

CHEM 4336 Section 001**Biochemistry II****Spring 2025****Instructor:** Dr. Dustin Patterson**Office:** Ratliff Building South, Room 3028**Phone:** 903-565-5623**Email:** dpatterson@uttyler.edu**Office Hours:** Tuesday 9:30-10:30 am, Thursday 1:30-3:30 pm, and by appointment.**Lecture:** Monday, Wednesday, and Friday 8:00 am-8:55 pm in Soules College of Business (COB) room 103.**Text:** Biochemistry: Concepts and Connections by D.R. Appling, S.J. Anthony-Cahill, and C.K. Matthews.**Equipment:** Pencils, scientific calculator, and ruler.**Course Resources:** Additional materials will be provided as either handouts or through the course Canvas site.

Course Content: Biochemistry II (CHEM 4334) is the second part in a two-part course series providing an introduction to fundamental principles and techniques in the chemistry of life, biochemistry. This course will continue on from Biochemistry I looking at central metabolic processes common to life, the chemical logic behind the pathways, and the regulatory mechanisms that control fluxes through pathways. In addition, an in depth look at signal transduction and coordination of biological process will be evaluated to understand how external and internal stimuli are communicated and lead to cellular responses.

Course Learning Objectives:

- Learn how biologic systems perform energy transduction via chemical processes carried out through metabolic pathways and principles for regulation of metabolic pathways
- Learn fundamentals in thermodynamic driving forces that power metabolism
- Learn methods of regulation in metabolic systems
- Examine the connectivity of metabolic pathways and their interplay for maintaining living systems
- Learn the molecular basis of cellular signaling and communication

Grade Distribution:

Grades will be determined by your performance on several regular exams, in addition to a final cumulative exam. Examinations will cover all materials from text, lectures, and any assigned materials. The breakdown of these components to your final grade is as follows:

Regular Exams (4)	80% (20% each)
Final Exam	<u>20%</u>
Total	100%

Final grades will be determined on a standard grading scale of A 90-100%, B 80-89%, C 70-79%, etc. Incentive points may be added, based on initiative, class participation, and improvement in the course.

Academic Honesty

Cheating of any kind will not be tolerated. Please make yourself aware of the university policy for academic dishonesty in the *Student Guide to Conduct and Discipline at UT Tyler*. During examinations only writing utensils, a calculator (non-programmable), and ruler are the only things that will be allowed on your desk, in addition to scrap paper that will be provided. All questions concerning the exam should be directed to the instructor and any talking amongst students may be punishable by point deductions as the instructor sees fit.

NOTE THE POLICY FOR SMART DEVICES BELOW.

Cell phones and smart watches/electronic devices must be put away during exams. If they are observed out in a visually accessible place (i.e. between legs, on the floor, etc.), it will be assumed that they are being used to cheat and your exam will be taken, you will receive a zero score (0 points) for the exam, and you will be referred to the Office of Judicial Affairs.

Recording of lectures, office hours, or study sessions is not allowed without prior consent.

Artificial Intelligence Use Policy:

For this course, artificial intelligence (AI) use on assignments is not permitted. The work submitted by students in this course will be generated by themselves. It is to the benefit of the student that any homework assigned be done by the student without any AI services. Any instance of the following constitutes a violation of UT Tyler's Honor Code: a student has another person/entity do any portion of a graded assignment, which includes purchasing work from a company, hiring a person or company to complete an assignment or exam, using a previously submitted assignment and/or using AI tools (such as ChatGPT).

Attendance and make-up policy:

Course attendance is expected and is to the benefit of the student. Missing class will likely adversely affect a student's exam performance and will not allow any addition of potential incentive points to their final grade. The instructor should be notified of any expected absences according to the University of Texas at Tyler guidelines and may be excused for reasons allowed by the university (see statements below). Make-ups will be allowed only for reasons outlined in the University of Texas at Tyler bylaws (see below).

Census and Withdraw Dates:

The Census Date is January 27, 2025, and the Last Day to Withdraw is March 31, 2025.

Tentative Lecture Schedule

- 01/13/25 Lipids, Membranes (Ch. 10, p. 301-316)
01/15/25 Lipids, Membranes (Ch. 10, p. 301-316)
01/17/25 Cellular Transport (Ch. 10, p. 317-331)
01/20/25 No Class—Martin Luther King Jr. Day
01/22/25 Chemical Logic of Metabolism (Ch.11, p. 335-358)
01/24/25 Carbohydrate Metabolism: Glycolysis (Ch. 12, p. 369-384)
01/27/25 Carbohydrate Metabolism: Glycolysis Mechanisms and Gluconeogenesis (Ch. 12, p. 369-393)
01/29/25 Metabolism: Glycolysis/Gluconeogenesis Regulation
01/31/25 Pentose Phosphate Pathway (Ch. 12, p. 393-410)
02/03/25 Overall Carbohydrate, Cellular Placement, Entry to Mitochondria
02/05/25 The Citric Acid Cycle (Ch. 13)
02/07/25 **Exam 1** (Ch. 10-12)
02/10/25 The Citric Acid Cycle (Ch. 13)
02/12/25 The Citric Acid Cycle (Ch. 13)
02/14/25 Electron Transport, Oxidative Phosphorylation (Ch. 14)
02/17/25 Electron Transport, Oxidative Phosphorylation (Ch. 14)
02/19/25 Putting the Metabolic Pathways Together (Ch 12-14)
02/21/25 Photosynthesis (Ch. 15)
02/24/25 Photosynthesis (Ch. 15)
02/26/25 Lipid Metabolism (Ch. 16)
02/28/25 Lipid Metabolism (Ch. 16)
03/03/25 Lipid Metabolism (Ch. 16)
03/05/25 Lipid Metabolism (Ch. 16)
03/07/25 **Exam 2** (Ch. 13-15)
03/10/25 Amino Acid and Nitrogen Metabolism (Ch. 18)
03/12/25 Amino Acid and Nitrogen Metabolism (Ch. 18)
03/14/25 Amino Acid and Nitrogen Metabolism (Ch. 18)
03/17/25, 03/19/25 and 03/21/25 No Class—Spring Break
03/24/25 Nucleotide Metabolism (Ch. 19)
03/26/25 Nucleotide Metabolism (Ch. 19)
03/28/25 Nucleotide Metabolism (Ch. 19)
03/31/25 Interorgan and Intracellular Coordination of Energy Metabolism (Ch. 17)
04/02/25 Interorgan and Intracellular Coordination of Energy Metabolism (Ch. 17)
04/04/25 **Exam 3** (Ch. 16,18, 19)
04/07/25 Interorgan and Intracellular Coordination of Energy Metabolism (Ch. 17)
04/09/25 Introduction to Biosignaling (Ch. 20)
04/11/25 Biosignaling: G-Protein Signaling (Ch. 20, p. 625-636)
04/14/25 Biosignaling: Receptor Tyrosine Kinase Signaling (Ch. 20, p. 636-648)
04/16/25 Biosignaling: Neurotransmission (Ch. 20)
04/18/25 Connecting Signaling to Metabolism
04/21/25 Putting Metabolism Together
04/23/25 **Exam 4** (Ch. 17 and 20)
04/25/25 Wrap-Up

04/30/25 Final Exam 8-10am

Final Exam: Wednesday, April 30, 2025, from 8-10 am in regular classroom. See [spring-2025-final-exam-schedule.pdf](#) for the link to the official schedule.

I reserve the right to make modifications as needed to the course. This will be done in accordance with university bylaws.

See links below for additional information about student resources and University policies.

[Student Resources](#)

[University Policies and Information](#)