General Biochemistry I Syllabus
Chem 463/563-Biol 483/583
4 Credits

Instructor: Megan Erb
Course Schedule: Tuesdays and Thursdays, 10:30 am-12:20 pm, Enterprise 178
Email: msikowit@gmu.edu
Office Hours: Monday 2-3 PM, Wednesday 10-11 AM, otherwise by appointment (Planetary Hall 301B)

Required Text: Lehninger Principles of Biochemistry, 8th Ed., D. Nelson and M. Cox

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

A "C" or better in this course is a prerequisite for several upper level CHEM courses. Please consult your course catalog for more details.

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:
The goals of this course are:

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 the modules reviewing the material, reading, 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 three exams and a final. The exams will cover the material discussed in lecture as well as the assigned reading. Exams will be mostly multiple choice and may have short answer questions. I reserve the right to ask questions on material assigned in the reading but not covered in lecture.

Grading (463/483)

Exam 1	20%
Exam 2	20%
Exam 3	20%
Final	30%
HW/quizzes/problems	10%
	100%

Plus and minus grades may be 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: 90-100=A, 80-89.99=B, 70-79.99=C, 60-69.99=D, <60=F

Attendance: If you are ill or otherwise unable to complete assignments/exams or attend class, you must contact the instructor immediately. All excused absences are at the discretion of the instructor. **Car/transportation trouble, traffic, routine doctor's appointments, vacations, and work are not considered excused absences.**

Honor Code: GMU is an Honor Code university; please go to https://oai.gmu.edu/mason-honor-code/ for a full description of the code and the honor committee process. You agreed to follow the honor code when you applied to GMU. Academic integrity is taken very seriously and violations are treated gravely. You may not have any electronic devices out during exams (phones, smart watches, etc.). You must complete the exam in one sitting and cannot get up and leave the test before submitting it. A first-time sanction recommended for honor code violations will be an F in the course. The second-time sanction recommendation will be suspension.

No grade is important enough to justify academic misconduct!!!!

Students in CHEM 563/BIOL 583: You will be responsible for writing three paper summaries over the course of the semester. You will turn in one summary on each exam date. A grading rubric and the paper you are responsible for reporting on will be distributed prior to the due date. Your overall grading scheme will differ from 463/483. Each paper summary will be 5% of your grade, exams 1, 2, and 3 will be 15% each.

Email: Students must use their GMU email account to receive important University information, including messages related to this class. I will only respond to emails from official GMU email addresses. I try to be accessible to students but also believe in

work/life balance. I will try to email you back as soon as I can. If you have not heard back from me within 48 hours, assume I did not get your email (or it likely got accidently marked as read) and please reach out again.

Blackboard: This class will be administered through Blackboard. You should become familiar with this platform and how to navigate it. 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: Activities and assignments in this course will regularly use the Blackboard learning system, available at *https://mymason.gmu.edu*. Students are required to have regular, reliable access to a computer with an updated operating system (recommended: Windows 10 or Mac OSX 10.13 or higher) and a stable broadband Internet connection (cable modem, DSL, satellite broadband, etc., with a consistent 1.5 Mbps [megabits per second] download speed or higher.

Electronic Device Etiquette: Electronic devices (laptops, tablets, phones, etc.) should only be used for courses related functions and . **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. No video recordings are permitted.

Students with Disabilities: Students with physical or learning disabilities should contact the 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.

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking**:** As a faculty member, I am designated as a "Responsible Employee," and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

Diversity: The GMU Department of Chemistry & Biochemistry promotes and maintains an equitable and just work and learning environment. We welcome and value individuals and their differences including race, economic status, gender expression and identity, sex, sexual orientation, ethnicity, national origin, first language, religion, age, and disability.

In-class participation, quizzed, and problems: Occasionally, problems may be given in class and graded for correctness, while other will be graded on completion and

participation. Anyone not in attendance during the class period will receive a 0, unless otherwise granted permission by the instructor. No late assignments will be accepted.

Achieve Homework: We will be using Achieve for homework this semester. This system comes at no cost to you and also provides access to the e-book. Please refer to Blackboard/Achieve for all homework deadlines.

Important University Deadlines

Last day to add classes- Tuesday, January 23
Last day to drop (100% refund)- Tuesday, January 30
Last day to drop (50% refund)- Tuesday, February 6
Unrestricted withdrawal (no refund)- February 7- February 20
Selective withdrawal (no refund)- February 21- March 25

General Biochemistry I
Schedule for Spring 2024

		Reading Chapters
16-Jan	Biochemistry Introduction	1.1-1.4, 13.2
18-Jan	Water and Buffers, Amino Acids	2.1-2.5
23-Jan	Amino Acids, Peptides, and Proteins	3.1 & 3.2
25-Jan	Protein Structure	4.1-4.3
30-Jan	Protein Function	5.1
1-Feb	Enzyme Kinetics	6.1-6.3
6-Feb	Enzyme Kinetics (continued)	6.4
8-Feb	**Exam 1**	
13-Feb	Carbohydrates	7.1-7.3
15-Feb	Nucleotides and Nucleic Acids	8.1-8.4
20-Feb	Lipids	10.1-10.3
22-Feb	Membranes	11.1-11.2
27-Feb	Transport	11.3
29-Feb	Biosignaling	12.1, 12.2, 12.4, 12.7-12.8
Mar 5/7	*No class- Spring Break*	
12-Mar	Biosignaling	continued
14-Mar	**Exam 2**	
19-Mar	Bioenergetics, Intro to Metabolism	13.1-13.4
21-Mar	Glycolysis	14.1-14.3
26-Mar	Gluconeogenesis	14.4-14.5
28-Mar	Regulation	15.1-15.3
2-Apr	Regulation Continued	15.4-15.5
4-Apr	**Exam 3**	
9-Apr	Citric Acid Cycle	16.1-16.3
11-Apr	Fatty Acid Oxidation	17.1-17.3
16-Apr	Lipid Biosynthesis	21.1-21.4
18-Apr	Oxidative Phosphorylation	19.1-19.3
23-Apr	Amino Acid Degradation	18
25-Apr	Integration of Metabolism/Review	
TBA	**Final Exam**	