General Biochemistry I Syllabus
Fall 2021
Chem463/563, Biol483/583
4 Credits

Instructor: Dr. Lee Solomon
Reserve/Backup Instructor: Dr. Megan Erb
Office Hours: Wednesday's at 3:00-4:00 PM or by appointment (Planetary Hall Rm 305)
E-mail: lsolomo@gmu.edu
Meeting Room: Innovation Hall, Room 105

Materials:

1) Textbook- Lehninger's Biochemistry, 8th Edition (or really any edition will work)

Prerequisites: Completion of BIOL 213 and CHEM 313 with a C or better

Course Description: This is the first semester of a two-semester general biochemistry sequence that will introduce the student to the rapidly changing subject area of biochemistry. We will begin with a brief introduction to biochemistry, followed by an in-depth look at the structure, function, kinetics, and regulation of enzymes. After developing an appreciation for these molecular machines, we will begin to explore complex cellular metabolic processes. We will then later discuss the biochemical basis of cellular signaling and transport.

Course Goals:

1. Introduce the student to the language of biochemistry.
2. Illustrate how the chemical principles learned in general and organic chemistry apply to biological situations, thus marrying together chemistry and biology.
3. Bring each student to a general understanding of and appreciation for the major biomolecules.
4. Have an understanding of the major metabolic pathways and their regulation and interaction.
5. Develop an awareness of how biochemical principles apply to various cross-disciplinary areas of research.

Biochemistry is a broad and complicated subject with a unique language, which adds to the difficulty. You should be forewarned that it takes time and dedication to earn a good grade in this class. You should not expect to pass simply by showing up every day, and you should not expect to pass the class if you do not show up every day. It is important that each student commit to spending significant hours outside of lecture reviewing the material and working through problems. **If you are unable to make this commitment you are unlikely to perform well in the class and may want to consider taking it at another time.**

Grading and Examination Policy: There will be four in-class exams. The exams will cover the material discussed in lecture as well as the assigned reading. Each exam will

be worth 100 points. I reserve the right to ask questions on material assigned in the reading but not covered in lecture.

Grading	463/483	563/583
Exam 1	25%	21.25%
Exam 2	25%	21.25%
Exam 3	25%	21.25%
Exam 4	25%	21.25%
Presentation (see below)	NA	15%
Total	100%	100%

Plus and minus grades are assigned (A+, A, A-), however, an absolute grading scale will not be determined until all scores have been compiled and evaluated. As a general rule, the following scale will be followed: 98-100= A+, 93-97.5=A, 90-92.5=A-, 87-89.5=B+, 83-86.5=B, 80-82.5=B-, 77-80=C+, 73-76.5=C, 70-72.5=C-, 60-69=D, below 60=F. If a curve must be applied this scale may be adjusted to accommodate it.

A+ grades are only given at the instructor's discretion for true scholarly achievement. Simply scoring a 98-100 is not, in and of itself, a guarantee to earn this grade. It is counted the same as an "A" when calculating GPA.

Presentations for Students in CHEM 563/BIOL 583: You will be responsible for giving a ten-minute PowerPoint presentation to the class on a protein of your choosing. This presentation must include a description of the protein's role in the organism, it's structure, it's function (including arrow-pushing chemical mechanisms), and any regulatory mechanisms that are known about it. A rubric will be posted separately with a grading scheme.

Please send Dr. Solomon your choice of protein before Labor Day so he can okay it.

Kahoots: We will be using **kahoot.com** an online quizzing program. These quizzes are meant to engage you in class and provide feedback to me for instruction. The winner of each quiz will be awarded one point toward their final average (up to a max of five points over the semester).

Snow days: In the event of University wide class cancellation, we will follow instructions from the administration for make-up days. If the cancellation falls on an exam date, the exam will be given at the next scheduled meeting. However, class online will not be cancelled and you should still expect to attend

Diversity Statement: An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.

The reflection of Mason's commitment to diversity and inclusion goes beyond policies and procedures to focus on behavior at the individual, group and organizational level. The implementation of this commitment to diversity and inclusion is found in all settings, including individual work units and groups, student organizations and groups, and classroom settings; it is also found with the delivery of services and activities, including, but not limited to, curriculum, teaching, events, advising, research, service, and community outreach.

This course is open to ALL students, keeping with Mason's (and my personal) commitment to diversity and expanding science to all people. Discrimination will not be tolerated, and if you feel in any way harassed, bring it to my attention and the situation will be addressed immediately.

Honor Code: GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. Academic integrity is taken very seriously and violations are treated gravely. You may not have any electronic devices other than a non-graphing calculator (if necessary) during exams and you also may also not change or check your exam after leaving the room. ***No grade is important enough to justify academic misconduct!!!!***

Email: Students must use their MasonLive email account to receive important University information, including messages related to this class. See *http://masonlive.gmu.edu* for more information.

