

BIOL& 221

COURSE LEARNING OUTCOMES (CLOs)

1. Describe the mechanisms of evolution.
2. Describe the process and significance of the classifications of organisms.
3. Use mathematical models to predict biological outcomes.
4. Describe the unifying traits of major taxa.
5. Describe adaptations and distinguishing traits of major taxa.
6. Explain the fundamental principles of population structure, distribution and growth.
7. Characterize the various forms of species interactions in biological communities.
8. Explain how matter and energy are ecologically stored, transferred and transformed.

Course Outline:

- I. **History**
 - A. Darwin's contributions
 - B. evolutionary theory
- II. **Evolution of populations**
 - A. natural selection and adaptation
 - B. population genetics
- III. **Species Concepts**
 - A. speciation
 - B. macroevolution
- IV. **Systematics**
 - A. taxonomy
 - B. phylogenetics
 - C. morphological and molecular homologies
- V. **Evolution of Life and Prokaryotes**
 - A. archaea
 - B. bacteria
- VI. **Protista**
 - A. diversity of protists and unifying characteristics
 - B. reproduction
 - C. adaptations
- VII. **Plantae**
 - A. diversity of plants and unifying characteristics
 - B. plant reproduction and life cycles
 - C. adaptations
- VIII. **Fungi**
 - A. diversity of fungi and unifying characteristics
 - B. fungi reproduction and life cycles

C. adaptations

IX. Animalia

A. diversity of animals and unifying characteristics

B. animal reproduction and life cycles

C. adaptations

- X. Population ecology**
 - A. density and dispersion
 - B. demography
 - C. models of population growth

- XI. Community Ecology**
 - A. interactions within the community
 - B. dominant and keystone species
 - C. disturbance and species diversity

- XII. Ecosystem ecology**
 - A. energy flow
 - B. chemical cycling
 - C. human impact and conservation