

**University of Arkansas – Fort Smith**

**5210 Grand Avenue  
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Fort Smith, AR 72913-3649  
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**General Syllabus:**

**BIOL 4103 Science Teaching Methods**

Credit Hours: 3

Lecture Hours: 2

Laboratory Hours: 3

Prerequisite: Admission to educator preparation program

Corequisite: EDUC 4211 Practicum II or consent of instructor

Effective Catalog: 2018~2019

**I. Course Information**

**A. Catalog Information:**

Designed to give the pre-service science teacher opportunities to reflect upon and design curricula for the classroom. New methods of teaching science will be explored and modeled throughout the course, and the creation of laboratory exercises is emphasized.

**II. Student Learning Outcomes:**

**A. Subject Matter**

This course is designed with the expectation that every student who possesses the desire and drive can be successful at meeting the following objectives:

1. Develop an understanding of the nature of science and scientific inquiry.
2. Learn applicable theory of science learning and develop resources for further research in specific areas of science education.
3. Understand current science education standards as well as how science curricula historically are established in public schools.
4. Translate educational theories into appropriate classroom strategies.
5. Develop instructional activities over short-term (one class period) and long-term (multi-week) timeframes.
6. Evaluate science educational materials which could serve as curricular and instructional resources.
7. Identify approaches that accommodate learning for a diverse group of learners.
8. Create materials that would provide valid assessments of students' science learning.
9. Develop a coherent and informed professional stance toward science teaching.

## **B. University Learning Outcomes**

Teaching in Science enhances the abilities of the following areas:

### **Analytical Skills**

**Critical Thinking Skills:** Students will research, evaluate, and compare information from varying sources in order to evaluate authority, accuracy, recency, and bias relevant to science teaching.

**Quantitative Reasoning:** Students will apply appropriate mathematical/statistical models to solve problems within their science teaching, and will recognize the limitations of quantitative analysis.

### **Communication skills**

Students will compose coherent documents appropriate for science teacher preparation, and effectively communicate orally within the class and 7-12 science classrooms.

### **Ethical Decision Making**

Students will identify ethical dilemmas and affected parties associated with science teaching, and apply ethical frameworks to resolve a variety of ethical dilemmas that they will likely face in their teaching careers.

### **Global & Cultural Perspectives**

Students will demonstrate how science teaching impacts or is impacted by different cultures, and will effectively utilize culturally-responsive pedagogical strategies.

## **III. Major Course Topics:**

### **A. Getting into science teaching**

1. Thoughts and actions of beginning science teachers
2. Purpose of science teaching
3. Planning for science teaching
4. Assessing science learning
5. Teaching science
6. The science learning environment

### **B. Foundations for science teaching**

1. The nature of science and of engineering and technology
2. Inquiry and teaching science
3. Diverse adolescent learners and differentiated instruction
4. Learning in secondary schools

### **C. Strategies for science teaching**

1. Lecture, Discussion, and Demonstration
2. Science, engineering, and societal issues
3. Laboratory and Fieldwork
4. Safety in the Laboratory and Classroom
5. Computers and educational technologies