Blackboard: Access to MyMason and GMU email are required to participate successfully in this course. Please make sure to update your computer and prepare yourself to begin using the online format BEFORE the first day of class. Check the IT Support Center website. Navigate to the Student Support page for help and information about Blackboard. In the menu bar to the left you will find all the tools you need to become familiar with for this course. Take time to learn each. Make sure you run a system check a few days before class. Become familiar with the attributes of Blackboard and online learning.

Grades will also be posted to Blackboard in Grade Center. Please make sure your grades are up to date and accurate. Notify me immediately if you notice any discrepancy or missing grades.

Technology Requirements:

Hardware**:** You will need access to a Windows or Apple computer with at least 2 GB of RAM and access to a fast and reliable broadband internet connection (e.g., cable, DSL). A larger screen is recommended for better visibility of course material. You will need speakers or headphones to hear recorded content and a headset with a microphone is recommended for the best experience. For the amount of Hard Disk Space required taking a distance education course, consider and allow for:

1. The storage amount needed to install any additional software and
2. Space to store work that you will do for the course.

Software**:** Our course will use Blackboard as the learning management system. You will need a browser and operating system that are listed compatible or certified with the Blackboard version available on the myMason Portal. See supported browsers and operating systems. Log in to myMason to access your registered courses. Your computer should be capable of running current versions of Acrobat Reader, Flash, Java, and Windows Media Player, QuickTime and/or Real Media Player. Also, make sure your computer is protected from viruses by downloading the latest version of Symantec Endpoint Protection/Anti-Virus software for free here.

Students owning Macs or Linux should be aware that some courses may use software that only runs on Windows. You can set up a Mac computer with Boot Camp or virtualization software so Windows will also run on it. Watch this video about using Windows on a Mac. Computers running Linux can also be configured with virtualization software or configured to dual boot with Windows.

Note: If you are using an employer-provided computer or corporate office for class attendance, please verify with your systems administrators that you will be able to install the necessary applications and that system or corporate firewalls do not block access to any sites or media types.

Electronic Device Etiquette: Electronic devices (laptops, tablets, phones, etc.) should only be used for Class Attendance, Kahoot access, and note taking. **Browsing the internet, gaming, checking email, and doing work for other classes is not allowed**. I reserve the right to ask you to leave if you do not comply with this policy. If you choose to voice record lecture, you may do so, but you do not have permission to distribute or share your recordings. They are for personal use only.

Students with Disabilities: Students with physical or learning disabilities should contact the Office of Disability Services for specific information and assistance regarding their needs. **If you have a documented disability that requires accommodation, you must meet with me in the first week of class to discuss your accommodations and their implementation.** Chemistry faculty and staff work cooperatively to assist students with disabilities with their educational objectives.

Title IX Notice of mandatory reporting of sexual assault interpersonal violence and stalking: As a faculty member and designated "Responsible Employee" I am required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX coordinator per university policy 1412. If you wish to speak with someone confidentially, please contact the **Student Support and Advocacy Center (703-993-2380)**. You may also seek assistance from Mason's **Title IX coordinator (703-993-8730; titleix@gmu.edu)**.

General Biochemistry I

Syllabus for Fall 2020

Text: Lehninger Principles of Biochemistry, 8th Ed.

Date	Topic	Reading Chapters
23-Aug	Biochemistry Introduction	1.1-1.4, 13.2
25-Aug	Water and Buffers, Amino Acids	2
30-Aug	Amino Acids, Peptides, and Proteins	3
1-Sept	Protein Structure	4
6-Sept	*Labor Day – University Closed*	
8-Sept	Cofactors	
13-Sept	Protein Function	5
15-Sept	**Exam 1**	
20-Sept	Enzyme Mechanisms	6.1, 6.2, 6.4
22-Sept	Enzyme Kinetics	6.3 6.5
27-Sept	Carbohydrates	7
29-Sept	Lipids	10
4-Oct	Membranes	11.1-11.2
6-Oct	*Fall Break - No Class*	
11-Oct	Membrane Transport	11.3
13-Oct	Bio signaling	12
18-Oct	**Exam 2**	
20-Oct	Bioenergetics, Intro to Metabolism	13
25-Oct	Glycolysis/Gluconeogensis	14
27-Oct	Fatty Acid Oxidation	17
1-Nov	Citric Acid Cycle	16
3-Nov	Oxidative Phosphorylation	19
8-Nov	**Exam 3**	
10-Nov	Lipid Biosynthesis	21
15-Nov	Amino Acid Degradation	18
17-Nov	Drugs and Poisons	
22-Nov	Biochemistry Case Study	Literature
24-Nov	*Thanksgiving Break- No Class*	
29-Nov	Grad Student Presentations	
1-Dec	***Exam 4 - Final Exam**	

*This schedule was written based on the posted academic calendar. Should any complications arise (e.g. a global pandemic), it is subject to change, however, exam 1-4 dates are final!

Lectures can be cancelled or replaced with other material but a minimum of one weeks' time will be given for students to do the reading.

If you have a conflict with any exam, you must let me know as soon as possible.

Note: All exams are cumulative, and you are responsible for all of the material you have been taught for each exam.