

Chem 473 Biochemistry I

Fall 2016

Tues 10:00-11:25

FMH 110

Instructor: Edgardo T. Farinas, PhD

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Office Hours: Weds 10:00-12:00 or by appointment

Class questions will not be answered by email. You must come to office hours.

Text: Biochemistry; R. H. Garrett and C. M. Grisham; 5th edition; Brooks/Cole Cengage Learning; ISBN-13: 978-1-133-10629- Course description: Covers advanced topic in Biochemistry.

Learning outcomes

At the end of this course the student will:

1. Explain basic elements of structure of amino acids, proteins, nucleic acids, carbohydrates and lipids
2. Describe higher order structure in proteins and relate it to function
3. Illustrate examples to demonstrate that structure determines function
4. Demonstrate the role of the intermolecular forces in macromolecular structure and function
5. Apply knowledge of chemical kinetics in understanding enzyme catalysis and mechanism
6. Interpret kinetic data and identify types of enzyme inhibition
7. Write and describe the key biosynthetic pathways in living systems
8. Apply thermodynamic principles to understand energy production in biological systems
9. Discuss Electron transport and energy production
10. Discuss biochemical processes: replication, transcription, translation
11. Explain biosynthesis of proteins

Point scheme:

3 mid terms (Mondays): **100 points each**

Finals: **150 points**

HW Assignment: **150 points**

Total 600 points

The NJIT honor code will be upheld, and that any violations will be brought to the immediate attention of the Dean of Students.

Students will be consulted by the instructor and must agree to any modifications or deviations from the syllabus throughout the course of the semester.

Week	Topic	Textbook Chapter correlation
Week 1: Sep 1 st -5	Biochem overview, Water	1-3
Week 2: Sep 7 th -12	Amino acids, Protein structure, primary secondary, tertiary protein function	4-6
Week 3: Sep 13-19	Protein structure function relationship, structural motifs, membrane proteins	
Week 4: Sep 20-26	CATALYSIS Kinetics, Enzyme mechanism, plotting kinetics, inhibition, drug mechanism allosteric inhibition, Hb and Myo	13-15
Week 5: Sep 27 th -Oct 3	Exam 1 Proteins , enzymes	
Week 6: Oct 4-10	Carbohydrates: Structural aspects, monosaccharides, polysaccharides	7
Week 7: Oct 11-17:	Lipids, structure, function, Vitamins and coenzymes	8
Week 8: Oct 18-24	ENERGY TRANSDUCTION: Metabolism, Catabolism, citric acid cycle oxidative phosphorylation	17
Week 9: Oct 25-Oct 31:	Exam 2: Lipids, carbohydrates, exam	
Week 10: Nov 1-7	Nucleic Acids, RNA, DNA: structure, function, DNA synthesis, recombinant DNA	10-13
Week 11: Nov 8-14	Transcription	29
Week 12: Nov 15-21	Translation	30
Exam 3, Nov 24:	Exam 3: Biological information processing	
Week 14: Nov 29-Dec 5	Control of energy production and essential macromolecules	17-20
Week 15: Dec 6-12	Review	