

Biochemistry I
CHEM 4320
Syllabus
Spring 2021

Instructor

Dr. Melissa Kelley

201-A Manion

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Google Classroom will be used as the LMS

Virtual Office Hours

Monday: 9:30-12:00

Wednesday: 9:30-12:00

Zoom Appointments are also available.

Class Meeting Time

MWF 11:00-11:50. Due to COVID-19 social distancing requirements, all lectures will be on-line. All lectures will be recorded and accessible using links provided in Google Classroom. We will have zoom discussions during the week to address any questions over material. All exams and quizzes will be conducted and submitted during normal class time MWF 10:00. It should be noted that this is not an online course, but a virtual course with both asynchronous and synchronous components.

Text

Biochemistry 7th Edition, J.M. Berg, J.L. Tymoczko, and L. Stryer (2012)

Course Description and Objectives

Biochemistry I is an intensive study of biomolecules and their properties including their structure, function, and metabolism. The objective of this course is for students to have an in-depth understanding of biomolecules including proteins, carbohydrates, nucleic acids, and lipids and their associated metabolism including bioenergetics and synthesis.

Course Prerequisites

Prerequisite Grade of C or better in CHEM 3411 and BIOL 1440. This course will require students to understand basic concepts from general chemistry and organic chemistry. These topics include but are not limited to: acid/base chemistry, shapes of molecules, organic functional groups and their reactions, oxidation/reduction reactions, thermodynamics, and equilibrium.

How to be successful in this course

1. **Lecture.** Students who do not keep up with lecture will not be successful in this course. Many of the topics I cover will not be presented in the book. You are responsible for the material covered in the lectures and the reading assignments. Attendance will be taken during our zoom discussions.

2. **Study time.** I recommend you devote between two and three hours per lecture study time.
3. **Biochemistry is a field that requires you to practice and think.** Biochemistry follows the same scientific laws that you have already learned and it is the application of these scientific laws to biological systems. Biochemistry is not a spectator sport and to be successful it requires hard work and lots of practice.
4. **Ask questions.** If you do not understand the concepts, I have presented in lecture ask. Biochemistry is a science in which one concept is built on another. Please do not be embarrassed, there is no such thing as a stupid question. Stupidity lies in not asking. Please feel free to utilize my office hours to ask.
5. **Be an interactive learner.** Ask questions and participate in class discussions. This is an excellent way to understand the material and hopefully you find many of the topics we cover are applicable to your life and your future career.

Important Notes:

1. Grade discussion by email will only be available using your UCA email account. I will not calculate your grade in the course for you.
2. I will not re-grade your assignments for additional partial credit. If I have made a mathematical calculation error, then the error can be discussed. You have one week to contact me about a mathematical error on your assignments, after that time period the grade stands.
3. Late work is never accepted.
4. I am available through email. Please feel free to contact me; however, I will typically respond during normal business hours.
5. I do not provide extra credit. There are plenty of opportunities for credit during the semester.
6. You must submit assignments in the manner requested and follow the directions concerning quizzes, exams, and assignments. Failure to follow the directions may result in a zero for that assignment.
7. If you have specific questions about exam material, do not wait until the last minute or the day before to ask questions or email me. I will not answer exam related questions the day before an exam.
8. If you miss a group zoom discussion meeting, they will be recorded and you will be provided the link. Prior to asking Kelley questions, make sure you have watched these links and all related lecture content.
9. To protect the privacy and intellectual property rights, course videos, student discussions, and other course materials are to be solely used for the individuals enrolled in this course. They may not be reproduced or shared in any way including posting electronically or posting on any websites. This includes lectures, slides and handouts, quizzes, exams and assignments. Any course material found

on websites is a violation of the UCA's academic integrity agreement and may result in failing the course.

What do I expect you to know and understand?

Everything we talk about in class. Test and quiz questions will require you to apply the principles we have discussed in class and are problems which you have not encountered before. I care that you understand structures and pathways.

Group Zoom Discussion Meetings

We will work as a class each week during our scheduled class time. We will have time to discuss the material for the week and address any questions. The schedule is provided in the syllabus.

Grading

Points Available
3 Exams @ 100 points each= 300 points
Case study assessment= 0-120 points
Quizzes = 0-180 points
Biochemical assignments= 0-100 points
Total points= 300-700 points

Grading Scale

A: 90%
B: 80%
C: 70%
D: 60%
F: 50%

Case Study Assessment (CSA)

You will have an opportunity to answer case study questions based on a glycolytic enzyme that is assigned to you by the instructor. Each student will be assessed on the biochemical knowledge with regard to biomolecule metabolism and associated blood chemistry.

Quizzes

The lowest quiz score will be dropped.

Missed Exams

A missed exam will be made up at my discretion. If you miss an exam for a **valid and significant reason**, and you contact me through email **significantly before** the schedule

exam, then we can discuss the possibilities of a make-up exam. If you contact me after the exam, no make-up will be given. I strongly suggest that you make every effort to attend exams and submit them on time. Failure to do so may result in a penalty to your grade or a zero for the assignment.

Biochemical Assignments

There will be an opportunity to complete a number of assignments during the semester. The assignments will be listed in Google classroom. These assignments are to be submitted digitally through Google Classroom and are not accepted late.

