Biol 335-02 Foundations of Biochemistry
Fall, 2024
M, W, F Newton 212
9:30 – 10:20 am

Instructor:	Dr. Jani E. Lewis
Office:	ISC 354
Telephone:	585-245-5310
Campus E-mail	lewisj
Internet Address:	lewisj@geneseo.edu
Office hours:	TBA

Course Description and Objectives:
The course format will be a combination of lecture and class discussions/group work. Evaluations will be based on three semester exams, a final exam, and online assignments to be done both during and outside of class.

Remember, as in every course we rely on concrete examples to illustrate concepts. You should strive to recognize these general concepts as they emerge from specific examples in the textbook and class. You should also recognize that any biologically based course is not merely a collection of terms and facts, but also, and more importantly, includes the process (the scientific method with its observations, hypotheses, and experiments) by which we study the living world.

This course has three main objectives. The first is to learn and understand the concepts of biological metabolism. The second objective is to examine how these concepts have evolved and the third is to apply these concepts to physiological disease. We will mainly be dealing with proteins, enzymes and metabolism. There will be some memorization, but the focus will be on application of the key pathways as related to disease.

Required Textbook: Biochemistry, 10th Edition by Berg, Gatto, Hines, Tymoczko and Stryer with Achieve access. You can buy the Achieve access with the etext but you must have the access to Achieve as this will be part of your grade. You will need to sign up for a "Vital Source" Account. The directions for this are in Achieve.

One Term Achieve Access Card (Achieve *always* contains the e-book)
ISBN: 9781319417482, Berg
"Achieve for Biochemistry (1-Term Access)"

Loose-leaf text + One Term Achieve Access card package
ISBN: 9781319530501, Berg
"Loose-Leaf Version for Biochemistry 10e & Achieve for Biochemistry (1-Term Access)"

Assignments to be done both in and outside of class include worksheets and portions of at least 2 primary journal articles. Each of the journal articles will have accompanying questions. Both the primary journal article and the questions can be downloaded from Brightspace and it is each person's responsibility to do so. While collaboration among your group members and between groups is encouraged, it is important that everyone understands the questions and answers asked of the paper and the text. You will be placed into groups the second week of class. You will submit the answers to the questions as a group assignment. If a group member does not participate in answering the questions you should not put their name on the submission. However, you need to contact me that your group is not submitting the answers to the journal articles as a group.

Lecture notes
Lecture notes will be placed on Brightspace 1 day prior to class (in most cases). You are welcome and even encouraged to download these and bring them to class.

Assignments:
Topics will be covered as listed in the course outline (with the possibility that the schedule may change due to unforeseen circumstances). The reading assignments should be started before the topic is covered in lecture. Before coming to class you should have skimmed through the chapter and become familiar with the major themes and vocabulary. Careful examination

of the figures will also make the lecture material more meaningful for you. After class the sections should be carefully re-read. Material from both the lectures and readings will be tested on the exams.

Achieve Assignments

You will have an achieve assignment (chapter problems) due for each chapter we cover in class. I have tried to make these useful by carefully selecting the questions that coincide with what I am covering for each chapter. **You have 2 attempts** to do each of these so make sure you do not submit them before you have finished answering the questions. These have specific due dates listed but **you can submit them late with a 5% penalty which is cumulative for each day** you submit them after the due date.

Journal Article Questions and Worksheets

There will be 1 – 2 journal articles that you are expected to read and answer accompanying questions. The purpose of these assignments is to become familiar with "how" biochemistry research is done and to feel more comfortable reading through the primary literature. The questions are due individually, but you are encouraged to work on them in your groups. We will go over the answers in class. The questions will usually only be on part of the article and the article might be divided up as to due dates for different parts. In general an article will cover more than one chapter topic and therefore I try to spread out the questions as we learn about the related material in class. The articles are listed in Brightspace in a "Journal Articles and Questions" module. In addition there will be 1-2 worksheets which are geared towards giving you more extensive exposure and practice to application questions related to the material being covered in class. These are to be submitted individually as well but you are welcome to work in your groups on these. The worksheets will be posted in Brightspace within the corresponding chapter module.

