

Introductory Biochemistry, CHEM 3700, Spring 2022

Section 1

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Office Hours:	<p>Office hours are held by appointment. Visit the link provided in Canvas to schedule a time to meet at your convenience. I am happy to meet face-to-face or via Zoom. Please note your preference when scheduling an appointment.</p> <p>Please also check out the office hours/review sessions offered by the SI and UTF for CHEM 3700.</p>
Text:	<p>Biochemistry: A Short Course, by Tymoczko, Berg and Stryer. The most recent edition is the 4th edition (ISBN: 1-1461-2613-5), but earlier editions would be fine as well.</p> <p>Calculator: A basic scientific calculator is required for practice problems and exams.</p> <p>iClicker (remote or app)</p>
Prerequisite	CHEM 2300 or CHEM 2310
Course Description	CHEM 3700 will cover in one semester the range of topics typically included in the field of biochemistry. Introductory biochemistry will cover the same topics as the 5700/5710 series, but in less depth. The course focuses on the major classes of biomolecules and their role in microbial, plant, and animal metabolism, as well as a more detailed look at the roles of these molecules in signaling pathways.
Course Communication	<p>Course announcements will be made via the class Canvas page. You are responsible for checking Canvas at least once a day for new announcements! An even better approach would be to set up Canvas announcements to go straight to your email. Please feel free to email me with questions! I try to maintain a 24-hour response time during the week and a 48 to 72 -hour response time on weekends. Often, I can respond much faster, however you should not plan to send last minute questions regarding quizzes or exams (ie. at 10pm on the evening that a quiz is due) and expect a rapid response.</p> <p>Office hours are offered by appointment for your convenience. Please visit the link provided in Canvas to schedule an appointment.</p>
Piazza	<p>For academic questions, I would prefer that you post your questions on Piazza (quiz questions are allowed). You will most likely also get a quicker response this way. The link to Piazza is located on the Canvas navigation list. Piazza is a free, online system where students can ask and answer questions. Not only will I be able to answer your questions, but my UTF and other students will be able to offer answers as well. (I always double check that answers provided by students are correct and will provide clarification if needed). Before you send a question, double check that someone else has not already asked it on Piazza, you may have an answer already waiting for you! You also have the option to post anonymously on Piazza, although please be aware that as an instructor I will be able to see your identity. It is expected that your communication on Piazza will be respectful and considerate, no harassment of any kind will be tolerated. Piazza is not the forum to discuss personal information. If you have personal concerns, please email me directly.</p>

<p>Canvas</p>	<p>Canvas is the where course content, grades, and communication will reside for this course.</p> <p>http://canvas.usu.edu</p> <p>Your username is your A#, and your password is your global password (the same one you use for Banner or Aggiemail).</p> <p>For Canvas, passwords, or any other computer-related technical support, contact the USU IT Service Desk via the contact information listed below.</p> <ul style="list-style-type: none"> ○ 435 797-4357 (797-HELP) ○ 877 878-8325 ○ http://it.usu.edu ○ servicedesk@usu.edu
<p>Course Navigation</p>	<p>The course is divided into 18 modules. For each module, you should download the provided lecture notes. While attending lecture, you should add your own annotations to the notes provided. After the lectures for a given module are completed, you should read the chapter in your textbook, focusing on the information covered in the lecture. Only information covered in lectures will be on the exam, you will not be tested on information from the text that is not covered in class. After reviewing the material, you should take the pertinent module quiz.</p> <p>All of the quizzes for a particular exam will be open at the beginning of that section and will remain open until the submission date for the exam. There will be a midterm exam after modules 5, 8, and 13, with a final exam after module 18.</p>
<p>Quizzes</p>	<p>There are 18 graded quizzes (one for each module) each worth 5 points plus a course pre-test quiz (also worth 5 points). The pre-test quiz must be completed within about the first week of the course by the date indicated on Canvas. Quizzes pertaining to each exam will be available anytime during the open window before the exam due date. For example, quizzes 1-5 must be taken before Exam 1, quizzes 6-8 before Exam 2, quizzes 9-13 before Exam 3, and quizzes 14-18 before the final. Quizzes have a 20-minute time limit and should be done individually but are open note and open book. For each quiz you may have two attempts and your best score is the score that will be kept. The questions on each attempt will not be identical, although they will cover the same concepts. Even if you do well on your first attempt, I strongly encourage you to utilize both attempts, as they will be good practice for your exams. Late submissions for quizzes (after the pertinent exam due date) will not be accepted. Please plan accordingly to avoid the potential issues that may occur with waiting until the due date to submit your quiz.</p>
<p>Midterm Exams</p>	<p>There will be a midterm exam after modules 5, 8, and 13 offered during specific testing windows as indicated in the course schedule that will be given in the USU testing center (testing.usu.edu). Each midterm exam will contain 33 questions worth 3 points each, plus one freebie point (100 points total per exam). You will not be allowed to take the midterm exams after their due dates.</p> <p><i>You are responsible for making appointments at the testing center in a timely manner in order to ensure you complete your exam within the availability window.</i></p> <p>Toward the end of the semester, an optional comprehensive make-up exam will be offered. If you elect to take this exam and do better than one of your three midterms, this score will replace your lowest midterm score. If you do worse, this score will not be counted. The make-up exam is not allowed to replace your final exam score.</p>

