Miami Dade College

Course Description

BSC1030 | Social Issues in Biology | 3.00 credits

Social Issues in Biology develop in students an understanding and appreciation for living systems (including themselves) and the skills and knowledge needed to address biological issues that are important and relative to their lives and the society in which they live. Such issues include, but are not limited to, the origin of biodiversity, advances in reproductive technology, genetic engineering, scientific ethics, advances in the treatment of disease and genetic disorders, environmental problems and sociobiology.

Course Competencies:

Competency 1: The student will demonstrate knowledge of the nature of science by:

1. Describing and illustrating the scientific method as presented in the literature.
2. Differentiating between science and biology
3. Comparing the characteristics of life every day to simple cell and multicellular organisms

Competency 2: The student will be Comparing the characteristics of life common to simple cell and multicellular organisms by:

1. Defining energy and matter and their laws and explaining how they are used in biological systems.
2. Explaining the basic structure of atoms and molecules and recognizing examples of covalent, hydrogen, and ionic bonding.
3. Explaining the importance of water to life and the concept of acidity as well as its expression as pH.
4. Identifying the four major groups of organic compounds (carbohydrates, lipids, proteins, and nucleic acids) and understanding their functions in living systems.
5. Describing the roles of enzymes in the synthesis and decomposition of biological compounds.
6. Describing the processes of photosynthesis and cellular respiration.

Competency 3: The student will demonstrate knowledge of the nature of cell structure and function by:

1. Describing a typical cell's structure and explaining the subcellular organelles' function.
2. Differentiating between plant and animal cells with respect to structure and function.
3. Identifying and explaining methods of cell transport such as diffusion, osmosis, and active transport.

Competency 4: The student will demonstrate knowledge of the cellular and organismal processes of proliferation by:

1. Explaining the function and significance of cell division and organismic reproduction.
2. Comparing and contrasting mitosis and meiosis and describing the significant events that occur in each stage of these processes.
3. Explaining the principles of heredity, as illustrated by the work of Gregor Mendel, and their application to humans.
4. Describing the structure of DNA and understanding how it functions to control a cell’s activity and acts as the molecule of heredity.
5. Explaining the processes of DNA replication, transcription and translation

Competency 5: The student will demonstrate knowledge of the nature of evolutionary theory by:

1. Explaining the theory of evolution of life on Earth favored by modern scientists.
2. Describing and explaining Darwin’s basic concept of natural selection and how it relates to the theory of evolution.
3. Listing and explaining the several categories of evidence that support the theory of evolution.
4. Describing how scientists group living organisms into hierarchical groups based on their shared characteristics, and name and characterize the major systematic taxa.

Competency 6: The student will demonstrate knowledge of interactions between organisms and the environment by:

1. Identifying and explaining the ways in which the abiotic environment affects living systems.
2. Describing the factors that control population growth and the mechanisms involved.
3. Discussing the various relationships existing among individuals and populations in communities.
4. Explaining the nature of ecosystems with particular reference to their sustainability.
5. Listing and describe the major biomes of the world.
6. Discussing the major impact humans have on their environment

Learning Outcomes:

- Communicate effectively using listening, speaking, reading, and writing skills
- Solve problems using critical and creative thinking and scientific reasoning
- Demonstrate knowledge of ethical thinking and its application to issues in society