

University of Arkansas - Fort Smith
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General Syllabus

CHEM 3991 Foundations of Chemistry Research

Credit Hours: 1 Lecture Hours: 0 Laboratory Hours: 3

Prerequisite: completion of at least 12 hours of chemistry and consent of the department head.

Effective: 2018~2019

I. Course Information

A. Catalog Description

Practical exposure to the concepts of literature searches, experimental design, data analysis, and presentation of results as they relate to chemistry research projects. May be repeated for a total of three hours.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

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

1. Conduct a literature search as it pertains to chemistry research
2. Design experiments pertaining to chemistry research
3. Interpret and analyze experimental data
4. Present research results

B. University Learning Outcomes

Foundations of Chemistry Research enhances student abilities in the following 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. Students 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. Students 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. 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. 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. Conduct literature search as it pertains to chemistry research with Scifinder®
- B. Design experiments pertaining to chemistry research
- C. Interpret and analyze experimental data
- D. Present research results