

University of Arkansas – Fort Smith
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General Syllabus

BIOL 2301 General Botany Laboratory

Credit Hours: 1

Lecture Hours: 0

Laboratory Hours: 3

Prerequisite: BIOL 1151 Biological Science Laboratory OR BIOL 2011 General Biology Laboratory

Prerequisite or corequisite: BIOL 2303 General Botany

Effective Catalog: 2018- 2019

I. Course Information

A. Catalog Description

A survey of plant anatomy, physiology, morphology and taxonomy.

B. Additional Information

The laboratory activities include experiments and demonstrations in physiology, and the study of histology and anatomy using live materials, microscope slides, models, and dissection.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Describe the hierarchical organization of plants from cellular structures to the overall organization of the plant body.
2. Describe the structure and functions of typical cells.
3. Understand the chemical relationships in physiological processes in the plant body.
4. Identify gross and microscopic features of plant organs and reproductive structures.
5. Demonstrate a proficiency at using a dichotomous key to identify plants.
6. Demonstrate a proficiency at collecting, identifying, and preserving native Arkansas plants.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will generate solutions/analysis of problems/issues evaluated, and assess and justify the solutions and/or analysis.

Communication Skills (written and oral)

Students will effectively communicate scientific ideas and principles. Students will compose scientifically sound lab reports and communicate facts to intended audience.

Global and Cultural Perspectives

Students will work collaboratively with others of diverse backgrounds to demonstrate how the discipline of biology impacts these diverse cultures.

III. Major Course Topics

- A. Microscopy
 - 1. Using a Microscope
 - 2. The Cell
- B. Roots
 - 1. Root Structure (Monocot and Dicot)
 - 2. Root Function
- C. Stems
 - 1. Stem Structure and Diversity (Monocot and Dicot)
 - 2. Stem Function
- D. Leaves
 - 1. Leaf Structure and Diversity
 - 2. Leaf Function
- E. Plant Propagation
 - 1. Grafting
 - 2. Seed Starting
 - 3. Vegetative
 - a. Cuttings
 - b. Divisions
 - c. Layering
 - d. Tissue Culture
- F. Diffusion, Growth, and Hormones
- G. Photosynthesis
- H. Water in Plants; Respiration; Digestion
- I. Meiosis and Alternation of Generations
- J. Kingdoms
 - 1. Fungi
 - 2. Bryophytes and Ferns
 - 3. Gymnosperms
 - 4. Angiosperms