

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

General Syllabus

CHEM 3423 Biochemistry II

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: CHEM 3403 Biochemistry I

Effective: 2018~2019

I. Course Information

A. Catalog Description

Presentations of metabolic regulation, enzyme kinetics, protein biosynthesis, and application of biochemical principles to physiological processes.

II. Student Learning Outcomes

A. Subject Matter

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

1. Analyze and apply topics from Biochemistry I to major metabolic pathways, both anabolic and catabolic.
2. Analyze and apply topics from Biochemistry I to the control and energetics of metabolic pathways.
3. Relate regulation and control of cellular processes.
4. Identify, describe and discuss the origin, functions, and interrelationships among major classes of biochemical molecules.
5. Explain the energetic constraints of metabolic reactions and discuss how this relates to the maintenance of cells and organisms.
6. Explain how kinetic constraints govern metabolic reactions and how this regulates life processes and metabolism.
7. Analyze the three-dimensional nature of biomolecules and their biological activity.

B. University Learning Outcomes

Biochemistry II 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. Anabolic pathways
- B. Catabolic pathways
- C. Regulation and control of pathways
- D. Interaction of pathways
- E. Structure and properties of biomolecules