

Montgomery County Community College  
 BIO 122  
 General Biology II  
 4-3-3

**COURSE DESCRIPTION:**

This course emphasizes evolution as it applies to the development, adaptation and taxonomy of organisms. The five kingdoms of organisms are discussed in terms of their structure, function, reproduction and adaptation. This course is subject to a course fee. Refer to <http://mc3.edu/adm-fin-aid/paying/tuition/course-fees> for current rates.

**REQUISITES:**

*Previous Course Requirements*  
 BIO 121 General Biology I

*Concurrent Course Requirements*  
 None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Describe the basic features of evolution and of the G <sub>0</sub> , G <sub>1</sub> , S, G <sub>2</sub> , and M phases of the cell cycle.		





## VI. Viruses

- A. Living/Non-Living
- B. Characteristics, DNA vs. RNA, reverse transcriptase, enveloped, etc.
- C. Infection pathways, lytic vs. lysogenic cycles, provirus concept

## VII. Prokaryotes

- A. Contrast typical cell with eukaryotic cell type
  - 1. Structure (wall, genetics, etc.) and shape (bacillus, spirillum, coccus, etc.)
  - 2. biochemical complexity, energy sources, other unique pathways
- B. Archaea vs. Eubacteria, and major groupings within each
- C. Difficulty of phylogenetic classification, esp. horizontal gene transfer
- D. Ecological importances

## VIII. Kingdom Protista

- A. Endosymbiotic Origins
- B. Diversity
  - 1. Algae (Protophyta)
    - a. characters differentiating the major photosynthetic phyla
    - b. likely evolutionary relationships and adaptations
    - c. effects on, or utility for, humans
  - 2. Protozoans, contrasting the major animal-

2. Seedless vascular plants, typified by the ferns
    - a. Evolutionary importance of vascular tissue
    - b. Evolution of increased sporophyte importance in the lifecycle
    - c. General characteristics and reproduction / lifecycle
  3. Gymnosperms, typified by the conifers
    - a. General characteristics and reproduction / lifecycle
    - b. Evolution and ecological importance of seeds
  4. Angiosperms
    - a. Evolutionary innovations resulting in recent ecological dominance
    - b. typical Monocot vs. Dicot characteristics
    - c. Vegetative Structure
      - 1). Roots structures and function
      - 2). Stems structures and function, herb vs. woody
      - 3). Leaves structures and function, ecological modifications
    - d. Sexual Reproduction
      - 1). Flower structure
      - 2). Pollen, seed and fruit development
      - 3). Dispersal structures
- XI. Kingdom Animalia
- A. Likely origin from multicellular flagellates, important homologies
  - B. Typical lifecycles

XII.

**LEARNING MATERIALS:**Textbook:

To ensure breadth and depth of topic coverage, and to provide well-illustrated examples to reinforce material covered in lecture, an appropriate general textbook will be selected and assigned. Normally the book will be selected in conjunction with BIO 121, to provide continuity for the students continuing from that course. The book in current use is: Reece et al., *Campbell Biology: Concepts and Connections*, 8<sup>th</sup> ed., Pearson, 2013.

Other materials (especially current articles of relevance) may be made available directly to the student or via the College's library reserve or its computer network.

Lab Manual:

None (lab handouts will be provided), but a recommended laboratory supplement is: Rust, *A Guide to Biology Lab*, Southwest Educational Enterprises, 1983.

Other learning materials may be required and made available directly to the student and/or via the \_\_\_\_\_ and/or course management system.

**COURSE APPROVAL:**

Prepared by: Thao Tran	Date: 4/21/1998
Revised by: Christopher J. Harendza, Ph.D. Associate Professor and Coordinator of Biology	Date: 10/22/2004
Revised by: Jerry Coleman, Ph.D.	Date: 11/15/2013
VPAA/Provost or designee Compliance Verification: Dr. Victoria Bastecki-Perez	Date: 2/24/2014