BCHM 3030 GENERAL INTERMEDIARY METABOLISM (4 credit hours)

Elmira College

SPRING 2025

Required Text:

Christopher Mathews, Kensal van Holde, Dean Appling, Spencer Anthony-Cahill (2012). ***Biochemistry*** (4th ed.). Pearson.

Supplemental readings might be included to illustrate or expand on textbook readings.

Pre-requisites: BIOL 1450 Introduction to Cell and Molecular Biology

Course Description

The course provides an overview of the biochemical processes involved in the metabolism of carbohydrates, lipids, and proteins in living organisms. Students will learn about the major metabolic pathways and their regulation, as well as the interconversion of macronutrients and the generation of energy. The course will cover topics such as glycolysis, the TCA cycle, oxidative phosphorylation, lipid metabolism, protein metabolism, Amino Acids and metabolic adaptations, etc. Through lectures, assignments and quizzes, students will gain a foundational understanding of intermediary metabolism and its significance in biological systems.

Course Objectives and Goals

- Understand the fundamental principles of intermediary metabolism and its role in cellular energy production and regulation.
- Gain knowledge of the major metabolic pathways and their regulation.
- Comprehend the interconversion of macronutrients and their roles in energy generation and storage.
- Recognize the significance of intermediary metabolism in biological systems and its implications for health and disease.
- Apply acquired knowledge to solve problems and propose strategies for metabolic regulation and intervention.

Evaluation of Performance

Your grade will be based upon your performance on exams, assignments, and participation.

4 Labs and Reports	20%
6 Assignments	30%
2 Quizzes	20%
Midterm Exam	15%
Final Exam	15%
Total	100%

Grades will be assigned as follows:

A	93% and above	B-	80 - 82%	D+	67 - 69%
A-	90 - 92%	C+	77 - 79%	D	63 - 66%
B+	87 - 89%	C	73 - 76%	D-	60 - 62%
B	83 - 86%	C-	70 - 72%	F	59% or below

Withdrawal Policy: Please see Elmira College Bulletin for information on this policy.

Academic Honesty: Please read the section on Academic Honesty in the **Code of Conduct**. Briefly, academic dishonesty includes: cheating, fabrication, facilitating academic dishonesty, and plagiarism. Ask if you have any questions on whether something constitutes as academic dishonesty. All work must be original and new. Past assignments from current or other courses will not be accepted. Academic dishonesty will not be tolerated. It will result in zero on the assignment, and a report will be filed with the school. Continued practice will result in failure of the class. Institutional penalties may also apply with repeated acts of academic honesty.

Student Responsibility:

- It is your responsibility to keep track of assignments and due dates.
- You should ask questions concerning assignments and lectures, if you need any clarifications.
- If you are struggling in class, have concerns, and/or unsure about expectations, please stop by during office hours or make an appointment for another time.

Tentative Schedule of Topics

Topic	Materials	Tasks & Evaluations
Introduction to Metabolism	Chapter 1	
Chemical Foundations of Biochemistry	Chapter 2	
Carbohydrates & Glycolysis	Chapter 3	Assignment #1
Gluconeogenesis	Chapter 4	Lab #1 and Report
Pentose Phosphate Pathway & Glycogen Metabolism	Chapter 5	Quiz #1
Tricarboxylic Acid Cycle	Chapter 6	Assignment #2
Electron Transport and Oxidative Phosphorylation	Chapter 7	Lab #2 and Report
Diabetes and Intermediary Metabolism	Chapter 8	Assignment #3
Metabolism and Biosynthesis of Fatty Acid	Chapter 9	
Biosynthesis of Triglycerides and Cholesterol	Chapter 10	Midterm Exam
Lipoprotein Metabolism	Chapter 11	
Regulation of Cholesterol Biosynthesis	Chapter 12	Assignment #4
Proteins Metabolism	Chapter 13	Lab #3 and Report
Amino Acids and Peptides	Chapter 14	
Amino Acid Deamination & the Urea Cycle	Chapter 15	Assignment #5
Amino Acid Biosynthesis & Regulation	Chapter 16	Quiz #2
Obesity & Metabolic Syndrome	Chapter 17	Lab #4 and Report
Hormonal Control of Appetite	Chapter 18	Assignment #6
Hormones and the Control of Metabolism	Chapter 19	
Metabolism and Exercise	Chapter 20	Final Exam