Biology 105 Introduction to Biology
Sample Syllabus

Week 1: Understanding Science: The Scientific Method, experimental design, data interpretation, predictive value, nature of scientific theories.

Week 2: The Chemical Components of Life: Atoms, molecules, carbon-based life forms, macromolecular components of cells.

Week 3: Cells as the Unit of Living Systems: Cell theory, prokaryotes, eukaryotes, Cell membranes, transport, endomembrane systems.

Week 4: Energy Transfer and Life: Energy, capture, transduction, photosynthesis, respiration.

Week 5: DNA, Gene Expression, Biotechnology: Encoding genetic information, gene expression, mutations, recombinant DNA technology and biotechnology.

Week 6: Chromosomes and Cell Division: Types of cell division, cell cycle and cancer, gamete formation, chromosome abnormalities and genetic disorders.

Week 7: Genes and Inheritance: Transmission of traits from generation to generation, genotypes to phenotypes, why we study and map genes.

Week 8: Evolution and Natural Selection: Evolution in the everyday world, natural selection and other ways in which evolution occurs, microevolution, and the evidence for evolution.

Week 9: Origin and Diversification of Life: Non-living to living, defining species, domains of life, evolutionary trees, biodiversity, and explaining macroevolution.

Week 10: Diversification of Animals: Origin, invertebrates, transition to land, vertebrates, humans and their evolution.

Week 11: Diversification of Plants: Definitions, colonizing the land, adaptations to land, co-evolution of plants and animals.

Week 12: Evolution and Diversity of Microbes: Viruses and the definition of living systems, bacteria and archae, protists, disease, natural selection, and evolution.

Week 13: Population Ecology: Populations and environmental interactions, life cycles of populations and life histories, growth of the human population.

Week 14: Ecosystems: Components, producers and consumers, interactions of organisms and the physical environment, species interactions.

Week 15: Biodiversity and Conservation: Measuring and maintaining biodiversity, human activity and ecosystem disruption, carrying capacity, the dawn of the Anthropocene.

Attachment #1

BIOL 105

Introduction to Biology

This course, designed for non-majors, considers basic concepts and selected topics in biology beginning at the molecular level and ending with the biosphere. Topics include: the chemistry and structure of cells in plants and animals; how cells obtain and use energy; basic genetics and the role of biotechnology in agriculture and medicine; evolution, natural selection, and species formation; the origin and diversity of microbial, plant and animal life; ecology, organisms and their environments, and the impact of human population growth and human activity on the systems and resources of our planet. This course is not available to those students for whom BIOL 107 is a required course, including students majoring in Biology, Biochemistry, Chemical and Biological Engineering, Molecular Biochemistry and Biophysics, or any pre-health professional major or minor. BIOL 105 and BIOL 114 constitute a one-year sequence in biology. Acceptable as part of the science component of the General Education Program. Course does not satisfy graduation requirements for Biology, Biochemistry, Chemical and Biological Engineering, or Molecular Biochemistry and Biophysics majors.

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