BIO/BICHM 346: Biochemistry

Instructor: Professor Wei-Jen Chang (TSC 2085)
Meeting Times: 09:00 AM-09:50 AM or 10:00 AM-10:50 AM
Meeting Days: Monday, Wednesday, Friday
QSR Drop-in Times: M 4-7 pm and R 4-6 pm
QSR Facilitated Group Study: TBD
Chang Office Hour (TSC 2085): R 8:30-10:00 AM

Course Description

In this class we will learn in details how major macromolecules are catabolized and synthesized in (human) cells. Physiological effects associated with the homeostasis of these molecules will also be discussed. In addition, we will examine properties and kinetics of enzymes, and chemical properties of macromolecules and their monomers.

Reference Textbooks

Biochemistry: The Molecular Basis of Life, 7th edition (McKee and Mckee, Oxford University Press).

Course Schedule

Fri Aug 29 2025 (Week 1)

Introduction

Mon Sep 01 2025 (Week 2)

Integration of Metabolism (Chapter 16)

Wed Sep 03 2025

Integration of Metabolism (Chapter 16)

Fri Sep 05 2025

Quiz 1. Integration of Metabolism (Chapter 16)

Mon Sep 08 2025 (Week 3)

Enzymes (Chapter 6)

Wed Sep 10 2025

Enzymes (Chapter 6)

Fri Sep 12 2025

Enzymes (Chapter 6)

Mon Sep 15 2025 (Week 4)

Quiz 2. Carbohydrates (Chapter 7)

Wed Sep 17 2025

Carbohydrates (Chapter 7)

Fri Sep 19 2025

Carbohydrates (Chapter 7)

Mon Sep 22 2025 (Week 5)

Quiz 3. Glycolysis (Chapter 8)

Wed Sep 24 2025

Glycolysis (Chapter 8)

Fri Sep 26 2025

Glycolysis (Chapter 8)

Mon Sep 29 2025 (Week 6)

Gluconeogenesis (Chapter 8)

Wed Oct 01 2025

Glycogen (Chapter 8)

Fri Oct 03 2025

Quiz 4. Glycogen (Chapter 8) Other Sugars (Chapter 9)

Mon Oct 06 2025 (Week 7)

Pentose Pathway (Chapter 8)

Wed Oct 08 2025

Review Session

Fri Oct 10 2025

No Class

Exam I

Mon Oct 13 2025 (Week 8)

TCA Cycle (Chapter 9)

Wed Oct 15 2025

TCA Cycle (Chapter 9)

Fri Oct 17 2025

Fall break

Mon Oct 20 2025 (Week 9)

Quiz 5. Electron Transport Chain (Chapter 10)

Wed Oct 22 2025

Electron Transport Chain (Chapter 10)

Fri Oct 24 2025

Carbohydrate Digestion and Absorption

Mon Oct 27 2025 (Week 10)

Lipids (Chapter 11)

Wed Oct 29 2025

Fatty Acid Breakdowns (Chapter 12)

Fri Oct 31 2025

Fatty Acid Breakdowns (Chapter 12)

Mon Nov 03 2025 (Week 11)

Quiz 6. Fatty Acid Synthesis (Chapter 12)

Wed Nov 05 2025

Fatty Acid Synthesis (Chapter 12)

Fri Nov 07 2025

Cholesterol (Chapter 12)

Mon Nov 10 2025 (Week 12)

Cholesterol (Chapter 12)

Wed Nov 12 2025

Review Session

Fri Nov 14 2025

Protein Metabolism (Chapter 15)

Exam II

Mon Nov 17 2025 (Week 13)

Protein Metabolism (Chapter 15)

Wed Nov 19 2025

Urea Cycle (Chapter 15)

Fri Nov 21 2025

Urea Cycle (Chapter 15)

Mon Nov 24-29 2025 (Week 14)

Thanksgiving break

Mon Dec 01 2025 (Week 15)

Urea Cycle (Chapter 15)

Wed Dec 03 2025

Amino Acids (Chapter 14)

Fri Dec 05 2025

Quiz 7. Amino Acids (Chapter 14)

Mon Dec 08 2025 (Week 16)

Nucleotides (Chapter 14)

Wed Dec 10 2025

Nucleotides (Chapter 14)

Fri Dec 12 2025

Nucleotides (Chapter 14)

Mon Dec 16 2025 Final Exam 7:00 pm – 10:00 pm [10am class] or

Thu Dec 19 2025 9:00 am – 12:00 pm [9am class]

Tentative scopes/subjects of quizzes

Q1. Names, structures, sidechain properties, and abbreviations of 20 life-building amino acids.

Q2. Review of enzymes

Q3. Enzymes, compounds, and reactions in glycolysis

Q4. Review from carbohydrates to glycogen pathway

Q5. Enzymes, compounds, and reactions in the TCA cycle

Q6. Lipids and fatty acid breakdown

Q7. Urea cycle

Exams

The two midterm exams are scheduled for two Fridays from **7–9 PM in G027, Taylor Science Center**. Both the midterms and the final exam are cumulative and closed-book. Each exam is designed to be completed within one to two hours. If, for any reason, you cannot take an exam at the scheduled time or need to take it in a different location, we can arrange this through the testing center. Please note, however, that all midterms must be completed no later than the Tuesday following the scheduled Friday.

Review sessions

The Wednesday classes before the exam.

Extra credits

The key to success in this class is simply staying on track. Yes, this includes memorizing vocabulary every day and every week as you learn a new language. Using office hours and/or QSR tutors are good ways to help ensure that you are not falling behind. To encourage you to get to know QSR tutors and/or me, please come to the QSR drop-in hours and/or my office hours at least three times before October 20, or sign up and participate in the facilitated group study.

AI policies

It is okay if you want to use AI to help you learn biochemistry. While most of the knowledge AI tools present may be correct, the information can also be presented as a 'partial truth'. I encourage your learning, and if you decide to use AI, please go to the bottom all the way. Try not just to use it to find a quick answer, as this generally does not help you learn anything.

Final grades

70% Lecture + 30% Lab

Total Lecture Points ~ 450 (Each midterm is ~ 100 pts, Final ~ 140 pts, Total quizzes ~ 100 pts)