Lecture Schedule with Appropriate Book Chapters

***This is a tentative schedule—all dates and contents are subject to change**

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Date	Lecture Number	Topic	Chapter	Assignments
Jan 20	Lecture 1	Introduction		
Jan 22	Lecture 2	Introduction	1	
Jan 25	Lecture 3	"		
Jan 27	Lecture 4	Protein Structure and Function	2	Quiz #1
Jan 29	Lecture 5	"		
Feb 1	Lecture 6	"	3	
Feb 3	Lecture 7	Exploring Proteins		Quiz #2
Feb 5	Lecture 8	Exploring Proteins	3	Assignment 1 Due
Feb 8	Lecture 9	Enzymes Basic Concepts and Design	8	Quiz #3
Feb 10	Lecture 10	"		Assignment 2 Due
Feb 12		EXAM 1		EXAM 1
Feb 15	Lecture 11	"		
Feb 17	Lecture 12	Catalytic Strategies and Regulatory Strategies	7,9, & 10	Assignment 3 Due

Feb 19	Lecture 13	Catalytic Strategies and Regulatory Strategies		Quiz #4
Feb 22	Lecture 14	Regulatory Strategies		
Feb 24	Lecture 15	Carbohydrates	11	Assignment 4 Due
Feb 26	Lecture 16	Carbohydrates		Quiz #5
Mar 1	Lecture 17	Metabolism: Basic Concepts and Design	15	
Mar 3	Lecture 18	Metabolism: Basic Concepts and Design	15	Assignment 5 Due
Mar 5	Lecture 19	"		Quiz 6
Mar 8	Lecture 20	Glycolysis and Gluconeogenesis	16	
Mar 10	Lecture 21	"		Assignment 6 Due
Mar 12	Lecture 22	"		Quiz #7
Mar 15	Lecture 23/24	"		
Mar 17		EXAM 2		EXAM 2
Mar 19	Lecture 25	Glycogen Metabolism		
Mar 22-26	Spring Break			
Mar 29	Lecture 26	Pentose Phosphate Pathway	21	
Mar 31	Lecture 27	Citric Acid Cycle		
April 2	Lecture 28	ETC and Oxidative Phosphorylation	20 17	
April 5	Lecture 29	Lipids and Cell Membranes	18	Quiz #8
April 7	Lecture 30	"	12	Assignment 6 Due
April 9	Lecture 31	Fatty Acid Metabolism	12	
April 12	Lecture 32	"	22	Quiz #9 Last Day to Drop
April 14	Lecture 33	"		Assignment 7 Due
April 16	Lecture 34	"		
April 19	Lecture 35	Amino Acid Metabolism		Quiz #10
April 21	Lecture 36	Amino Acid Metabolism & Integration of Metabolism	23 and 24	
April 23		EXAM 3		EXAM 3
April 26	Lecture 37	Integration of Metabolism	27	
April 28		Case Study Assessment		CSA
April 30		No Class-Study Day		

Group Meeting Zoom Schedule

All meeting will be conducted by Zoom starting at 11:00 am. Zoom links to discussions will be posted in Google Classroom.

Zoom Meeting Date	Discussion Topic	Lectures
Jan 20	Syllabus Information	
Jan 25	Intermolecular forces/amino acids	1-2
Feb 1	Acid Base	3-5
Feb 5	Binding pockets/hydrolysis	6-7
Feb 10	Exam 1 Review	1-8
Feb 17	Kinetics	9-11
Feb 24	Mechanism/Hemoglobin	12-14
Mar 3	Thermodynamics/Carbs	15-17
Mar 10	Carb Metabolism	18-20
Mar 15	Exam 2 Review	9-22
March 31	Gluconeogenesis/Glycogen/PPS	23-26
April 7	TCA/ETC/Ox.Phos	27-29
April 14	Ox Phos/Lipids	30-32
April 21	Exam 3 Review	23-35
April 26	CSA Review	36-37

*The instructor reserves the right to modify the course requirements and other related policies as circumstances arise with sufficient notification to students. Even the professor can have an unanticipated emergency. During these times, our University or the Conway community may experience an unanticipated emergency that requires changing the class schedule or requirements. I DO NOT expect to invoke this clause, but if I do, you will be notified as soon as possible.

University Academic Policies

Academic Integrity	The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.
Disabilities Statement	The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Disability Resource Center, 450-3613.
Building Emergency Plan	An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at http://uca.edu/mysafety/bep/ . Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.
Title IX Disclosure	If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs, and the obligation to conduct an investigation will depend on the specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: https://uca.edu/titleix . *Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.
Course Evaluations	<p>Evaluations are kept completely confidential. Your thoughtful feedback is highly valued and cannot negatively or positively affect your course grade. Over the years this information has changed and improved the instruction of this course.</p> <p>Student evaluations of a course and its professor are a crucial element in helping faculty achieve excellence in the classroom and the institution in demonstrating that students are gaining knowledge. Students may evaluate courses they are taking starting on the Monday of the thirteenth week of instruction through the end of finals week by logging in to myUCA and clicking on the Evals button in the top right.</p>
Student Handbook Policies	You are encouraged to familiarize yourself with student policies described in the student handbook. In particular, carefully read and understand those policies pertaining to academic issues and sexual harassment.