

BIOCHEMISTRY I CHEM 4600 CRN 22190/

CHEM 4600H 22191/ CHEM6600 22192

Spring 2017

Instructor: Dr. Victoria Mariani, 216 Courtland North, Tel. (404) 413-5542, vmariani@gsu.edu

Prerequisites: required: Chem 1211K, 1212K, 2400 and 2410 (grade of C or higher in Organic 2 (2410))
recommended: Biol 3800 (Molecular Cell Biology)

Lecture: MWF 10:00 am – 11:30 am, Urban Life 220

Office Hours: Wednesdays 12:30 – 3:00 pm in Courtland North 216.

Textbook:

Text: You can use 7th or 8th edition of text.

Biochemistry, 8th Ed., Berg, J.M.; Tymoczko, J.L.; Gatto, G.J.; Stryer, L., (2015), W.H. Freeman: New York, NY. [ISBN 1-4641-2610-0 Hardcover or ISBN 1-4641-8801-7 Looseleaf] or

Biochemistry, 7th Ed., Berg, J.M.; Tymoczko, J.L.; Stryer, L., (2012), W.H. Freeman: New York, NY. [ISBN 1-4292-2936-5 Hardcover or ISBN 1-4292-7396-8 Looseleaf]

Workbook: This is strongly recommended. The workbook includes learning objectives, self-assessment problems with solutions, and comprehensive problems. I will go over the questions from the text and workbook (see icollege “suggested problems”) during class. I recommend you use the 8th edition of the workbook.

Biochemistry Student Companion, 7th Ed., Deis, F.H.; Gerber, N.C.; Gumpert, R.I.; Koeppe, R.E., (2012), W.H. Freeman: New York, NY. [ISBN 1-4292-3115-7 Paperback].

Biochemistry Student Companion, 8th Ed., Rhodes, C.; Fertuck, K.; Josephy, D.; Koeppe, R.E., (2015), W.H. Freeman: New York, NY. [Paperback]

Tutorial Sessions: These sessions will be run by past students to review the material. Time: TBA

Chemistry Tutotial Center (CTC): The CTC is in Courtland North 217. There will be a tutor specifically for Biochemistry there to answer your questions. This is the best time to ask questions on specific homework problems and lecture topics. Time: TBA

iCollege: BIOCHEMISTRY I XLS GROUP RW SPRING SEMESTER 2018

All announcements will be posted on icollege. Please check it often. All notes from class will be posted within 24 hours after class.

Do not email me on icollege. I cannot check this email. Email me at vmariani@gsu.edu

Exams 4600: There will be four class exams worth **100** points each. These exams will have 50 questions, each worth 2 points. The lowest exam grade will be dropped. If you miss more than one exam, the 2nd missed exam will require proper documentation. See: <http://codeofconduct.gsu.edu/files/2013/03/2013-14-Student-Code-IV.F.-Policy-on-Class-Attendance.pdf>

There will be a required comprehensive final exam worth **150** points (on **April 30 8:00am** Urban Life 220). This exam will have 75 questions worth 2 points each. The final exam is mandatory, and it will not be dropped under any circumstance. Those who do not take the final DO NOT get an incomplete, they get a 0 for the final exam grade.

Test scores will be posted on icollege. If there is a mistake or your score is missing, you must come to my office to discuss. *You are responsible for checking grades!* The icollege website is simply a tool to report grades, it is not my gradebook.

Quizzes 4600: Quizzes will collectively be worth **50** points. There will be 5 quizzes at **10** points each

Grade Calculation 4600: 1. Add up 3 highest exam grades, total points earned on quizzes, final exam grade. 2. Divide by 5 for % 3. Use scale to estimate grade

Semester Grade = (sum 3 best class exams + quiz points + final exam) / 5

A+ 97% A 93% A- 89% B+ 85% B 80% B- 76% C+ 71% C 65% C- 59% D 50% F <50%

Learning Outcomes: The course will focus on developing an understanding of the biochemical principles and processes that govern the structure, interactions, functions & transformations of biomolecules; this will help students rationalize biochemical facts and solve problems. Upon successful completion of the course students will have the tools to be able to apply their knowledge of biochemistry to understand the causes of human diseases, as well as applications of biochemistry in medicine, agriculture and the environment.

Course Objectives: A comprehensive and integrated review of modern biochemistry with emphasis on proteins, enzymes, nucleic acids, lipids, carbohydrates and metabolism. Will examine biomolecular structure-function relationships, concepts of enzyme function, regulation, bioenergetics, metabolism, gene expression, and characterization of biomolecules. Organization, transport and signaling in cells will also be examined. Principles of acid/base chemistry, redox, organic mechanisms, kinetics, and thermodynamics will be applied throughout. *Working knowledge of these topics covered in 1211, 1212, 2100 and 2410 is expected PRIOR to taking biochemistry.*

Secrets to Success: Those who are successful in this course: 1) **Review:** Read the text and/or look over power points before lecture. This is to familiarize yourself with the material before it is covered such that one can pick up information in class time. 2) **Reinforce:** Look over and/or recopy the notes from the lecture within a day of the class. This is to reinforce the material and to make you aware of any problem spots. 3) **Apply:** Regularly work problems from the text, companion, sample exams and internet. If you cannot apply the material it will be difficult to answer multiple choice questions on the exams. 4) If you have questions about the material or problems come to my office hours with questions

To pass this course you need to do more than simply memorize the material. You need to be able to “apply” the material. Reading the text or another source is real important for this. To be successful one must learn to “speak the language of biochemistry”.

