



Biochemistry 201: Survey of Biochemistry

Credits: 3

Course Designations and Attributes:

- Breadth - Biological Science
- Level - Introductory
- L&S Credit - Counts as Liberal Arts and Science credit in L&S

Meeting Time and Location: To be determined

Instructional Mode: all face-to-face

How Credit Hours are Met by the Course:

- Three hours (i.e. 50 minutes) of classroom with direct faculty instruction and a minimum of six hours of out of class student work each week over approximately 15 weeks

Instructors:

- Professor Hazel M. Holden
- Professor Ivan Rayment
- Professor Paul Friesen

Instructor Availability:

- Immediately after class or by appointment

Instructor Email/Preferred Contact:

- Room 3424A BSB, phone: 262-4988 Hazel_Holden@biochem.wisc.edu
- Room 3424B BSB, phone: 262-0437 Ivan_Rayment@biochem.wisc.edu

Official Course Description: In this course we will explore the basic chemical properties of proteins, lipids, carbohydrates, and nucleic acids and their roles in metabolic pathways and gene expression. Current biochemical techniques utilized to investigate these macromolecules will also be described. Finally, the role of vitamins in human health will be discussed.

Prerequisites:

- CHEM 104 or equivalent

Course Learning Outcomes:

Overview: Biochemistry 201 is an introductory level course that provides a broad, yet detailed survey of fundamental concepts in modern biochemistry. It is designed as a one semester course for non-biochemistry majors, including but not limited to those students in the nursing, animal, and dairy science programs.

Specific Learning Outcomes:

- Understand basic concepts of macromolecule structure and function
- Understand the chemical concepts involved in both anabolic and catabolic pathways
- Understand the basics of gene expression and regulation
- Understand modern biochemical techniques used to study proteins and nucleic acids

Grading:

- Two exams (100 points each), five short quizzes throughout the semester (20 points each), and a final exam (200 points)
- The total number of points is 500

Grade Distribution:

A 90% and above
AB 88-89%
B 80-87%
BC 78-79%
C 70-77%
D 61-69%
F 0-60%

Required Textbook, Software & Other Course Materials:

- Biochemistry by T. A. Brown, First Edition (2017)

Exams, Quizzes, Homework, & Other Graded Assignments:

- There will be three exams. The first two will occur during the class period at the times defined in the course outline at the end of this document. The final exam will be given during the official end-of-term examination period (TBD). The final exam is cumulative. The exams will be closed-book with no access to electronic devices. The exams are worth a total of **400 points**.
- There will be five short quizzes given during the class period to encourage the students to keep up with the lectures. These quizzes will constitute a total of **100 points**.

Preliminary Outline of Lectures for Spring 2019

Lecture	Reading Assignment	Date
Introduction Cells and Organisms	Chapters 1 and 2	Jan. 23
Review of General and Organic Chemistry	Biological Chemistry handouts	Jan 25
Protein Structure	Chapter 3	Jan 28
Protein Structure		Jan 30
Protein Structure		Feb 1
Short quiz/Nucleic Acids	Chapter 4	Feb 4
Nucleic Acids		Feb 6
Lipids	Chapter 5	Feb 8
Lipids		Feb 11
Lipids		Feb 13
Carbohydrates	Chapter 6	Feb 15
Carbohydrates		Feb 18
Exam No. 1		Feb 20
Enzymes	Chapter 7	Feb 22
Enzymes		Feb 26
Enzymes		Feb 28
Short quiz/Glycolysis	Chapters 8 and 9	Mar 1
Glycolysis/TCA cycle		Mar 4
TCA cycle		Mar 6
Photosynthesis	Chapter 10	Mar 8
Photosynthesis		Mar 11
Carbohydrate Metabolism	Chapter 11	Mar 13
Short quiz/Lipid Metabolism	Chapter 12	Mar 15

Lipid Metabolism		Mar 25
Lipid Metabolism		Mar 27
Nitrogen Metabolism	Chapter 13	Mar 29
Nitrogen Metabolism		Apr 1
Exam No. 2		Apr 3
DNA Replication and Repair	Chapter 14	Apr 5
DNA Replication and Repair		Apr 10
RNA Synthesis	Chapter 15	Apr 12
Short quiz/Protein Synthesis	Chapter 16	Apr 15
Protein Synthesis		Apr 17
Control of Gene Expression	Chapter 17	Apr 19
Control of Gene Expression		Apr 22
Short quiz/Methods	Chapter 18	Apr 24
Methods for Studying Proteins		Apr 26
Methods for Studying DNA/RNA	Chapter 19	Apr 29
Role of Vitamins in Biology	Handouts	May 1
Why Take Biochemistry 201?		May 3

Rules, Rights, and Responsibilities:

See the Guide's [Rules, Rights and Responsibilities](#)

Academic Integrity:

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

Accommodations for Students with Disabilities:

McBurney Disability Resource Center Syllabus Statement: "The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform Professor Holden of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Professor Holden will work either directly with the student or in coordination with the McBurney Center to identify and provide

reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." <http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>

Diversity & Inclusion:

Institutional Statement on Diversity: "Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals."

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world." <https://diversity.wisc.edu/>