**General Biochemistry I Syllabus**

**Fall 2019**

**Chem463/563, Biol483/583**

**4 Credits**

Instructor: Megan Erb

Office Hours: Tuesdays 3:30-4:30 pm, Thursdays 11 am-12 noon

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Note: I am on 50% parental leave this semester. I will be on campus Tuesday, Wednesday, and Thursday and will answer emails as I can all other days.

Materials:

1. Textbook- Lehninger’s Biochemistry, 7th Edition (or really any edition will work)
2. TopHat access- www.tophat.com/, ($30). Join Code: 687331

**Prerequisites: Completion of BIOL 213 and CHEM 313 with a C or better. If you have not met the prerequisites, you may not take this course.**

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 three in-class exams and a final. The final exam is cumulative. 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.

Quizzes or in-class problems may be given. They will not always be announced in advanced. Make-up quizzes will not be given and a grade of “0” will be assigned if a quiz is missed.

Grading (463/483)

Exam 1 20%

Exam 2 20%

Exam 3 20%

Final Exam 30%

TopHat-Quizzes/problems 10%

 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: 97-100= A+, 93-96.5=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

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 posted on Blackboard. Your overall grading scheme will differ from 463/483. Each exam will account for 15% of your overall grade and each paper summary will count for 5%.

Attendance: 10 percent of the course grade is derived from in-class quizzes/problems. Students with an excused absence (sick with a doctor’s note, death in the family, religious observance) should contact me before missing class/exams to discuss your options. In the event of an illness, you must also present a doctor’s note **explicitly stating** that you were too ill to take the exam. **Car/transportation trouble, traffic, routine doctor’s appointments, vacations, and any avoidable conflicts are not considered excused absences.** Excused absences are at the discretion of the instructor.

Attendance will be taken via TopHat at the beginning of class. This will not count towards your grade, but allows me to gauge your level of commitment if you encounter difficulties with the course material.

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.

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*](http://masonlive.gmu.edu) for more information.

Blackboard: 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.

Electronic Device Etiquette: Electronic devices (laptops, tablets, phones, etc.) should only be used for TopHat 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.** It is your responsibility to meet all deadlines for arranging testing accommodations required by the Office of Disability services. Chemistry faculty and staff work cooperatively to assist students with disabilities with their educational objectives.

General Biochemistry I

# Syllabus for Fall 2019

**Text: Lehninger Principles of Biochemistry, 7th Ed.**

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| --- | --- | --- |
|   |  | Reading Chapters  |
| 27-Aug | Biochemistry Introduction | 1.1-1.4, 13.2 |
| 29-Aug | Water and Buffers, Amino Acids | 2.1-2.5 |
| 3-Sept | Amino Acids, Peptides, and Proteins | 3.1 & 3.2 |
| 5-Sept | Protein Structure | 4.1-4.3 |
| 10-Sept | Protein Function | 5.1 |
| 12-Sept | Enzyme Kinetics | 6.1-6.3 |
| 17-Sept | Enzyme Kinetics (continued) | 6.4 |
| 19-Sept | **Exam 1** |  |
| 24-Sept | Carbohydrates | 7.1-7.3 |
| 26-Sept | Nucleotides and Nucleic Acids | 8.1-8.4 |
| 1-Oct | Lipids | 10.1-10.3 |
| 3-Oct | Membranes | 11.1-11.2 |
|  8-Oct | Transport | 11.3 |
| 10-Oct | Biosignaling | 12.1, 12.2, 12.4, 12.7-12.8 |
| 15-Oct | *No class- Fall Break* | continued |
|  17-Oct | Biosignaling  |
| 22-Oct | **Exam 2** |  |
| 24-Oct | Bioenergetics, Intro to Metabolism | 13.1-13.4 |
| 29-Oct | Glycolysis | 14.1-14.3 |
| 31-Oct | Gluconeogenesis | 14.4-14.5 |
| 5-Nov | Regulation | 15.1-15.3 |
| 7-Nov | Regulation Continued | 15.4-15.5 |
| 12-Nov |  |  |
| 14-Nov | **Exam 3** |  |
| 19-Nov | Citric Acid Cycle | 16.1-16.3 |
| 21-Nov | Fatty Acid Oxidation | 17.1-17.3 |
| 26-Nov | Lipid Biosynthesis | 21.1-21.4 |
| 28-Nov | *Thanksgiving- No Class* |  |
| 3-Dec | Amino Acid Degradation | 18 |
| 5-Dec | Oxidative Phosphorylation | 19.1-19.3 |
|  |  |  |
| **17-Dec** |  **Final Exam**  |  |

\*This schedule is tentative and subject to change, however, the exam dates are final. The final exam day has to be finalized with the registrar at the end of September.