

**CHEM 6600
BIOCHEMISTRY I
Fall 2020**

Instructor:

Dr. Ming Luo

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Lecture Schedule & Room:

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

101 Petit Science Center (PSC 101, 65 seats)

This is designated as a Blended course. 25% of the students will be present in-person in each lecture. Cohorts will be divided alphabetically according to students' last names and will be regrouped for each of the four periods. The days to attend in-person classes will be sent to you by email when available.

Please read COVID-19 Syllabus Statements before coming to classes:

<https://cetl.gsu.edu/resources/resources-for-remote-teaching-and-learning/fall-plan-keep-teaching/syllabus-statements/>.

All tests (pop-up questions, quizzes and exams) will be taken online via Top Hat (see below).

All lectures will be streamed by Zoom. You may record the lectures.

Office Hours:

4:00pm-5:00pm, Monday and Wednesday. Appointment by email. Online meetings only.

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

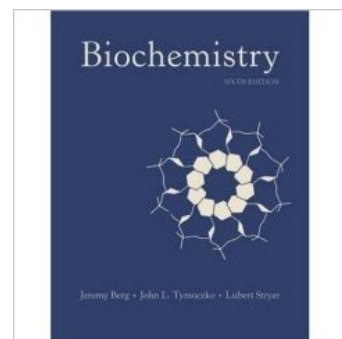
Students desiring to discuss more in-depth about a topic or career plans may schedule an appointment for an online meeting via email.

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 for student participation in each lecture (pop-up questions), answering quizzes, and taking exams.



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 (via Top Hat) of 100 points each,

= 400

and four quiz sections of 20 points each

= 80

Total = 480

Exams schedule (Please mark your calendar):

September 18 (F) in-class exam 1

October 12 (M) in-class exam 2

November 4 (W) in-class exam 3

December 7 (M) in-class exam 4

No make-ups or rescheduling of exams will be carried out under any circumstance

The final grade will be counted by dividing your total earned points by 480. You are responsible for withdrawing before the deadline if you need to do so.

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.

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 13th 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 18

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

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

Exam 3: October 12

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 4

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 7

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

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

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