Notes: There will be no incompletes given for this course. Poor course performance is not rewarded with an incomplete. Do not ask. If you have a hardship, the Dean of Students is where you go. Please see: <http://deanofstudents.gsu.edu/student-assistance/emergency-withdrawal/>

There will be no grade changes in this course. I simply add up the points you earned. I cannot alter what you earned. Unfortunately, there is no score for “hard work”. If there are any issues with your grade or course work, you must come to my office (not email) before the last day of class to discuss. The day grades are due is a terrible time to address these issues!

Exam Dates (Subject to change)

no.	Date
1	Friday Feb 2
2	Friday Feb 23
3	Friday March 23
4	Friday April 20
F	Monday April 30

Tentative Quiz Schedule (Subject to change)

Quiz no.	Date opened @~5PM	Date due @ ~7PM
1	Friday Jan 26	Thursday Feb 1
2	Friday Feb 16	Thursday Feb 22
3	Friday Mar 16	Thursday Mar 22
4	Friday Apr 13	Thursday Apr 19
5	Monday Apr 23	Sunday Apr 29

CHEM 4600H 22191

Honors CHEM 4600H: Students need to co-register with CHEM 3690. A case study needs to be completed in addition to course work. Case study grade is the grade for CHEM 3690.

CHEM6600 22192

Graduate CHEM 6600: There will be four class exams worth **120** points each. These exams will have 60 questions, (same 50 as 4600 each worth 2 points and additional questions). The lowest exam grade will be dropped. If you miss more than one exam, the 2nd missed exam will require proper documentation. See: <http://codeofconduct.gsu.edu/files/2013/03/2013-14-Student-Code-IV.F.-Policy-on-Class-Attendance.pdf>
There will be a required comprehensive final exam worth **200** points (on **April 30 8:00am** Urban Life 220). This exam will have 75 questions (Same 75 as 4600 each worth 2 points and additional questions).

Quizzes CHEM 6600: Quizzes will collectively be worth **40** points. There will be 5 quizzes at **10** points each, and the top 4 quizzes count.

Semester Grade = (sum 3 best class exams + top 4 quizzes + final exam) / 6

TENTATIVE CLASS SCHEDULE (Subject to change)

Dates	Chapters	<i>Topics Covered</i>
Jan 8 – Jan 31	1.1, 1.3, 2.1 - 2.6, 3.1 -3.2, 4.1 -4.3, 5.2, 7.1- 7.2,	Review: intermolecular interactions, acid/base chemistry (buffers, pK_a), aqueous biochemistry, amino acid structures, properties and reactivity, pI and peptide charge, peptide bonds, 3D protein 2°, 3° and 4° structure, thermodynamics of protein folding (hydrophobic effect), protein purification, separation techniques, DNA structure and function, hemoglobin structure and oxygen transport, Hemoglobin cooperativity & allostery
Feb 2		Exam 1
Feb 5 – Feb 21	8.1 - 8.6, 8-ap 9.1, 10.1 - 10.4, 11.1- 11.2,	enzymes, classes of enzymatic reactions, Michaelis-Menten kinetics, enzyme Inhibition, catalytic strategies, Carboxypepsidase and Chymotrypsin Mechanism, enzyme regulation, allosteric enzymes, carbohydrates structure and reactivity
Feb 23		Exam 2
Feb 26 – Nov 1	15.1- 15.3, 13.1, 13.3 - 13.4 16.1 -16.4, 17.1 – 17.4	reactions of metabolism, glycolysis reaction mechanisms, glycolysis regulation, fermentation reaction, gluconeogenesis overview, transition reaction and regulation, citric acid cycle reactions and mechanisms, citric acid cycle regulation
Mar 21		Exam 3
Mar 26 – Apr 18	18.1 – 18.6, 21.1 – 21.5, 12.1 – 12.2, 22.1 – 22.2, 12.4 14.1, 14.2	biochemical oxidation-reduction reactions (redox review), electron transport chain & proton pumping, proton pumping & oxidative phosphorylation, regulation of ETC, membrane transport and shuttles, glycogen breakdown & regulation, glycogen synthesis and regulation, overview fatty acid catabolism, signal transduction: gPCR's and tyrosine phosphorylation cascades
Apr 20		Exam 4
Apr 23		Review (last day of class!)
Apr 30		Final Exam 8:00