On line make-up exam (can substitute for lowest midterm score)	An optional “make-up exam”, covering all of the material covered on midterms 1-3 and worth 100 points, will be offered during the time interval indicated in Canvas. If you score <i>higher</i> on this exam than on your lowest of three in-class midterms, the score will replace the lowest midterm score. If you score <i>lower</i> on the make-up exam than on all three of your in-class midterms, then this exam score will not count. The make-up exam must be scheduled and taken online in the USU testing center. More information about the make-up exam will be provided in class and in Canvas.																						
Final Exam	A final exam (66 questions: ½ comprehensive, ½ new material) worth 200 points must be taken during USU finals week.																						
Supplemental Instruction	The supplemental instruction leader will hold structured review sessions twice a week that review the material from the current week’s lectures via Zoom. Dates/times and contact information will be announced on Canvas. You may attend any SI sessions that you wish. The SI instructor for this course is:																						
Undergraduate Teaching Fellow	The UTF for this course will hold weekly office hours; dates/times and contact information will be announced on Canvas. The UTF for this course is:																						
Coursework and Grading	<p>A total of 590 points are possible in CHEM 3700 and are distributed as follows:</p> <p style="padding-left: 40px;">Total of 3 midterms, or best two midterms and comprehensive make-up exam..... 300 pts. 18 on-line quizzes, chem 3700 pre-test (best 18 of 19 @ 5 pts each) 90 pts. Comprehensive Final Exam 200 pts. ----- Total points..... 590 points</p> <p>In addition, to encourage you to attend, prepare for, and be attentive during lectures, you may earn up to 5 points extra credit based on correct responses to the questions I will ask in lectures using the iclicker system. The points earned will be calculated as follows:</p> <p>(# of questions answered correctly/total # of lecture questions) x 5.....max 5 points</p> <p>In terms of final assignment of grades, you are <i>guaranteed</i> the following grades if your final class percentage lies within the indicated ranges:</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Grade</th> <th>Range</th> </tr> </thead> <tbody> <tr><td>A</td><td>100 % to 93.0%</td></tr> <tr><td>A-</td><td>< 93.0 % to 90.0%</td></tr> <tr><td>B+</td><td>< 90.0 % to 87.0%</td></tr> <tr><td>B</td><td>< 87.0 % to 83.0%</td></tr> <tr><td>B-</td><td>< 83.0 % to 80.0%</td></tr> <tr><td>C+</td><td>< 80.0 % to 77.0%</td></tr> <tr><td>C</td><td>< 77.0 % to 73.0%</td></tr> <tr><td>C-</td><td>< 73.0 % to 70.0%</td></tr> <tr><td>D</td><td>< 70.0 % to 60.0%</td></tr> <tr><td>F</td><td>< 60.0 %</td></tr> </tbody> </table> <p>Grades will not be rounded. A final grade of a 92.99% would earn an A-, while a 93.0% would earn an A.</p>	Grade	Range	A	100 % to 93.0%	A-	< 93.0 % to 90.0%	B+	< 90.0 % to 87.0%	B	< 87.0 % to 83.0%	B-	< 83.0 % to 80.0%	C+	< 80.0 % to 77.0%	C	< 77.0 % to 73.0%	C-	< 73.0 % to 70.0%	D	< 70.0 % to 60.0%	F	< 60.0 %
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F	< 60.0 %																						

Course Flexibility	<p>Life happens. In order to provide some flexibility, the following course provisions (as detailed in other locations in the syllabus) are available to all students:</p> <ol style="list-style-type: none"> 1. Your highest 18 of 19 quiz scores (module quizzes + chem 3700 pre-test) are kept. Additionally, a comprehensive make-up quiz will be offered at the end of the semester that can replace your next lowest quiz score or missed quiz. 2. Your lowest MIDTERM exam score may be dropped and replaced with your score on the comprehensive makeup exam. Your total of three midterms, OR two best midterm exam scores + comprehensive make up exam score count towards your final grade. (Note: You CANNOT drop your final exam score.) 3. An additional five points of extra credit can be earned by attending class and answering iClicker questions during the lectures. The extra credit will be calculated as follows: <ul style="list-style-type: none"> • $(\# \text{ of questions answered correctly} / \text{total \# of ALL lecture questions}) \times 5$
Provisions	<p>The administration of CHEM 3700 will adhere strictly to the academic policies outlined in the most recent USU General Catalog, which can be found here: http://catalog.usu.edu/content.php?catoid=12&navoid=3139</p>
Course assessment	<p>Students in this class are expected to develop proficiency in the principles listed on the class schedule and the attached “Learning Objectives” list. Questions provided on midterms, quizzes, and through the use of the iClicker personal response system will be used to assess your understanding of these principles. The formats to be used for assessment will include instructor-designed questions. Please note that assessment is a tool used by the Department of Chemistry and Biochemistry to improve the quality of instruction and proficiency of our students. Your grade will be based on your performance on the assignments indicated above, some of which will be used for course assessment.</p>

