CHEM 6600
BIOCHEMISTRY I
Fall 2019

Instructor:
Dr. Ming Luo
Email:mluo@gsu.edu
Phone:404-413-6608

Lecture Schedule & Room:
Monday, Wednesday and Friday 5:30-6:50 pm;
230 Petit Science Center (CLSO, 65 seats)

Office Hours:

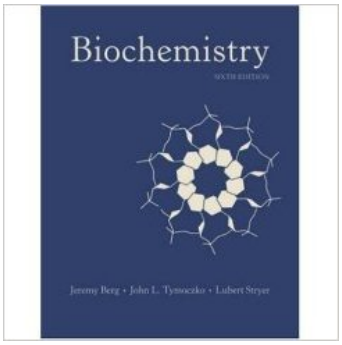
4:00pm-5:00pm, NSC 585, Monday and Wednesday. Appointment by email.

Students are required to bring their lecture notes.

Office hours are suspended the day of the exams, and no questions will be answered on the day of the exams.

Students desiring to discuss more in-depth about a topic or career plans may schedule an appointment via email.

Textbook:
Biochemistry, 8th edition, by Berg, Tymoczko, Gatto, and Stryer is a good reference, but not required.



Top Hat:
You are required to register for a Top Hat account (https://tophat.com). This App will be used during each lecture for student participation and answering quizzes.

Course Objective:
A comprehensive and integrated review of modern biochemistry with emphasis on proteins, enzymes, nucleic acids, carbohydrates, lipids, regulation and control of enzymes and metabolism, bioenergetics, nucleotide metabolism, protein synthesis, and cellular sensing mechanisms. There is a total of 32 in-class lectures.

Tests and Assignments:
Four in-class exams of 100 points each,
and four quiz sections of 20 points each
(every section consists of four 5 point quizzes)
(the lowest score of one period will be dropped) = 300
One comprehensive final exam = 200
Total = 500

Exams schedule (Please mark your calendar):
September 20 (F) class exam 1
October 14 (M) class exam 2
November 6 (W) class exam 3
December 6 (F) class exam 4

December 13 (F) final exam
No make-ups or rescheduling of exams will be carried out under any circumstance

The final grade will be counted against the possible points out of 500 (3 class exams/quizzes + final exam). The final exam is mandatory, and it must be taken on December 13. You are responsible for withdrawing before the deadline if you need to do so. If more than two in-class exams are missed for legitimate reasons, you should seek a hardship withdrawal or an incomplete. If you do not withdraw and miss the final exam, or more than two in-class exams, then zeros will be assigned for your grades.

Projected Grading Scale (≥):
A+: 97%, A: 90%; A-: 86%; B+: 81%; B: 77%; B-: 72%; C+: 68%; C: 65%; C-: 60%; D: 55%; F: <55%

Notes:
The Instructor reserves the right to seat or move students during the tests.
Students may be asked to show (and leave) their student identification on the desk to take the test. Tests will be graded ONLY upon identification of a student I.D #.

The Department of Chemistry follows the university policy on academic honesty published in the "Faculty Affairs Handbook" and the "On Campus: The Undergraduate Co-Curricular Affairs Handbook." All tests taken must represent your individual, unaided efforts. To receive or offer information during an examination is cheating. The use of unauthorized supplementary materials during tests is also cheating. A student who cheats on an exam will receive a zero for that exam which cannot be dropped as the lowest grade. Any suspected offenses may also be referred to the Department Chair for appropriate actions.

Suggestions:
Students are strongly encouraged to carefully read and study in depth the topic and available materials before coming to class, and not to wait until the last days to study for tests.

Last day to Withdraw from Class and Receive a "W":
October 15th semester midpoint
The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or his designee):

1. Give a WF to all those students who are on their rolls but no longer taking the class and
2. Report the last day the student attended or turned in an assignment.

Academic Honesty

Students will be expected to maintain the highest standards of academic honesty. With respect to homework assignments, it is expected that no student will turn in work that is not his or her own by copying the work of another student or by using the work or solutions from this course given in previous years. Discussion of approaches to solving the homework problems after attempting to work the problems independently, however, is permitted and encouraged.

It is expected that during a test or examination, a student will not:

1) Accept or use information of any kind from other students.
2) Present the work of another student as his or her own.
3) Use aids to memory other than those expressly permitted by the examiner.

