

CHEM 4243/BIOL 5243 BIOCHEMISTRY

Fall 2023 Syllabus TR 9:30 am -10:50 am

Course Instructor

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Office: Bolin 307G

Class Website: D2L website

Office Hour: MW 10:00-12:00 am; F 10:00-11:00 am by appointment

Purpose of the Syllabus

The purpose of the syllabus is to inform you about course expectations, policies, and content. Ignorance of course policies because you did not read your syllabus will not be an acceptable excuse for not adhering to these policies. Because the syllabus is also available online, you cannot lose it. By accepting this syllabus and remaining enrolled in the course, you affirm that you understand the contents of this syllabus and that you will adhere to its requirements.

Prerequisites

Credit for CHEM2013 (second semester organic chemistry) is required. It is STRONGLY suggested that you take biochemistry only if you have grades of a C or better in both semesters of organic chemistry (and that you remember what you learned) and have taken some introductory biology at some point. Physics and at least college algebra (if not calculus) are also recommended.

Required Textbook and Materials

Nelson, DL and Cox, MM, *Lehninger: Principles of Biochemistry*, 8th ed. [REQUIRED – you will be expected to actually read the text and do the problems, so you will need this book]. I strongly recommend that you buy this textbook and use it. Either hard copy or digital copy is acceptable.

A scientific calculator of some kind is required. Bring it every day.

Computer (laptop/desktop, not including Chromebook) is required for online session if needed.

Webcam is required for online session if needed.

PyMOL Molecular Modeling System: This is a free 3D visualization program available through the following download site <https://pymol.org/>. This system is available for both PC and Mac. You will be given a homework assignment using this system, so you will need it; it will also be helpful in general for you to see the proteins we will be talking about in class.

PyMol installation video: <https://youtu.be/75cGJKYyMrM>

PyMol tutorial video: <https://youtu.be/tkxNuTADMWg>

PyMol wiki: https://pymolwiki.org/index.php/Practical_Pymol_for_Beginners

Class Format due to COVID-19

- (1) Face covering is recommended, but not required.
- (2) If a student is approved by Disability Support Services to limit or eliminate their physical class attendance due to an underlying condition, please email me the information and I will implement “livestreaming” our face-to-face classroom sessions. But you still have to show up for the quizzes and exams, because I will not give the online test.
- (3) I will use D2L for posting syllabi, course communication, and course schedule. You should regularly check D2L and the email hosted via D2L for important course information.

- (4) In the event of increased incidence and risk of COVID-19 that results in the university moving back to a shelter-in-place mode, the course instruction will transition to fully online. More instructions will be given at that time.

Course Preparation and Success

Biochemistry is NOT an easy course. Biochemistry covers an extensive amount of material and you are required to know it. You will not succeed in this course unless you prepare for each class and study every day. For every hour in class, you should spend a minimum of 3 hours outside of class reading the text, reviewing your notes, creating study outlines and aids, and studying. This time commitment is NOT optional!! You absolutely cannot succeed by attempting to cram the night or morning before a quiz or exam. You should buy your textbook rather than renting it so that you can write all over it – do NOT just highlight passages, but write in the margins or write on multiple sheets of paper. If you want to type up your notes, that is fine, but you will learn more and learn better by physically writing out the material (note I did not say copying – I said writing, as in reading, thinking, summarizing and putting things into your own words).

Lecture Attendance Policies

1. Lecture attendance is required; it is not optional. You will only learn if you come to class.
2. Lecture will begin promptly on time; students are expected to be in their seats, ready to begin, and will be marked absent if they are not.
3. Students are expected to have read all required materials before walking into class.
4. If you miss class, it is up to you to get notes from another student as I will not provide them.
5. Students with excessive absences may be instructor dropped from the course with an “F”.
6. No make-ups will be given for missed quizzes or assignments due to lack of attendance, regardless of the reason you did not attend.
7. No make-ups will be given for exams; however, under special circumstances (see section on exams), consideration will be given and a substitute grade offered.
8. No one is allowed to miss the final. Missing the final exam will result in an “F” for the course.