"Questions to Answer while reading the chapters":

You will receive individual credit for submitting the **"Questions to answer…"** for each chapter". **I will be randomly grading these. Please note that to be eligible for credit you must submit them by the deadline listed**. If you do not submit them for that date, then you will not be able to receive credit no matter how good your answers are. I will follow this guideline strictly as the value of these questions is doing them as you read these chapters and not right before the exam. **I will also not** be posting answer sheets for these questions but simply checking if you had the correct answer. It will be up to you to make sure you understand the questions should you not receive the full grade. These questions are submitted individually however, I do encourage you to do these in groups and come see me if you do not understand a question or want to check if you have answered the question correctly. However, the answers should be posted individually.

Question of the day (QD):

Sometime during almost every class period you will be given a question to do in your groups. This question will be collected and count towards your test grades. If you have been there for every QD -1 during that testing period, you will receive 2 extra percentage points on your exam. Everyone from your group who participates must sign the answer sheet to receive credit for the question. Any group who submits a group-member's name that is not present at the time the question was done will lose all credit for that question.

Graded Work	**Contribution:**
Exams 1-4	65%
Achieve Assignments	15%
Journal article questions and worksheets	15%
Questions to answer while reading the text	5%
Questions of the day (QD)	Extra credit (2% per exam)

Grading:

Grades will be based on four exams scheduled as indicated in the course outline. All 4 exams will not be comprehensive but cover only the material between each exam as outlined below. Exams count for 65% of your grade. Please note that although the material is not comprehensive, material in biochemistry tends to build on previous chapters and therefore it is best to review all that you have learned up to that point in the course before each exam. Achieve assignments count for 15% of your grade. Journal articles and worksheets will count for 15% of your grade and will be comprised of the questions related to the journal articles and answers to the worksheets. Due dates will be assigned to these at the time they are given out. "Questions to answer" will be worth 5% so it is minimal to your grade if you choose not to do them but can be a grade booster if you do

choose to do them. In addition these should reinforce the material covered in class. Again, due dates are listed in the gradebook for each set of these questions. **To receive credit you must submit them when they are due**. "Questions to answer…" **are individual** assignments while the journal articles and worksheets are group assignments.

Grades will follow the following point distribution:

>93%, A	90-92.9%, A-	87-89.9%, B+	83-86.9%, B	80-82.9%, B-
77-79.9%, C+	73-76.9%, C	70-72.9%,C-	60-69.9%, D	<60%, E

Under most circumstances, there will be no adjustment to your grades. There is no quota for particular letter grades.

Grade Appeals on Exams:
Requests for recalculation of exam scores or reevaluation of a question or your exam grade must be made in writing and accompanied by the exam item in question. Recalculation of a grade is simple – show me my math error and it will be corrected immediately. To request a re-evaluation of my scoring on a question, submit a typed explanation of how your original submission fully and cogently addresses the question asked. All grade appeals must be submitted to me in person no later than 1 week after the exam has been returned.

Class etiquette and excuse policies:
You get out of a course what you put into it and attending class can only add to that fact. You must also be present to get credit for the question of the day. It is required that you come to class for each of the scheduled exams. There will be few exceptions to this requirement. If you find that you cannot make the scheduled exam date you must contact me prior to the exam date. If this is not possible (as in the case of severe illness or unexpected family affairs) proper documentation must be provided. This should be done as soon as is possible.

Cell phone must be set to silent before coming to class. If it does ring during class you will lose the question of the day credit for that period and you will be asked to leave for the rest of the period. If there is a reason you need it to be turned on to ring (awaiting an emergency call from parents or child) please come see me before class begins and there will be no problems with letting your cell phone ring during class. I appreciate your cooperation in this matter as cell phone usage during class has become an increasing disturbance in recent years.

I also expect that if you bring your computer to class you will be using it for the purpose of following along in class and/or taking notes. Many students use their computers for checking email/playing games and/or surfing the web during class. This can be very distracting to the individual and to the people around that individual. I expect the courtesy of not performing such tasks during the 50 minutes that class is in session. If you wish to do any of these things (checking email/playing games and/or surfing the web) during the time class is scheduled please do not come to class. I reserve the right to dismiss individuals who I find using their computers during class for unrelated class activities.

Accommodations:
SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will be made for medical conditions related to pregnancy or parenting. Requests for accommodations including letters or review of existing accommodations should be directed to Ms. Heather Packer in the Office of Disability Services in Erwin Hall 22 or disabilityservices@geneseo.edu or 585-245-5112. Students with letters of accommodations should submit a letter to each faculty member at the beginning of the semester and discuss specific arrangements. Additional information on the Office of Disability Services is available at www.geneseo.edu/dean_office/disability_services.

