 2017**
HIGH SCHOOL COURSE OUTLINE

Course Title: Environmental Science Essentials

Department: Special Education

Course #: 8165

Grade Level/s: 11-12

Course Length: Year

Prerequisite/s: Successful completion of biology/life science and earth/physical science

UC/CSU (A-G) Req: NA

Brief Course Description: This course meets District graduation requirements for science credit. Environmental Science is the study of the interaction between the living and non-living parts of our world. It draws from all areas of study including biology, earth science, chemistry, economics, political science, and ethics. This course is a project-based course that will focus on five major environmental issues taking place around the world today, including: overpopulation/poverty, loss of biodiversity, global warming, pollution, and resource and energy waste.

I. GOALS

The students will:

A. Demonstrate proper laboratory skills and practices

B. Demonstrate an understanding of science as a process

C. Develop responsible attitudes about science and how science relates to the world, people's lives, and the environment

D. Improve communication and teamwork skills

E. Develop interest and understanding of environmental science and sustainable practices and technologies

F. Gain experience in problem solving and decision-making using science process skills

G. Distinguish ecosystem types and analyze their functions

H. Analyze human resource use and misuse

I. Demonstrate an understanding of sustainable resource management to include: water, air and land

J. Demonstrate an understanding of human nutritional needs, food production and distribution

K. Compare traditional and sustainable agricultural practices and their impact on the environment

L. Describe how electricity is produced from a variety of energy sources (fossil fuels, nuclear, and alternative sources) and analyze the costs and benefits of energy sources

M. Demonstrate an understanding of waste reduction and recycling

N. Demonstrate an understanding of human growth rates and global population distribution

O. Describe environmental and socioeconomic problems associated with population growth

P. Demonstrate an understanding of the process involved in making environmental policies at the local, state, national and international levels

II. OUTLINE OF CONTENT FOR MAJOR AREAS OF STUDY

Semester 1

A. Environmental Science- Introduction
   1. Describe Environmental Science
   2. Describe Major Environmental issues
      a. Resource depletion
      b. Pollution
      c. Loss of Biodiversity
   3. Application of science to the solution of environmental issues
      a. Science as a process
      b. Proper experimental design
   4. Ethical Environmental decisions

B. Ecosystems
   1. Biotic factors in an ecosystem
      a. Ecosystem structure
      b. Interaction of species within an ecosystem
      c. Biodiversity complex vs. depleted ecosystem
      d. Species adaptation
   2. Abiotic factors and ecosystem function
      a. Energy flow in an ecosystem
      b. Material cycling
   3. Types of Ecosystems
      a. Land biomes
      b. Freshwater
      c. Marine

C. Resources
   1. Water Resources
      a. Distribution of the Earth's water resources
      b. Freshwater pollution
      c. Ocean pollution
   2. Atmosphere
      a. Composition of the atmosphere
      b. Climate
      c. Causes of air pollution
      d. Effects of air pollution on human health
      e. Acid precipitation

Semester 2

A. Land
   1. Analyze cities
   2. Analyze the use of land

B. Food and fiber
   1. Human dietary needs and nutrient deficiencies
   2. Awareness and reasons for human hunger world-wide
      a. Cause of hunger
      b. Solution to hunger

   3. Agricultural practices (sustainable and detrimental)
      a. Soil maintenance and restoration
      b. Safety and quality of produce

C. Human energy use
   1. Electrical energy using fossil fuels
   2. Nuclear energy
   3. Alternative energy (solar, wind, geothermal, hydroelectricity)

D. Waste
   1. Waste reduction and recycling
   2. Hazardous waste production, management and prevention

E. Human growth population
   1. Human growth rates
      a. Global comparisons
   2. Historical changes in human population
   3. Issues related to population growth

F. Sustainable Future
   1. Cooperation (local, national and global)
   2. Environmental policies (local, national and global)

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III. ACCOUNTABILITY DETERMINANTS

A. Key Assignments
   1. Year-round participation with on-campus composting and horticulture
   2. Renewable Energy Activity
   3. Material Cycling Lab
   4. Environmental Policy Proposal

B. Assessment Methods
   1. Classwork/homework
   2. Labs and Performance Tasks
   3. Projects
   4. Quizzes
   5. End of Unit Tests
   6. Semester Final Exams

IV. INSTRUCTIONAL MATERIALS AND METHODOLOGIES

A. Required Textbook(s)

   Miller, G. T. (2007). Living in the Environment: Principles, Connections, and Solutions (15th ed.). Thomson Brooks/Cole (Cengage.) ISBN 9780495015987

B. Supplementary Materials
   1. newsela.com
   2. www.nsf.gov
   3. www.nea.org
   4. sciencenews.org

C. Instructional Methodologies
   1. Direct Instruction
   2. Guided Inquiry
   3. Cooperative Learning
   4. Discourse
   5. Learning Centers
   6. Differentiated Instruction
   7. Problem-Based Learning
   8. Visual Representations and Concrete Models