To monitor attendance, a seating chart or attendance sign-in sheet will be kept. Students who sign-in for students that are not present will be referred to the Dean of Students. Because quizzes and assignments cannot be made-up and because exams are written off of my lectures, attendance of the lecture is critical. If you need to leave class early, it must be for a good reason and you must tell me before class begins or you will be marked absent. Do not email me regarding lecture absences or bring doctor's notes, etc. if you miss lecture. If you miss lecture, it is up to you to find out from another student what was missed and obtain notes from other students. For further information on Class Attendance policies, see the MSU Student Handbook, available online through the Student Life section of the MSU website.

Late Assignment Policies

1. All assignments are to be turned in to the instructor prior to the beginning of class or electronic deadline on the day that the assignment is due.
2. Assignments are posted or assigned in advance and due dates will be clearly indicated; there is no excuse for not turning in homework on time. It is YOUR responsibility to pay attention to deadlines.
3. No late assignments will be accepted from any student for any reason.
4. Assignments should be stapled (if necessary) BEFORE they are turned in to the instructor.

Quiz Policies

1. Quizzes will be given every Thursday throughout the semester except for the Thursdays on which exams are given. No quiz will be given the week of Thanksgiving.
 - a. Each quiz will be worth 15 points and there will be a total of 9 quizzes.

- b. Quizzes will be given at the very beginning of the class period. If you come late, you will NOT be allowed to take the quiz.
 - c. You will have no more than 10-15 minutes to take each quiz.
 - d. Quizzes may include problems from the book or new questions not from the book. Problems will be representative of what you may expect on the exams.
 - e. Disability students must take their quizzes under the same conditions as all other students.
 - f. There will be no make-ups for missed quizzes.
 - g. I will use Lockdown Browser and Respondus Monitor to monitor and record you during the quizzes if online quiz is provided.
 - h. Lockdown Browser is NOT compatible with Chromebook Laptops or mobiles devices. iPad and regular PCs are the only devices that are compatible with such software.
2. The lowest quiz grade will be dropped to allow for one Thursday absence or one “bad day”. If you miss more than one quiz, the resulting zeros will be incorporated into your quiz score.

Exam Policies

Exams	Cover Chapters	Date
Midterm Exam #1	Chapter 1-5	Sep 28, 2023
Midterm Exam #2	Chapter 6-9	Nov 2, 2023
Midterm Exam #3	Chapter 10-13	Dec 7, 2023
Final Exam	Mock ACS	Dec 12, 2023

1. There will be 3 (three) midterms and 1 (one) comprehensive final.
 - a. Exam dates are listed on the Lecture Schedule and will not be moved.
 - b. No make-up midterms will be offered if the midterm is missed, regardless of the reason.
 - c. Students are not allowed to miss the final exam. Failure to take the final exam will result in an F in the course. All graduating seniors are required to take the final exam.
2. Students with a legitimate, excusable reason for missing the midterm will be given consideration. A make-up exam will not be offered, but a substitute score based on the comprehensive final will be used to replace the zero received.
3. Graduate students will have extra take home exam and specific due date will be highlighted.
4. I will use Lockdown Browser and Respondus Monitor to monitor and record you during the exams if online format is provided.
5. Lockdown Browser is NOT compatible with Chromebook Laptops or mobiles devices. iPad and regular PCs are the only devices that are compatible with such software.

Excusable reasons for missing an exam include the following:

1. Extreme and verifiable illness (colds and elective procedures don't count and you must have a doctor's note verifying you could not come the actual day of the exam)
2. If you are quarantine because of COVID-19, students must report to MSU and provide the letter either from Office of Student Rights and Responsibilities or medical doctor.
3. Accident or injury (must present verification, e.g., tow slip, emergency room documentation)
4. MSU sanctioned event (you must be an active participant, not support staff)
5. Extreme family emergency (e.g., funeral the day of the exam; must show proof; immediate family only – best friends, great aunts, etc. don't count)
6. Students MUST notify me, the instructor, PRIOR to the start of the exam to receive consideration for an excused absence. If you are physically unable to notify me, then have a friend or family member notify me. Notifying me after the fact will result in an unexcused absence and a zero for the exam.

