Introductory Biochemistry, CHEM 3700, Summer 2021

Section 1

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Office Hours:

Office hours during the summer semester are offered by appointment. Please feel free to email me (melissa.kofoed@usu.edu) to set up a time to meet.

Office hours will be held via Zoom. Upon scheduling an appointment, you will be sent a Zoom link to my personal meeting room.

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.
This course is offered during the 1st 7-week session of the summer semester, which means that the course will cover the same material at a significantly faster pace as the equivalent course offered during the spring semester.

Required Materials

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.

Calculator: A basic scientific calculator is required for practice problems and exams.

It is required that you have a computer with a high-speed internet connection. Your computer must also have the Google Chrome browser, a webcam, and a microphone if you wish to take your proctored exams with the Proctorio browser extension.

A 3-credit course offered during the 15-week semester would require a time commitment of approximately 6-9 hours per week. **As this course is offered during the 1st 7-week session of the summer semester at an accelerated pace, the expected time commitment per week is 12-15 hours (approximately 5 hours "in class" and 7-8 hours outside of class).**

Prerequisite

CHEM 2300 or CHEM 2310

Course Fees

$15 per credit course fee is applied to all online courses to sustain current digital technologies and support services required for engaging and effective online learning.

Course Communication

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.
Office hours are offered by appointment for your convenience if you would like to discuss anything (virtually) face-to-face. Please email me to schedule an appointment.

Piazza

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.

Canvas

Canvas is the where course content, grades, and communication will reside for this course.

http://canvas.usu.edu

> Your **username** is your **A#**, and your **password** is your global password (the same one you use for Banner or Aggiemail).

For Canvas, passwords, or any other computer-related technical support, contact the USU IT Service Desk via the contact information listed below.

- 435 797-4357 (797-HELP)
- 877 878-8325
- http://it.usu.edu
- servicedesk@usu.edu

Course Navigation

The course is divided into 18 modules. For each module, you should download the provided lecture notes and watch the appropriate lecture videos. While watching the lecture videos, you should add your own annotations to the notes provided. After watching the lecture videos, 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. You are allowed to work ahead in this class. Due dates for lectures are suggested to help keep you on pace. However, **ALL QUIZ AND EXAM DUE DATES ARE FIRM.** 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.
As this is a seven-week class, it is important to move through the material in a timely manner.

Quizzes

There are 18 graded quizzes (one for each module) each worth 5 points. 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. All of the lectures should be completed for each module before the quizzes are taken. 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 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.**

Midterm Exams

There will be a midterm exam after modules 5, 8, and 13 offered during specific testing windows as indicated in the course schedule. 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.** 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.

Exams must be taken at a USU testing center or using the Proctorio browser extension. Proctorio requires the use of a computer with Google Chrome, a webcam, and a microphone. Please note that if you are taking the exam using Proctorio, you are allowed to have the linked allowed reference sheet and blank scratch paper and a calculator. YOU WILL NEED TO PRINT THESE OUT AHEAD OF TIME. For more information please visit testing.usu.edu and see announcements on Canvas.

If you elect to take your exam at a USU testing center, 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.

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 on the syllabus. If you score *higher* on this exam than on your lowest of three in-class midterms, the score will replace the lowest midterm score. If you score l*ower* 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 or with the Proctorio browser extension. 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 by June 25th.

Course Flexibility

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:

1. 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. Midterm exams are open for an entire week. This is not to encourage procrastination but rather to allow for flexibility in your schedule and to allow you to take your exam on a day/time that works best for you. Consistently taking exams on the last available date will mean that you will be behind schedule come the end of the semester.
4. An additional five points of extra credit can be earned by completing the embedded "quiz" questions within the recorded lectures. These questions can only be answered, and points can only be earned by accessing the lectures from either the Course Schedule, the Assignments page, or from within the course modules. If you have issues that prevent you from accessing and streaming the lectures via either of these methods, please email me. The extra credit will be calculated as follows:

(# of questions answered correctly/total # of ALL lecture questions) x 5

Coursework and Grading

A total of 590 points are possible in CHEM 3700 and are distributed as follows:

Total of 3 midterms, or best two midterms and the on-line make-up exam	300 pts.
18 on-line quizzes @ 5 pts each	90 pts.
Comprehensive Final Exam	200 pts.
Recitation quizzes (best 12 of 13 @ 5 pts each)	60 pts.
Total points	590 points

When this course is taught face to face, I offer students the opportunity to earn an additional 5 points of extra credit by attending class and answering iClicker questions throughout the lecture. In order to provide you with the same opportunity, I have embedded questions within each lecture. These questions can only be answered, and points can only be earned by accessing the lectures from either the Course Schedule, the Assignments page or within the course Modules. If you have issues that prevent you from accessing and streaming the lectures via these methods, please email me. The extra credit points can be earned as follows:

(# of questions answered correctly/total # of lecture questions) x 5…….**max 5 points**

In terms of final assignment of grades, you are *guaranteed* the following grades if your final class percentage lies within the indicated ranges:

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 %

Grades will not be rounded. A final grade of a 92.99% would earn an A-, while a 93.0% would earn an A.