In accordance with the Americans with Disabilities Act, reasonable accommodations will be provided for all persons with disabilities in order to ensure equal participation in Chem 3700. In cooperation with the Disability Resource Center, reasonable accommodation will be provided for students with disabilities. Please meet with the instructor during the first week of class to make arrangements. Alternative format print materials, large print, audio, diskette or Braille, will be available through the Disability Resource Center.

* This syllabus serves as a statement of intent and serves as an agreement between the instructor and the student. Every effort will be made to avoid changes to the syllabus, but the possibility exists that unforeseen events could make changes to the syllabus necessary.

IDEA Objectives

1. Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories).
2. Learning to apply course material (to improve thinking, problem solving, and decisions).
3. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course.

Course Objectives

*A full list of course objectives is available on Canvas. Objectives specific to each module are also listed with the lecture notes.

Chemistry 3700 Syllabus, Spring 2022, Dr. Melissa Kofoed

Week	Day	Date	Lecture	Topic	Chapter (3 rd Edition)	Module	Quiz
1	M	1/10	1	Course Introduction, Cells and Biomolecules	1	1	1
	W	1/12	2	Organic Functional Groups, Chemical Bonds	2		
	F	1/14	3	pH, pKa	2		
2	M	1/17		Holiday: Martin Luther King Jr. Day		2	2
	W	1/19	4	Amino Acids	3		
	F	1/21	5	Protein Structure Part I	4		
3	M	1/24	6	Protein Structure Part II	4	3	3
	W	1/26	7	Enzymes	6		
	F	1/28	8	Enzyme Kinetics, Enzyme Inhibition	7		
4	M	1/31	9	Enzyme Mechanisms	8	4, 5	4, 5
	W	2/2	10	Regulatory Strategies	9		
	F	2/4	11	Nucleic Acids	33		
5	M	2/7	12	Nucleic Acid Structure	33	5	5
	W	2/9		Exam 1 (Modules 1-5) Tues (2/8)-Thurs (2/10)			
	F	2/11	13	Carbohydrate Nomenclature			
6	M	2/14	14	Carbohydrate Structure	10	6, 7	6
	W	2/16	15	Lipids	10		
	F	2/18	16	Membranes	11		
7	M	2/21		Holiday: Presidents' Day	12	7, 8	7
	W	2/23	17	Signal Transduction Pathways	13		
	F	2/25	18	Metabolism	14		
8	M	2/28	19	Metabolism Part II	15	8	8
	W	3/2		Exam 2 (Modules 6-8) Tues (3/1)-Thurs (3/3)			
	F	3/4	20	Glycolysis	16		
9	M	3/14	21	Gluconeogenesis	17	9, 10	9
	W	3/16	22	Pre-TCA Cycle Step, TCA Cycle	18, 19		
	F	3/18	23	Electron Transport Chain	20		
10	M	3/21	24	ATP Synthase	21	11, 12	10, 11
	W	3/23	25	Electromagnetic Radiation	22		
	F	3/25	26	Photosynthesis- Light Reactions	22		
11	M	3/28	27	Photosynthesis- Calvin Cycle	23	12, 13	12, 13
	W	3/30	28	Glycogen Metabolism	24, 25		
	F	4/1	29	Pentose Phosphate Pathway	26		
12	M	4/4		Exam 3 (Modules 9-13) Mon (4/4)-Wed (4/6)		14	14
	W	4/6	30	Fatty Acid Degradation	27		
	Th	4/8	31	Fatty Acid Synthesis	28		
13	M	4/11	32	Amino Acid Degradation, Amino Acid Synthesis	30, 31	15, 16	15
	W	4/13	33	DNA Replication Part I	34		
	F	4/15	34	DNA Replication Part II	34		
14	M	4/18	35	DNA Damage and Repair	34	16, 17	16, 17
	W	4/20	36	Transcription, RNA Processing	36		
	F	4/22	37	Protein Synthesis Part I	37, 38		
15	M	4/25	38	Protein Synthesis Part II	39, 40	18	18
	W	4/27		Interim Day			

Final Exam (50% Modules 1-9; 50% Modules 14-18): Thurs April 28-Tuesday May 3