Inexcusable reasons for missing an exam include the following:

1. Scheduling doctor/dentist, therapy or other appointments for the day/time of the exam (possible exception: court dates). Note: you can control when your appointments are even if you are told “this is the only time you can come in”, so scheduling conflicts are not an excuse to miss the exam.
2. Failure to show up (missed bus, forgot you had an exam, slept in, car problems, etc.). Emphasis: do NOT sleep through exams – you are all adults and you should act like it.
3. Weather; if MSU is open, then you must be here, so if bad weather is forecast, prepare for it. It is your responsibility to check the MSU website for information on weather closures or delays.
4. Congested exam schedule or overlapping classes
5. Failure to obtain babysitter or caregiver
6. Work schedule conflict

In general, none of these excuses will be accepted for missed exams as all of them stem from a lack of responsibility on the part of the student to maintain control over their own schedules. You know exactly when your exams are scheduled, and you should make every effort to take them.

Absolutely no electronic devices of any kind may be used during exams. All exams are closed book and will be monitored for cheating. If you are caught doing anything suspicious, your exam will be taken away from you and you will receive an automatic zero for the exam.

University-Sponsored Teams and Organizations

All members of in-season sports teams or other campus organizations who will be missing class because of university sanctioned events MUST present to me a written statement on university letterhead and signed by a university official indicating those dates that will be missed because of travel or participation in the university-sponsored event. Athletics documentation must be presented to me within the first 2 weeks of the beginning of the semester. Other documentation (such as for theater, etc.) must be presented to me at least one week prior to the time that will be missed.

Students with Disabilities

Students with disabilities are required to register with Disability Support Services (DSS) before classroom accommodations can be provided. The instructor then needs to be notified by the student of the nature of these accommodations. This notification will take the form of an official letter obtained from DSS by the student and given to the instructor. Every effort should be made to provide me with this documentation within the first 2 weeks of the semester to avoid losing accommodations because you failed to provide proper notification in a timely manner. It is always the responsibility of the student to arrange accommodations with DSS. Students with disabilities must still take their exams on the same day as the rest of the class.

Course Policies Regarding Disruptive Behavior

1. Do not walk through the classroom or leave once class has begun (exception: sudden illness)
2. Do not talk during lecture except to ask questions of the instructor; talking to your friends, even to ask a question, is disruptive and will prevent other students in the class from hearing me
3. Do not engage in disruptive or disrespectful behavior
4. Do not cheat on exams or assignments (see Student Handbook)
5. Do not play games on your electronic devices or play with your social media sites, do homework for other classes, read books or newspapers, sleep, listen to music, etc. during the lecture
6. Do not eat or drink in class unless you can do so quietly; no one needs to listen to crinkling food wrappers or worse, listen to you chew or slurp

7. Disruptive students will be given one (1) verbal warning to improve their behavior. Second offenders will be asked to leave the classroom and will be referred to the Dean of Students. Abusive students will be dismissed from the class permanently.

Policy on Electronic Devices [READ THIS TWICE]

1. Turn off or silence (note: vibrate is not the same as silent) all cell phones, pagers, music players/headphones, and other electronic devices that make noise or have the potential to disrupt the class *before* you walk into the room.
2. NO cell phones are permitted to be out and/or in my (or your) sight in this class.
3. YOU MAY NOT TAKE PHOTOS OF MY SLIDES. These slides are copyrighted.
4. If your phone is out and/or in sight and/or you are caught using it, you will be asked to put it away and you will lose 1% from your final lecture grade in the course for each violation.
5. Should your phone ring/vibrate during class, you are dismissed for the day and you will lose 1% from your final lecture grade in the course for each violation.
6. If you want to use your phone to record the lecture, it must be placed at the front of the room and out of your reach.
7. No laptops/tablets are allowed AT ALL. Computers are distracting and you will learn more by writing.

University Code of Conduct

For university standards of conduct please refer to the MSU Student Handbook. In general, students are to attend all meetings of all classes; instructors may drop students for excessive absences, indifference, disruptive behavior, or failure to complete class assignments; students are prohibited from cheating, plagiarizing, or colluding. Students are expected to have read the Student Handbook.

Academic Dishonesty

Cheating, plagiarism, and collusion (as well as several other forms of conduct) are all strictly prohibited at MSU. Please read the MSU Student Handbook definitions of cheating, plagiarism, and collusion and MAKE SURE that you do not engage in any of these behaviors. If you are unclear on what may count as cheating, plagiarism, or collusion, please see the instructor or the Dean of Students. Plagiarism hurts everyone and is never acceptable.

