



CHEM 4243/BIOL 5243 Syllabus: BIOCHEMISTRY

College of Science, Mathematics and Engineering

CHEM 4243/BIOL 5243 Section 101

Fall 2026 TR 9:30 am -10:50 am

Contact Information

Instructor: Dr. George Fu-Cheng Liang, Ph.D.

Office: Bolin Hall 307E

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

Office phone: (940) 397-4472

E-mail: fucheng.liang@msutexas.edu

Course 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.

Textbook & Instructional 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 a hard copy or digital copy is acceptable.

1. Your course material is in D2L on the first day of class, for everyone in your class. Your Professor has opted to have this course in the program to save you time and money.
2. A discounted charge, including tax, has been added to your student account—this amount is lower than the price listed on the publisher's website.
3. You have the choice to "opt out" of this special pricing and find your material on your own. If you prefer to "opt out", the instructions will be in your my.msutexas.edu email on the second day of class.
4. If you "opt out", you lose your course material. If you "opt out" by mistake, please contact the bookstore at the email address below and you will be "re-instated" with your course materials.
5. For questions concerning the program or if you need assistance, please contact the Bookstore at jenny.denning@msutexas.edu.

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 [PyMOL website link](#). 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: [Installation YouTube link](#)

PyMol tutorial video: [Tutorial YouTube link](#)

PyMol wiki: [wiki weblink](#)

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).

Student Handbook

Refer to: [Student Handbook](#)

Academic Misconduct Policy & Procedures

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. Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.

[Office of Student Conduct](#)

Moffett Library

Moffett Library provides resources and services to support student's studies and assignments, including books, peer-reviewed journals, databases, and multimedia

materials accessible both on campus and remotely. The library offers media equipment checkout, reservable study rooms, and research assistance from librarians to help students effectively find, evaluate, and use information. Get started on this [Moffett Library webpage](#) to explore these resources and learn how to best utilize the library.

Grading

Final grades will be calculated using the following distributions:

Final Grade Assessment	Percentage
Midterm Exams (3 @ 100pts each)	55 %
Quizzes (10 @ 15pts each; lowest dropped)	15 %
Homework (Class Assigned)	10 %
Attendance	10 %
Final Exam (100pts)	10 %

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.

Homework

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.

Quizzes

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.
- 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.

Exams

Exams	Cover Chapters	Date
Midterm Exam #1	Chapter 1-5	Sep 24, 2026
Midterm Exam #2	Chapter 6-9	Oct 29, 2026
Midterm Exam #3	Chapter 10-13	Dec 3, 2026
Final Exam	Mock ACS	Dec 8, 2026

- 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.
- Students with a legitimate, excusable reason for missing the midterm will be given consideration. A make-up exam will be offered.
- Graduate students will have extra take home exam and specific due date will be highlighted.

Excusable reasons for missing an exam include the following:

- 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)
- 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.
- Accident or injury (must present verification, e.g., tow slip, emergency room documentation)
- MSU sanctioned event (you must be an active participant, not support staff)
- 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)
- 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.

Mid-Term Exam

Midterm Exams will be open-ended written exams, plus some multiple-choices.

Final Exam

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 Dates

- Last day for term schedule changes: Check date on [Academic Calendar](#).
- Deadline to file for graduation: Check date on [Academic Calendar](#).
- Last Day to drop with a grade of "W:" Check date on [Academic Calendar](#).
- Refer to: [Drops, Withdrawals & Void](#)

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into [D2L](#) through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Attendance

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.

Recording Classes

****Recording classes is generally prohibited without the professor's explicit permission.*** Such recordings, when permitted, are for personal use only and may not be uploaded to the internet or otherwise shared, transmitted, or published without the professor's prior consent. Some faculty may not permit recordings of their classes. When it is feasible and appropriate, students may record classes to accommodate disabilities under the Americans With Disabilities Act, with prior approval of Disability Support Services. Such recordings may not be uploaded to the internet or otherwise shared, transmitted, or published.

Instructor Class Policies

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.

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exists in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for 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. For more details, please go to [Disability Support Services](#).

Emergency Aid Resources for Basic Needs

Unexpected life circumstances can affect anyone. If you are experiencing challenges meeting basic needs—such as housing, utilities, food, transportation, healthcare, technology, textbooks or other life necessities, resources may be available to help. Visit the [Student Emergency Support and Resources webpage](#) to learn more, and explore emergency support opportunities through MSU and how to access them. For additional information, please contact the Office of Student Affairs: Clark Student Center #108, (940) 397-7500, student.affairs@mstuexas.edu.

College Policies

Campus Carry Rules/Policies

Refer to: [Campus Carry Rules and Policies](#)

Smoking/Tobacco Policy

Midwestern State University seeks to provide a safe, healthy, pleasant environment for its faculty, staff, and students. To this end, the use of tobacco products, including smoke and smokeless tobacco, and the advertising, sale, free distribution, and discarding of tobacco products shall be prohibited in all indoor and outdoor facilities and in all university vehicles. The policy extends to faculty, staff, students, vendors, guests, and visitors.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes has prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry](#).

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit [MSUReady – Active Shooter](#). Students are encouraged to watch the video entitled “Run. Hide. Fight.” which may be electronically accessed via the University police department’s webpage: ["Run. Hide. Fight."](#)

Grade Appeal Process

Update as needed. Students who wish to appeal a grade should consult the Midwestern State University [MSU Catalog](#)

***Notice:** Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

Course Schedule:

Date	Topic	Date	Topic
Aug 25	Course Introduction READ Cp. 1 Foundations of Biochemistry by Thursday for Quiz #1	Oct 15	Quiz #6 Cp. 8 Nucleotides and Nucleic Acids
Aug 27	Quiz #1 Cp. 2 Water	Oct 20	Cp. 8 Nucleotides and Nucleic Acids
Sep 1	Cp. 2 Water	Oct 22	Quiz #7 Cp. 9 DNA-based Information Technologies
Sep 3	Quiz #2 Cp. 3 Amino Acids, Peptides, & Proteins	Oct 27	Cp. 9 DNA-based Information Technologies
Sep 8	Cp. 3 Amino Acids, Peptides, & Proteins	Oct 29	Exam 2: Chapters 6-9
Sep 10	Quiz #3 Cp. 4 The 3D Structure of Proteins	Nov 3	Cp. 10 Lipids
Sep 15	Cp. 4 The 3D Structure of Proteins <i>Assigned Homework: PyMOL</i>	Nov 5	Cp. 10 Lipids
Sep 17	Quiz #4 Cp. 5 Protein Function	Nov 10	Cp. 11 Biological Membranes and Transport
Sep 22	Cp. 5 Protein Function	Nov 12	Quiz #8 Cp. 11 Biological Membranes and Transport
Sep 24	Exam 1: Chapters 1-5	Nov 17	Cp. 12 Biosignaling
Sep 29	Cp. 6 Enzymes	Nov 19	Quiz #9 Cp. 12 Biosignaling
Oct 1	Cp. 6 Enzymes	Nov 24	Cp. 13 Bioenergetics & Biochemical Rxns
Oct 6	Cp. 6 Enzymes <i>Assigned Homework: Kinetics</i>	Nov 26	THANKSGIVING HOLIDAY
Oct 8	Quiz #5 Cp. 7 Carbohydrates and Glycobiology	Dec 1	Cp. 13 Bioenergetics & Biochemical Rxns
Oct 13	Cp. 7 Carbohydrates and Glycobiology	Dec 3	Exam 3: Chapters 10-13

COMPREHENSIVE FINAL EXAM: Tuesday, December 8, 2026 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.