

CHEM 3785 - Biochemistry 1

Fall 2026 Syllabus, Section 02, CRN 40766,

Credit hours: 3

Instructor

Michael Serra

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Public Instructor Information

Instructor Title: Doctor

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Course Description

3785. Biochemistry 1. Structure and function of proteins, nucleic acids, and carbohydrates. Includes techniques of protein purification and analysis, the study of enzyme catalysis and kinetics. Study of the organization and regulation of metabolic pathways: glycolysis, the citric acid cycle, and oxidative phosphorylation. Prereq.: "C" or better in CHEM 3720. 3 s.h.

Course Readings

Group	Title	Author	ISBN
	Fundamentals of Biochemistry 5th edition	Voet, Voet, and Pratt	ABS

The bookstore carries only the 6th edition. You can likely find a 5th edition copy through Amazon, e-bay or an online bookstore.

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Schedule of Topics and Assignments

Day	Date	Reading(s)	Proposed Topic	Due/To Prepare for Class
Mon	8/24	2.1 A,B	Physical Properties of Water	
Wed	8/26	2.1C, 2.2 A,B	Hydrophobic Effect, Chemical Properties of Water	
Fri	8/28	2.2C	Buffers	
Mon	8/31	3.1, 3.2A,B, 3.3A	Nucleotides, Nucleic Acid Structure	
Wed	9/2	3.3B, 4.1A,C,D,E	Genes Direct Protein Synthesis Amino Acid Structure	
Fri	9/4	4.1B, 4.2, 5.1, 6.1A	The Peptide Bond, Stereochemistry Polypeptide Diversity Peptide group	Online Quiz 1: Ch. 2 and 3.1 – 3.2A,B
Mon	9/7	Labor day, no classes		
Wed	9/9	6.1B,D, 6.2B,C	Secondary and Tertiary Structure	
Fri	9/11	6.3, 6.4A	Quaternary Structure, Protein Stability	Online Quiz 2: Ch. 4, 5.1, 6.1 and 6.2
Mon	9/14	6.4B, 5.2B	Denaturation Salting Out	
Wed	9/16	5.2C	Chromatography	
Fri	9/18	5.2D	Electrophoresis	
Mon	9/21	Exam 2: Ch. 2, 3, 4, 5.1 – 5.2C, 6		

Wed	9/23	5.3 A,B,C	Protein Sequencing	
Fri	9/25	7.1A	Myoglobin	
Mon	9/28	7.1B,C,D	Hemoglobin and Cooperativity	
Wed	9/30	7.1D	Hb: An Allosteric Protein	
Fri	10/2	7.1E, 8.1A	Sickle Cell Anemia Monosaccharides	Online Quiz 3: Ch. 5.2D, 5.3, 7A-D
Mon	10/5	8.1B,C, 8.2A,C	Glycosidic bonds, Polysaccharides	
Wed	10/7	11.1A,B,C	Properties of Enzymes	
Fri	10/9	11.2, 11.3A-E	Transition State Theory, Catalytic Mechanisms	
Mon	10/12	11.4A,B	Lysozyme: acid-base catalysis	
Wed	10/14	11.5A,B,C	Serine Proteases: covalent catalysis	Online Quiz 4: Ch. 8, 11.1 – 11.4 A,B
Fri	10/16	12.1B	Enzyme Kinetics: The Michaelis-Menten Eqn.	
Mon	10/19	Exam 2: Ch. 5.2D-5.3C, 7, 8, 11		
Wed	10/21	12.1C, 12.2A, B	Finding Vmax and KM, Enzyme Inhibition	
Fri	10/23	12.3A	ATCase: An Allosteric Enzyme	
Mon	10/26	1.3C,D 14.1A,B	Free Energy Review Overview of Metabolism	
Wed	10/28	14.1C,D,E, 14.2A	Overview of Metabolism, ATP	Online Quiz 5: Ch. 1 and 12
Fri	10/30	14.2B,C,D, 14.3A	Coupled Rxns., Other "High-Energy" Cmpds.	
Mon	11/2	14.3B, C	Reduction Potential and Free Energy	
Wed	11/4	15.1, 15.2A	Overview of Glycolysis, Rxns. of Glycolysis	
Fri	11/6	15.2B-J	Reactions of Glycolysis	
Mon	11/9	15.3A-C, 15.4A	Fermentation, Control of Glycolysis	Online Quiz 6: Ch. 14, 15.1 – 15.2
Wed	11/11	Veteran's Day, no classes		
Fri	11/13	15.5A,B,C	Metabolism of Hexoses Other than Glucose	
Mon	11/16	17.1, 17.2A,B	Overview of the Citric Acid Cycle, Synthesis of acetyl-CoA	
Wed	11/18	Exam 3: Ch. 1, 12, 14, 15		
Fri	11/20	17.3A-H	Reactions of the CAC	
Mon	11/23	17.4A,B, 17.5A,B	Regulation of the CAC, Rxns. Related to the CAC	
Wed	11/25	University open, no classes		
Fri	11/27	No classes		
Mon	11/30	18.1A, 18.2A,B	The Mitochondrion, Electron Transport	Online Quiz 7: Ch. 17
Wed	12/2	18.2C,D,E,F, 18.3A,B	Electron Transport, Oxidative Phosphorylation	
Fri	12/4	18.3C,D, 18.4A,B	P/O Ratio, Uncoupling, Control of Oxidative Metabolism	
Mon	12/7	Comprehensive Final Exam		1:00 p.m. – 3:00 p.m

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.