Instructor Drops

According to the 2012-2013 MSU Student Handbook, p. 47, "An instructor may drop a student any time during the semester for excessive absences, for consistently failing to meet class assignments, for an indifferent attitude, or for disruptive conduct." For the purposes of this course, "consistently failing to meet class assignments" includes consistently not turning in assigned work or turning in work that consistently receives a failing grade.

Intellectual Property

By enrolling in this course, the student expressly grants MSU a "limited right" in all intellectual property created by the student for the purpose of this course. The "limited right" shall include but shall not be limited to the right to reproduce the student's work product to verify originality and authenticity, and for educational purposes.

Final Grade Assessment

Final grades will be calculated using the following distributions:

Midterm Exams (3 @ 100pts each)	55%
Quizzes (9 @ 15pts each; lowest dropped)	15%
Homework (Class Assigned)	10%
Attendance	10%

Final Exam (100pts Mock ACS)

10%

Midterm Exams will be open-ended written exams, plus some multiple-choices. The Final Exam, however, will be a multiple-choice exam. All exams will be a significant test of your ability to understand both detail and context and use your knowledge to solve problems.

Important: Based on experience, students with a failing quiz average at the time of the first midterm who then fail Midterm 1 go on to get Ds or Fs in the class. If you are struggling, it is recommended that you come see me EARLY in the semester. I cannot help you if you do not make the effort to come see me.

Overall, final course grades will be based on the following scale: A (90% or higher); B (80-89.9%); C (70-79.9%); D (60-69.9%); F (59.9% or less). If you do not get 90% or better on every assignment, you should not expect to get an A in the course. There will be no extra credit offered or adjustments made to the class.

Lecture Schedule

Date	Topic	Date	Topic
Aug 29	Course Introduction READ Cp. 1 Foundations of Biochemistry by Thursday for Quiz #1	Oct 19	Quiz #6 Cp. 8 Nucleotides and Nucleic Acids
Aug 31	Quiz #1 Cp. 2 Water	Oct 24	Cp. 8 Nucleotides and Nucleic Acids
Sep 5	Cp. 2 Water	Oct 26	Quiz #7 Cp. 9 DNA-based Information Technologies
Sep 7	Quiz #2 Cp. 3 Amino Acids, Peptides, & Proteins	Oct 31	Cp. 9 DNA-based Information Technologies
Sep 12	Cp. 3 Amino Acids, Peptides, & Proteins	Nov 2	Exam 2: Chapters 6-9
Sep 14	Quiz #3 Cp. 4 The 3D Structure of Proteins	Nov 7	Cp. 10 Lipids
Sep 19	Cp. 4 The 3D Structure of Proteins <i>Assigned Homework: PyMOL</i>	Nov 9	Cp. 10 Lipids
Sep 21	Quiz #4 Cp. 5 Protein Function	Nov 14	Cp. 11 Biological Membranes and Transport
Sep 26	Cp. 5 Protein Function	Nov 16	Quiz #8 Class cancel due to conference
Sep 28	Exam 1: Chapters 1-5	Nov 21	Cp. 12 Biosignaling
Oct 3	Cp. 6 Enzymes	Nov 23	THANKSGIVING HOLIDAY
Oct 5	Cp. 6 Enzymes	Nov 28	Cp. 13 Bioenergetics & Biochemical Rxns
Oct 10	Cp. 6 Enzymes <i>Assigned Homework: Kinetics</i>	Nov 30	Quiz #9 Cp. 13 Bioenergetics & Biochemical Rxns
Oct 12	Quiz #5 Cp. 7 Carbohydrates and Glycobiology	Dec 5	Cp. 13 Bioenergetics & Biochemical Rxns
Oct 17	Cp. 7 Carbohydrates and Glycobiology	Dec 7	Exam 3: Chapters 10-13

COMPREHENSIVE FINAL EXAM: Tuesday, December 12, 2023 from 8:00-10:00am

NOTE: GRADUATING SENIORS ARE REQUIRED TO TAKE THE FINAL. Seniors do not get a pass just because they are graduating, and if you need a specific grade to ensure that you graduate, you need to start working on that grade on the first day of class.