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 12:30 pm – 2:00 pm, CS 608

Office Hours: TBA

Textbook:

Text: You can use 7th or 8th edition of text. I use the 8th edition for my reading assignments.


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.


Tutorial Center: The tutorial center is in Sports Arena 125 Decatur St SE, First Floor

There will be a tutor specifically for Biochemistry there to answer your questions. This is a good time to ask questions on specific homework problems and lecture topics. Time: TBA

iCollege: BIOCHEMISTRY I XLS GROUP RW SPRING SEMESTER 2020

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

Please do not email me on icollege. Email me at vmariani@gsu.edu
Exams 4600: There will be four class exams worth 100 points each. 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 Wednesday April 29 6 10:45 am CS 608). The final exam is mandatory, and it will not be dropped under any circumstance. Failure to take the final WILL NOT result in a grade as an incomplete, simply a 0 will be used as 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 approximately 10-15 quizzes on icollege.

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+ 68%  C 62%  C- 58%  D 50%  F <50%

Exams 6600: There will be four class exams worth 120 points each. 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 Wednesday April 29 6 10:45 am CS 608). The final exam is mandatory, and it will not be dropped under any circumstance. Failure to take the final WILL NOT result in a grade as an incomplete, simply a 0 will be used as 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 6600: Quizzes will collectively be worth 40 points. There will be approximately 10-15 quizzes on icollege.

Grade Calculation 6600:

1. Add up 3 highest exam grades, total points earned on quizzes, final exam grade.
2. Divide by 6 for %
3. Use scale to estimate grade

Semester Grade = (sum 3 best class exams + quiz points + final exam) / 6

A+ 97%  A 93%  A- 89%  B+ 85%  B 80%  B- 76%  C+ 68%  C 62%  C- 58%  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. We 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)

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**Topics for Exam 1:**

1.1 What is Biochemistry  
1.3 properties of water, intermolecular interactions, acid/base chemistry, buffers, pKₐ  
2.1 - 2.6 amino acid structures, properties and reactivity, pl and peptide charge, peptide bonds, 3D protein  
2ⁿ, 3ⁿ and 4ⁿ structure, thermodynamics of protein folding (hydrophobic effect)  
3.1 - 3.2 protein purification, separation techniques  
7.1 - 7.3 hemoglobin structure and oxygen transport, cooperativity and allosterism

**Topics for Exam 2:**

8.1 - 8.6, 8-ap enzymes, classes of enzymatic reactions, Michaelis-Menten kinetics, enzyme inhibition  
9 notes catalytic strategies, carboxypeptidase A mechanism  
9.1 chymotrypsin Mechanism  
10.1 - 10.4 allosteric enzymes, enzyme regulation

**Topics for Exam 3:**

11.1 - 11.2 carbohydrates structure and reactivity  
12.1 types of lipids  
15.1 - 15.3, reactions of metabolism and energy utilization by ATP/redox  
13.1, 13.3 membrane transport  
16.1 - 16.4 glycolysis reaction, mechanisms, and regulation, fermentation reaction, gluconeogenesis  
17.1 – 17.4 transition reaction and regulation, citric acid cycle reactions, mechanisms, and regulation

**Topics for Exam 4:**

18.1 – 18.6 biochemical oxidation-reduction reactions (redox review), electron transport chain, oxidative phosphorylation, regulation, membrane transport and shuttles  
21.1 – 21.5 glycogen breakdown & regulation, glycogen synthesis and regulation  
14.1, 14.2 signal transduction: gPCR's and tyrosine phosphorylation cascades  
22.1 – 22.2 fatty acid catabolism,  
27.3 diabetes  
27.5 overview of metabolic processes

**Note:**  
We may progress faster or slower throughout the semester. Topics from a previous section could be held for the next exam or topics from a later session could have been covered and added to the exam. I only will add topics to the exam that have been covered!  

**Please come to class regularly for exact topics covered on the exam.**