

University of Arkansas – Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913–3649
479–788–7000

General Syllabus

CHEM 4431 Laboratory Methods II

Credit Hours: 1

Lecture Hours: 0

Laboratory Hours: 3

Prerequisite: CHEM 4411 Laboratory Methods I

Effective: 2018-2019

I. Course Information:

A. Catalog Description

Practical experience in the design of laboratory and demonstration activities (including safety) on a topic, but applied to several levels of students and facilities. Students observe and assist in lab activities and evaluate results in consultation with instructor. Class may be repeated for a total of two hours.

B. Additional Information

This course is intended for majors in the physical/earth science secondary education degree program. The intent is to provide the student with specific content area experience at a relatively early point in the pursuit of the degree. The class is very much a hands on experience with assignments that support those activities. Students will be able to set up and present laboratory and demonstration activities to the class. If the class is repeated for credit it will be considered elective credit. If the class is repeated, effort will be made to ensure that the same project topic, course and/or instructor are not reassigned.

II. Student Learning Outcomes

A. Subject Matter

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

1. Assess specific areas of chemistry laboratory that students find particularly confusing or difficult to master.
2. Evaluate specific challenges a laboratory teacher faces in assisting students in learning chemistry.
3. Apply what is observed in working with laboratory students to multiple approaches in presentation of material in the physical science laboratory.

4. Assess and express a personal interpretation of a difficult concept for laboratory students studying physical sciences.
5. Apply and develop laboratory and demonstration materials to aid a student in understanding physical sciences.
6. Assess appropriate expectations of student activities and comprehension at various levels of education and appropriately assess and modify laboratory exercises to meet that level of expectation.
7. Apply and connect content material to laboratory exercises and demonstrations.
8. Evaluate laboratory safety issues; explain and practice recommended safety techniques.

B. University Learning Outcomes

Laboratory Method II enhances student abilities in the following general education areas:

Analytical Skills

Critical Thinking Skills: Students will identify a problem or issue and will research, evaluate, and compare information from varying sources in order to evaluate authority, accuracy, recency, and bias relevant to the problems/issues. The student will generate solutions/analysis of problems/issues evaluated and will assess and justify the solutions and/or analysis.

Communication Skills (written and oral)

Students will communicate proficiently. The student will compose coherent documents appropriate to the intended audience and effectively communicate orally in a public setting.

Ethical Decision Making

Students will model ethical decision-making processes. The students will identify ethical dilemmas and affected parties and will apply ethical frameworks to resolve a variety of ethical dilemmas.

Global & Cultural Perspectives

Students will reflect upon cultural differences and their implications for interacting with people from cultures other than their own. The students will demonstrate understanding or application of their discipline in a global environment and will demonstrate how their discipline impacts or is impacted by different cultures.

III. Major Course Topics:

- A. Many of the topics in chemistry will be touched upon as the students explore and study laboratory techniques.
- B. Learning styles of students in a laboratory situation.
- C. Student-teacher relationships and interactions.
- D. Laboratory safety practices, safety consideration for demonstration, and sources of information on laboratory safety.