Safeguarding your mental health:
Diminished mental health, including significant stress, mood changes, excessive worry, or problems with eating and/or sleeping can interfere with optimal academic performance. The source of symptoms might be strictly related to your course work; if so, please speak with me. However, problems with relationships, family worries, loss, or a personal struggle or crisis can also contribute to decreased academic performance.

SUNY Geneseo provides mental health services to support the academic success of students. Counseling Services, a part of the Lauderdale Center for Student Health & Counseling, offers free, confidential psychological services to help you manage personal challenges that may threaten your well-being.

In the event I suspect you need additional support, I will express my concerns and the reasons for them, and remind you of resources (e.g., Counseling Services, Career Services, Dean of Students, etc.) that might be helpful to you. It is not my

intention to know the details of what might be bothering you, but simply to let you know I am concerned and that help, if needed, is available. Getting help is a smart and courageous thing to do -- for yourself /and /for those who care about you.

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Important dates to keep in mind

August 26	First day of classes
September 02	Labor Day – no classes
October 14	Fall Break – no classes
November 20	Last day to elect Pass/Fail for full semester courses
November 27-29	Thanksgiving – no classes
December 02	Last day to withdraw from full semester courses
December 09	Last day of regularly scheduled classes
December 16	**Final Exam 12:00 -2:30 pm NOTE TIME CHANGE**

Course Outline

DATE		TOPIC
August	26	Chapter 1 - Biochemistry: An evolving science., Chapter 2 - Protein Composition and Structure.
	28	Chapter 2 – finish, Chapter 3 – Binding and Molecular Recognition
	30	Chapter 3 - continued
Sept.	02	Labor Day – no class
	04	Chapter 3 continued.
	06	Chapter 5 – Enzyme: Core Concepts and Kinetics
	09	Chapter 5- continued
	11	Chapter 5 - continued.
	13	Chapter 5 - continued.
	16	Chapter 6 – Catalytic Strategies.
	18	Chapter 6 - continued.
	20	Chap 6- continued
	23	Chap 6 - finish
	25	Chapter 7 – Enzyme Regulatory Strategies.
	27	Chapter 7 - continued.
	30	***Test #1 - Chapters 1, 2, 3, 5, 6***
October	02	Chapter 7 - continued.
	04	Chapter 7 - continued
	07	(Do on your own) Chapter 11 – Carbohydrates and Glycoproteins); Chapter 14 – Signaling Transduction pathways.
	09	Chapter 14 – Signaling Transduction pathways continued

	11	Chapter 15 – Metabolism – Basic concepts and design
	14	Fall Break – no class
	16	Chapter 15 – Metabolism Continued.
	18	Chapter 15 – Metabolism Continued.
	21	Chapter 16 – Glycolysis and gluconeogenesis.
	23	Chapter 16 – continued
	25	Chapter 16, finish
	28	Chapter 17 – Pyruvate Dehydrogenase and the Citric Acid Cycle.
	30	Chapter 17 - Continued
November	01	***Test #2 Chapters 7, 11, 14, 15***
	04	Chapter 17 – Continued
	06	Chapter 18 – Oxidative Phosphorylation
	08	Chapter 18 – Oxidative Phosphorylation
	11	Chapter 18 – Oxidative Phosphorylation finish up
	13	Chapter 20.3- 20.5 – Pentose Phosphate
	15	Chapter 20.3-20.5 – Pentose Phosphate – finish up
	18	***Test #3 Chapters 16, 17, 18***
	20	Chapter 21 – Glycogen Metabolism
	22	Chapter 21 – Glycogen Metabolism.
	25	Chapter 21 – finish
	27	Thanksgiving Break – no class
	29	Thanksgiving Break – no class
December	02	Chapter 22 – Fatty Acid Metabolism (Chapter 12 – do on your own with review sheet and notes)
	04	Chapter 22 - continued
	06	Chapter 22 - continued
	09	Chapter 22 - continued.
	16	***Final Exam Chapters 20, 21, 22 only <u>NOTE TIME CHANGE</u>: 12:00 to 2:30 in same room as class.***