

## 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.