



Syllabus

BIO 122 General Biology II

General Information

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Department Science and Technology

Course Prefix BIO

Course Number 122

Course Title General Biology II

Course Information

Catalog Description A study of evolutionary concepts and survey of taxonomic levels of organization (domain, kingdom, phylum, class, order, family, genus, species). Emphasis will be on anatomical/physiological adaptations, life history traits and ecology of representative organisms.

Credit Hours 4

Lecture Contact Hours 3

Lab Contact Hours 2

Other Contact Hours 0

Grading Scheme Letter

Prerequisites

None

Co-requisites

None

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category

Natural Sciences (and Scientific Reasoning)

FLCC Values

Institutional Learning Outcomes Addressed by the Course

Vitality, Inquiry, and Interconnectedness

Course Learning Outcomes

Course Learning Outcomes

1. Describe evolutionary theory as a unifying concept in biology
2. Utilize evolutionary, taxonomic, and biodiversity concepts in related problem solving
3. Utilize basic laboratory techniques to conduct experiments.
4. Design laboratory experiments and report on conclusions based on data analysis

Outline of Topics Covered

A. Evolutionary thought

1. Development of evolutionary thought
2. Evidence for evolution
 - a. Fossil record
 - b. Comparative anatomy
- c. Embryology
- d. Molecular Biology

B. Principles of Evolution

1. Micro vs. Macroevolution
2. Gene pool and gene frequency
 3. Hardy-Weinberg principles
 4. Mutations
 5. Gene flow
 6. Genetic drift
7. Natural selection

C. Speciation

1. Defining a species
2. Allopatric vs. sympatric speciation
3. Isolating mechanisms

- D. Origin and Evolution of Life
 - 1. Conditions of the early earth
 - 2. Formation of cells
 - 3. Multicellular organisms
- 4. Human evolution

- E. Systematics
 - 1. Classifying organisms
 - 2. The binomial system
- 3. Domains and kingdoms of life

- F. Bacteria
 - 1. Characteristics and adaptations
 - 2. Structure
 - 3. Reproduction
- 4. Pathogenic vs. beneficial

- G. Protista
 - 1. Characteristics and adaptations
 - 2. Classification
 - a. Plant-like protists (unicellular algae)
 - b. Fungus-like protists (water and slime molds)
 - c. Animal-like protists (protozoa)

- H. Fungi
 - 1. Characteristics and adaptations
 - 2. A survey of the major phyla
 - a. Chytridiomycota (chytrids)
 - b. Ascomycota (sac fungi)
 - c. Basidiomycota (club fungi)
 - d. Zygomycota (zygote fungi)

- I. Plant Structure and function
 - 1. Classification and adaptations
 - a. Evolutionary origins and trends
 - b. Survey of the major divisions
 - 2. Plant form and function
 - a. Plant tissues (dermal, ground and vascular)
 - b. Roots
 - 1. Structure and function
 - 2. Growth
 - c. Stems
 - 1. Structure and function
 - 2. Growth
 - d. Leaves
 - 1. Structure and function
 - e. Special adaptations of roots, stems and leaves
 - f. Water and nutrient transport

- 3. Reproduction and development
 - a. Flowers
 - 1. Structure and function
 - 2. Pollination and fertilization
 - b. Seeds
 - 1. Ovule and embryo
 - 2. Dormancy and dispersal
 - 3. Germination and growth
 - c. Fruits
 - 1. Structure and function
 - 2. Development
 - 4. Responses to environment
 - a. Plant hormones
 - b. Tropisms
- J. Animal Structure and Function
- 1. Characteristics and evolutionary trends
 - a. Survey of major animal phyla
 - b. Major evolutionary trends in body plans
 - 2. Homeostasis and organization
 - a. Feedback systems in homeostasis
 - b. Organization of the animal body plan (cells, tissues, organs, organ systems)
 - 3. Animal physiology: human models and comparisons to other forms
 - a. Principles of circulation
 - b. Principles of respiration
 - c. Nutrition and digestion
 - d. Excretion
 - e. Lymphatic and Immune system
 - f. Endocrine system
 - g. Nervous system
 - h. Muscle and skeleton
 - i. Reproduction and development
4. Behavior
- a. Learned
 - b. Inate
- K. Ecology
- 1. Principles of population growth
 - 2. Community Interactions and Competition
 - 3. Ecosystem structure and function
 - a. Nutrient cycling
 - b. Environmental Impact (Acid Rain, Global Warming)
 - 4. Survey of Earth's Ecosystems