Following a test or examination, a student will not try to deceive teachers or graders by misrepresenting or altering his or her previous work. In advance of a test or exam, a student will not knowingly obtain access to the exam questions.

Departures from the above standards are contrary to fundamental principles of GSU. Such departures are considered serious offenses for which disciplinary penalties, including suspension and expulsion, can be imposed.

Disability Service:

Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which an accommodation is sought.

Tentative Lecture Schedule (check https://gsu.view.usg.edu/ on a daily basis for updates, lecture notes and schedule changes etc):

Section I. Protein Structure & Function Relationships, Enzyme Mechanisms
Amino Acids, Protein Structure, Protein Isolation, Protein in Action, Enzymes, Enzyme kinetics
Exam 1: September 20

Section I. Metabolism: Carbohydrate Structure, Glycolysis, TCA Cycle, Oxidative Phosphorylation
Enzyme regulation, Carbohydrate Structure, Glycolysis, TCA Cycle, Oxphos and ATP Synthesis
Exam 3: October 14

Section III. Carbohydrate Metabolism, Bioenergetics, Lipids, Biosynthesis
Gluconeogenesis, Glycogen, Calvin Cycle, Pentose Shunt Pathway, Common Mechanistic Strategies, Lipid Structure and Metabolism, Ribonucleotide Synthesis.
Exam 3: November 6

Section IV. Genetic Information, Nucleic Acids, Proteins, Membrane, and Cellular Sensory Mechanisms
Genetic codes, Nucleotide Structure and Metabolism, Protein Synthesis, Membrane, Molecular Biology, and Cellular Sensory Mechanisms, others
Exam 4: December 6

V. Final Exam

December 13: Comprehensive Final Exam. 5:30-7:30pm in 218 Natural Science Center.

Tentative lecture schedule (may be changed as the course progresses)

Week	Date	Chapter	Topic	Lecturer
1	August 26	1	Course introduction, Basics	Luo
	28	2	Amino acid	Luo
	30	2	Protein structure - I	Luo
2	September 2		***Labor Day, No Class***	
	4	2	Protein structure - II	Luo
	6	3	Study protein	Luo
3	9	7	Protein in action	Luo
	11	8	Enzymes and kinetics	Luo
	13	9	Enzymes catalytic strategies	Luo
4	16	10	Enzymes regulatory strategies	Luo
	18		**Review**	Luo
	20		**Midterm Exam 1**	Luo
5	23	15	Metabolism: Introduction	Luo
	25	11	Carbohydrates	Luo
	27	16	Glycolysis	Luo
6	30	16	Glycolysis: regulation	Luo
	October 2	17	Pyruvate Dehydrogenase	Luo
	4	18	Citric acid cycle	Luo
7	7	18	Oxidative phosphorylation	Luo
	9	18	ATP synthesis	Luo
	11		**Review**	Luo
8	14		**Midterm Exam 2**	Luo
	16	16	Gluconeogenesis	Luo
	18	20	Photosynthesis-Calvin cycle	Luo
9	21	20	Pentose phosphate pathway	Luo
	23	21	Glycogen metabolism	Luo
	25	22	Fatty acid metabolism	Luo
10	28	22	Fatty acid metabolism	Luo
	30	25	Nucleotide biosynthesis	Luo
	November 1	25	Nucleotide biosynthesis	Luo
11	4		**Review**	Luo
	6		**Midterm exam 3**	Luo
	8	4	Genetic Information	Luo
12	11	28	DNA structure and function	Luo
	13	30	Protein Synthesis	Luo
	15	13/26	Membrane Structure and Function	Luo
13	18	31	Control of Gene Expression	Luo
	20	14	Signal transduction	Luo
	22	27	Metabolic pathway integration	Luo
14	25		***Thanksgiving no class***	
	27		***Thanksgiving no class***	
	29		***Thanksgiving no class***	
15	December 2	5	Tools for molecular biology	Luo
	4		**Review**	Luo
	6		**Midterm exam 4**	Luo
16	9		**Review (overall)**	Luo
	11		Office hour or Q&A	Luo
	13		**Final exam (5:30-7:30pm in 218 NSC)**	Luo

Reference Textbook for the chapters: Biochemistry, 8th edition, by Berg, Tymoczko, Gatto, and Stryer.