

**CHEM 6600
BIOCHEMISTRY I
Fall 2016**

Instructor:

Dr. Ming Luo

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Phone: 404-413-6608

Lecture Schedule & Room:

Monday, Wednesday and Friday 5:30-6:50 pm;

327 Classroom South (CLSO, 65 seats)

Office Hours:

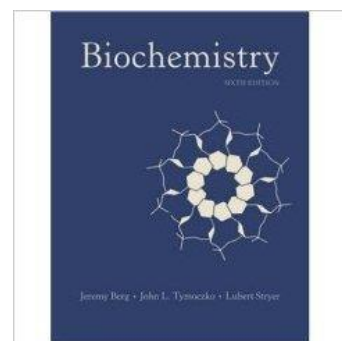
Students are required to bring their lecture notes.

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.



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 are 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 five 4 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 16 (F) class exam 1

October 10 (M) class exam 2

November 2 (W) class exam 3

December 2 (F) class exam 4

December 9 (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 9. 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 (\geq):

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 16

Section I. Metabolism: Carbohydrate Structure, Glycolysis, TCA Cycle, Oxidative Phosphorylation

Enzyme regulation, Carbohydrate Structure, Glycolysis, TCA Cycle, Oxphos and ATP Synthesis

Exam 3: October 10

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 2

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 2

V. Final Exam

December 9: Comprehensive Final Exam

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

Week	Date	Chapter	Topic	Lecturer	
1	August	22	1	Course introduction, Basics	Luo
		24	2	Amino acid	Luo
		26	2	Protein structure - I	Luo
2		29	2	Protein structure - II	Luo
		31	3	Study protein	Luo
	September	2	7	Protein in action	Luo
3		5		Labor Day, No class	
		7	7	Protein in action	Luo
		9	8-10	Enzymes and catalytic strategies	Luo
4		12	8	Enzyme kinetics	Luo
		14		Review	Luo
		16		Midterm Exam 1	
5		19	15	Metabolism: Introduction	Luo
		21	11	Carbohydrates	Luo
		23	16	Glycolysis	Luo
6		26	16	Glycolysis: regulation	Luo
		28	17	Pyruvate Dehydrogenase	Luo
		30	18	Citric acid cycle	Luo
7	October	3	18	Oxidative phosphorylation	Luo
		5	18	ATP synthesis	Luo
		7		Review	Luo
8		10	16	Gluconeogenesis	Luo
		12	19-20	Photosynthesis-Calvin cycle	Luo
		14		Midterm Exam 2	
9		17	20	Pentose phosphate pathway	Luo
		19	21	Glycogen metabolism	Luo
		21	12/22	Lipids and Fatty acid metabolism	Luo
10		24	22	Fatty acid metabolism	Luo
		26	25	Nucleotide biosynthesis	Luo
		28	25	Nucleotide biosynthesis	Luo
11	November	31		Review	Luo
		2		Midterm exam 3	
		4	4-5	Genetic Information	Luo
12		7	25	DNA structure and function	Luo
		9	30	Protein Synthesis	Luo
		11	13/26	Membrane Structure and Function	Luo
13		14	31	Control of Gene Expression	Luo
		16	14	Signal transduction	Luo
		18	27	Metabolic pathway integration	Luo
14		21		Thanksgiving no class	
		23		Thanksgiving no class	
		25		Thanksgiving no class	
15		28	5	Tools for molecular biology	Luo
		30		Review	
	December	2		Midterm exam 4	
16		5		Review (overall)	Luo
		7		Office hour or Q&A	Luo
		9		Final exam (time & location to be announced)	

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