

**CHEM 6600  
BIOCHEMISTRY I  
Fall 2014**

**Instructor:**

Dr. Aimin Liu and Dr. Jun Yin

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**Graduate Teaching Assistant:**

Ian Davis

404-413-5562

**Lecture Schedule & Room:**

MW 5:30-6:50 pm; F: Self-Study & Office Hours

327 Classroom South (CLSO, 65 seats)

**Office Hours:**

Students are required to bring their textbook and lecture notes.

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

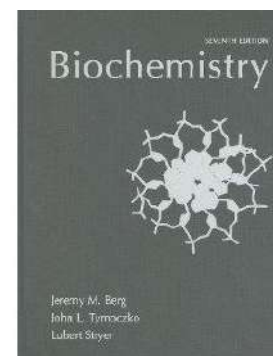
Students desiring to discuss more in-depth about a topic or career plans may request to schedule an appointment outside office hours via email

**Textbook:**

"Biochemistry, 4th, 6th or 7th edition, Lubert Stryer et al. The 5th edition is not recommended.

**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, vitamins, nucleotide metabolism, protein synthesis, and cellular sensing mechanisms.



**Tests and Assignments:**

Three class exams 100 points each = 300

One comprehensive final exam = 200

Total = 500

**Exams schedule (Please mark your calendar):**

September 22 (M) class exam 1

October 27 (M) class exam 2

December 1 (M) class exam 3

December 9 (T) 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 + 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 one in exam is 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 one class exam, then zeros will be assigned for these 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 are required to show (and leave) their student identification on the desk to take the test. Tests will be graded ONLY upon showing a student I.D.

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 Chairman for appropriate action.

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." Any suspected offenses may be referred to the Department Chair for appropriate action. 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.

### **Suggestions:**

Students are strongly encouraged to carefully read and study in depth the topic on the textbook 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 14<sup>th</sup>, 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) Represent 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 (Liu)**

Amino Acids, Protein Structure, Protein Synthesis, Protein Isolation, Protein in Action, Enzymes, Kinetics, regulation, Common Mechanistic Strategies

Exam 1: September 22

#### **Section II. Carbohydrate Metabolism (Yin)**

Carbohydrate Structure, Glycolysis, PDH Complex, TCA Cycle, NADH Shuttle, Oxphos and ATP Synthesis, Gluconeogenesis, and Glycogen - Pentose Shunt Pathway

Exam 2: October 27

#### **IV. Bioenergetics, Lipids, Nucleic Acids, Vitamins, and Cellular Sensory Mechanisms (Liu)**

Lipid Structure and Metabolism, Nucleotide Structure and Metabolism, Water Soluble Vitamins, Fat Soluble Vitamins & Minerals, and Cellular Sensory Mechanisms

Exam 3: December 1

### **V. Final Exam**

December 9: Comprehensive Final Exam

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

Week	Date	Chapter	Topic	Lecturer (Liu or Yin)
1	August	25	1 Introduction, pH, buffer	Liu Yin
		27	2 Amino acid, protein	Liu
		29	2 Protein structure	Liu
2	September	1	<b>Labor day, no class</b>	
		3	2 Protein structure	Liu
		5	3 Protein purification	Liu
3		8	7 Protein in action	Liu
		10	7 Protein in action	Liu
		12	8 Enzymes	Liu
4		15	8 Enzyme kinetics	Liu
		17	10 Enzyme regulation	Liu
		19	<b>Review</b>	Liu
5		22	<b>Midterm exam 1</b>	
		24	11 Carbohydrates	Yin
		26	11 Carbohydrates	Yin
6	October	29	16 Glycolysis	Yin
		1	16 Glycolysis	Yin
		3	16 Gluconeogenesis	Yin
7		6	17 Pyruvate dehydrogenase	Yin
		8	17 Citric acid cycle	Yin
		10	18 NADH shuttle	Liu
8		13	18 Oxidative phosphorylation	Liu
		15	19 Photosynthesis	Liu
		17	20 Calvin cycle	Yin
9		20	20 Pentose phosphate pathway	Yin
		22	21 Glycogen metabolism	Yin
		24	<b>Review</b>	Yin
10		27	<b>Midterm exam 2</b>	
		29	12 Fatty acid metabolism	Yin
		31	22 Fatty acid metabolism	Yin
11	November	3	25 Nucleotide biosynthesis	Yin
		5	25 Nucleotide biosynthesis	Yin
		7	30 Protein synthesis	Yin
12		10	5 Tools for molecular biology	Yin
		12	15 Vitamins and minerals	Liu
		14	15 Vitamins and minerals	Liu
13		17	14 Signal transduction	Liu
		19	27 Metabolic pathway integration	Liu
		21	27 Metabolic pathway integration	Liu
14		24	<b>Thanksgiving no class</b>	
		26	<b>Thanksgiving no class</b>	
		28	<b>Thanksgiving no class</b>	
15	December	1	<b>Midterm exam 3</b>	
		3	26 <b>Review I</b>	Liu
		5	27 <b>Review II</b>	Yin
16		8	28 Office hour or Q&A	
		9	<b>Final exam</b>	

Textbook: Biochemistry, 7<sup>th</sup> edition, Berg, Tymoczko, Stryer.