Life and Environmental Science (With Lab)

SCI 232

Upon completion of this course the student will:

1. Learn fundamental principles, generalizations, or theories
2. Gain factual knowledge (terminology, classifications, methods, trends)
3. Learn to *apply* course material (to improve thinking, problem solving, and decisions)

Upon completion of the course, the student will demonstrate an understanding of the following:

1. Laboratory Safety & Procedures

2. General and Biodiversity
   A. Apply the scientific activities of inquiry, observation, investigation, interpretation, and verification to biological concepts laboratory safety, general lab skills, and data collecting and analysis will be emphasized.
   B. Examine the unity of life of all living creatures on earth, how living things are organized, and the interaction between living things in the biosphere.
   C. Identify the levels of organization of living things on earth from the simplest to most complex.

3. Cell Structure and Function
   A. Chemical composition of life.
   B. Explain cell theory and differentiate between a typical animal and a typical plant cell structure.
   C. Describe the structure and functions cell organelles and membranes.
   D. Explain cell metabolism and energy use including enzymes, photosynthesis, and respiration.

4. Cell Division and Heredity
   A. Compare cell division and mitosis to gamete formation and meiosis.
   B. Analyze Mendelian genetics, transmission of traits, genetic variation, and selective breeding by man.

C. Interpret the genetic code: DNA-RNA and protein synthesis, recombinant genetics, genetic fingerprinting.

5. Evolution and Diversity
   A. Describe natural selection and its role in evolution.
   B. Explain speciation.
   C. Describe the theory of the origin of life.
   D. Differentiate between viruses, bacteria, protistans, and fungi.

6. Plant Structure, Function, and Diversity
   A. Differentiate between various types of plant tissue.
   B. Describe plant nutrition and transport.
   C. Explain various life cycles.

7. Animal Diversity, Structure, and Function
   A. Describe characteristics of various animal phyla.
   B. Describe levels of organization and function in animals.
   C. Explain various physiological processes including reproduction and development.

8. Environmental Interactions
   A. Differentiate the dynamics of the biotic environment: plant and animal population, interdependence of organisms, food chains and webs, ecological succession, adaptation, endangered species, biological clocks.
   B. Describe pollution effects on the environment.
   C. Differentiate between biotic and abiotic systems.