

**University of Arkansas – Fort Smith
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General Syllabus

BIOL 4018V Undergraduate Research in Biology

Credit Hours: 1-3

Lecture Hours: 0

Lab Hours: 1-3

Prerequisite: Biology major, completion of at least 12 hours Biology, junior standing and consent of instructor.

Effective Catalog: 2018- 2019

I. Course Information

A. Catalog Description

A course that covers the scientific method by giving practical exposure to hypothesis testing, experimental design, data collection and analysis.

B. Additional Information

This course is intended to serve as an elective for Biology majors. Students pursuing externally funded research projects will be encouraged to register for this course in order to earn course credit for their research.

II. Student Learning Outcomes

A. Subject Matter

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

1. Identify scientific problems and design investigations to address those problems.
2. Formulate testable hypothesis.
3. Design and conduct controlled experiments in the field or lab.
4. Collect and evaluate quantitative and qualitative data.
5. Perform basic statistical analysis to test hypothesis and significance of findings.
6. Effectively present findings orally and in writing to a general audience.

B. University Learning Outcomes

Undergraduate Research enhances student abilities in the following areas:

Communication Skills (written and oral)

Students will communicate proficiently. They will compose coherent research documents appropriate to the intended audience. They will effectively communicate their research findings in a public or departmental setting.

Analytical Skills

Critical Thinking Skills: Students will evaluate information gathered for and during the investigation. They will utilize critical thinking skills to solve problems and draw correct conclusions based on acquired data.

III. Major Course Topics

- A. Identifying biological conundrums
- B. Generating testable hypothesis
- C. Designing experiments
- D. Collection of quantitative and qualitative data
- E. Statistical testing of hypothesis with data collected
- F. Effective communication of findings to a scientific and general audience