Course Schedule

This course is semi self-paced in that you can work ahead, although **ALL QUIZ AND TEST DUE DATES ARE FIRM, LATE SUBMISSIONS WILL NOT BE ACCEPTED!** Quiz and exam due dates can be found on the assignments page or the quizzes page on Canvas.

Each exam and the associated quizzes must be completed by the final date of the availability window as listed below.

	Exam Availability Windows
Exam 1 (Modules 1-5)	May 21st- May 27th
Exam 2 (Modules 6-8)	June 1st- June 7th
Exam 3 (Modules 9-13)	June 12th- June 18th
Final Exam (50% Modules 1-13, 50% Modules 14-18)	June 18th- June 25th

Provisions 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

Course assessment 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 questions embedded with the lectures 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.

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.

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.

Week	Day	Date	Lecture	Topic	Chapter (3rd Edition)	Module	Quiz
1	M	5/10		Course Introduction		1, 2	1, 2
	T	5/11	1a, 1b	Cells and Biomolecules (29 min) Organic Functional Groups, Chemical Bonds (48 min)	1, 2		
	W	5/12	1c	pH, pKa (55 min)	2		
	Th	5/13	2a, 2b	Amino Acids (33 min) Protein Structure Part I (38 min)	3, 4		
	F	5/14	2c	Protein Structure Part II (39 min)	4		
2	M	5/17	3a	Enzymes (47 min)	6	3, 4, 5	3, 4, 5
	T	5/18	3b, 3c	Enzyme Kinetics (40 min) Enzyme Inhibition (37 min)	6, 7		
	W	5/19	4a, 4b	Enzyme Mechanisms (31 min) Regulation (40 min)	8, 9		
	Th	5/20	5a, 5b	Nucleic Acids (27 min) Nucleic Acid Structure (38 min)	33		
	F	5/21		Catch Up/Review for Exam			
3	M	5/24		**Exam 1 (Modules 1-5) Available: 5/21-5/27**		6, 7, 8	6, 7
	T	5/25	6a	Monosaccharides (45 min)	10		
	W	5/26	6b, 7a	Polysaccharides (33 min) Types of Lipids (35 min)	10, 11		
	Th	5/27	7b	Types of Lipids Part II, Cell Membranes (48 min)	11, 12		
	F	5/28	7c, 8a	Signal Transduction Pathways (36 min) Metabolism (43 min)	13, 14		
4	M	5/31		**Holiday: Memorial Day**		8, 9	8
	T	6/1	8b	Metabolism Part II (48 min)	15		
	W	6/2		Catch Up/Review for Exam			
	Th	6/3		**Exam 2 (Modules 6-8) Available: 6/1-6/7**			
	F	6/4	9a	Glycolysis (46 min)	16		
5	M	6/7	9b	Gluconeogenesis (40 min)	17	9, 10, 11, 12, 13	9, 10, 11, 12, 13
	T	6/8	10a, 10b	Pre-TCA Cycle Step (29 min) TCA Cycle (49 min)	18, 19		
	W	6/9	11a, 11b	Electron Transport Chain (48 min) ATP Synthase (25 min)	20, 21		
	Th	6/10	12a, 12b	Electromagnetic Radiation (31 min) Photosynthesis: Light Dependent Reactions (28 min)	22		
	F	6/11	13a, 13b	Photosynthesis: Calvin Cycle (35 min) Glycogen Metabolism, Pentose Phosphate(38 min)	23, 24, 25, 26		
6	M	6/14		Catch Up/Review for Exam		14, 15, 16	14, 15
	T	6/15		**Exam 3 (Modules 9-13): Available 6/12-6/18**			
	W	6/16	14a, 14b	Fatty Acid Degradation (37 min) Fatty Acid Synthesis (27 min)	27, 28		
	Th	6/17	15a, 15b	Amino Acid Degradation (34 min) Amino Acid Synthesis (23 min)	30, 31		
	F	6/18	16a, 16b	DNA Replication Part I (29 min) DNA Replication Part II (35 min)	34		
7	M	6/21	16c	DNA Damage and Repair (21 min)	34	16, 17, 18	16, 17, 18
	T	6/22	17a, 17b	Transcription (32 min) Post-transcriptional Modifications (23 min)	37, 38		
	W	6/23	18a, 18b	Protein Synthesis Part I (25 min) Protein Synthesis Part II (29 min)	39, 40		
	Th	6/24		Catch Up/Review for Exam			
	F	6/25		**Final Exam (Modules 1-12): Available 6/18-6/25**			