

MMBIO 240 - Molecular Biology

Fall 2025

Section 001: 221 MARB on M W F from 1:00 pm - 1:50 pm

Instructor/TA Info

Instructor Information

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Course Information

Description

This course is intended to give an introduction to the field of molecular biology. Molecular biology is the study of the structure and function of biology at the molecular level, and is mostly focused on DNA, RNA, and proteins and how these molecules are produced in a cell. Molecular biology is one of the

most interdisciplinary fields in science today, and principles gained in this class will be broadly applicable to many other courses in Life Sciences.

Prerequisites

CELL 120 (or BIOL 130 or MMBIO 121) & Chem 105, or equivalents. These courses must be completed prior to enrolling in MMBIO 240; no exceptions can be made due to college policy.

Materials

Learning Outcomes

Molecular Functions, Structures, Processes, and Mechanisms

Describe and compare the functions and molecular structures of DNA, RNA, and protein, and explain the processes and regulatory mechanisms governing the synthesis of each.

Molecular Biology Techniques

Explain a variety of molecular biology techniques, and interpret experimental results obtained using the various methods.

Problem Solving

Solve unfamiliar problems by applying the information and principles mastered through Learning Outcomes 1 and 2

Effective Collaboration

Collaborate with other students to solve challenging problems, to clarify ideas and concepts, and to learn from one another in a spirit of cooperation and integrity

Grading Scale

Grades	Percent
A	93%
A-	90%
B+	87%
B	83%
B-	80%
C+	77%
C	73%
C-	70%
D+	67%
D	63%
D-	60%
E	0%

Grading Policy

In my classes, students EARN their grades. This course has a very generously high GPA at the end of the semester, but I still have students asking me how they can get a higher grade once all assessments are completed. For example, a student earns an 89.7% and they asked me if I round up....I don't. Or a student earns a 92.8% and they ask if there's "anything I can do" to get the higher grade....there's not. If you want to get a certain grade, then it is up to YOU to EARN that grade. There is no magical grade fairy that gives bonus points only to the students that ask for them at the end of the semester. Please respect this policy, and know that if you don't earn an A there are an awful lot of students that did put in the effort and demonstrated the mastery of the material to earn an A.

Students sometimes request a re-grade on an assignment or an exam. I prepare grading keys for my TAs so that they can determine scores that are fair and in line with my expectations. In addition, I have the same TA grade the same question for all students so that you don't get your test graded by the "tough TA" while your peer gets graded by the "easy TA". If a student

disagrees with a score given by a TA, here is the policy for petitioning a re-grade: within 3 weekdays of having the exam returned, the student must deliver the entire exam to Dr. Johnson along with an explanation of which question was thought to be unfairly graded. The explanation must include WHY the student believes that more points were warranted in accordance with their response. Simply stating that the student understood the principle but didn't write that down is not sufficient. You need to prove that you understood the principle at the time of the exam or assignment by showing how your answer adequately answers what was asked for. In addition to having the professor re-mark that question, the entire assignment will be subject to a re-grade by Dr. Johnson. Students should note that it is possible that a student may lose points overall from a re-grade request.

If you feel that a TA is grading harshly or unfairly, please talk to Dr. Johnson about this directly. I've had some students get confrontational with TAs, and I don't like to see that. Many TAs are new to grading and are facing their own "learning curve", and may need some pointers.

Attendance Policy

Class attendance is critical to mastering the material in this course. If you do not come to class, I cannot help you learn. Attendance is an assignment, and your attendance and participation in class is almost always directly correlated with your final grade. I also reserve the right to put questions on the exams that can only be answered by those who have attended class regularly.

Study Habits

Note that each lecture will contain a list of course learning outcomes at the beginning. These outcomes should give you direction in what to focus on during the lecture and your studies outside of class. Exam questions will mostly be drawn directly from these outcomes. Other professors who have taught MMBIO 240 have surveyed their previous students who have earned the

highest marks in this course to see what they do to be successful. A summary of their responses will be posted online to give you direction on how to prepare for exams effectively (See Content, "What my top 240 students do to be successful").

Cheating

If you are caught cheating on an exam then you will be given a zero on that exam. Depending upon the severity of the cheating, you may be given a failing grade for the entire class. I abide by the Honor Code, and I expect my students to do the same. I WILL report you to the Honor Code office if I catch you cheating. There are lots of excellent students who cannot attend BYU because they barely missed the cutoff, and I would rather have them get a chance than to have a cheater blocking their path.

Extra Credit

Extra credit for course ratings

Due: before midnight on the last day of class

Complete the BYU course ratings, opt to "release your name" at the end so that we know that you completed the evaluation, get 3 points extra credit. Must be completed before Finals begin; no exceptions.

Molecular biology in the scientific literature

Due: before midnight on the last day of class

Can write up to 2 reports for 3 points each. See Content section for a description of the assignment ("Extra credit assignments").

Scripture study extra credit

Due: Thursday, Dec 11 at 11:59 pm

For each week of the semester that you study the Book of Mormon (for students who are members of the Church of Jesus Christ of Latter-day Saints) or other

holy scripture [(the Bible, the Koran or the Book of Mormon if you want) for students who are not members] each day (all seven days), you will earn 1 pt of extra credit (14 weeks in the semester, so 14 pts total possible). At the end of the semester, I'll give a Learning Suite survey to figure out how many of these points that you've earned. So keep track each week of how you did each day of the week.

Class Etiquette

As part of the generation that has grown up with a cell phone in your hand, you should recognize the importance of staying engaged in class. I always have a few students that tend to have their eyes on their phones all throughout class. Those students tend to do poorly in terms of final grades, because they aren't paying attention. Sometimes these students waste valuable class time by asking questions that have already been posed in the exact same class period. Please don't waste the time of your teacher OR your peers by not paying attention. Get your money's worth out of this class! Further, even though I try really hard to be engaging as a teacher, there is no way that I can compete with YouTube in terms of all of the possible interesting content available. Please be courteous to your fellow students, who may be trying to pay attention in class but get distracted by your YouTube video.

Class Policies

1. Unexpected emergencies happen. However, the sooner you can tell me that you will miss an exam or other deadline, the sooner we can make alternate plans. Keep me informed!
2. Please **do not discuss exam questions with other students until after the exam period is concluded**. About 5-10% of the students in this class will have Accommodations letters from the Accessibility Center, and many of them will have an accommodation to have additional days to take exams. I have no control over this. But please be aware that there is a very good chance that

somebody sitting around you before class has not taken the exam yet, despite the exam period having ended.

Students with Disabilities

If you have an Accommodations Letter from the Accessibility Center, please make me aware of that during the first week or two of the semester. I will respond to the email from the Accessibility Center within 1-2 weekdays to develop a plan with you to be successful in this course. I am here to help all of my students, including those with physical/mental/emotional challenges, and I am happy to help.

Use of this Syllabus

This syllabus has been prepared to outline the organization of this class. Students should read the entire syllabus and refer to it frequently. Please be courteous and refer to the syllabus to answer your questions before asking the professor; this tends to be a large class. If you want to put me in a bad mood and make me question my decision to be a teacher, please ask me in class when the exam begins and ends even though it is posted on LS and you have a cell phone in your pocket.....

Learning Assessment

I reserve the right to re-use exam questions from one semester to the next. As a result, **you should not seek out copies of exams from students who took my course in previous semesters. In addition, you should not pass on information about exams onto future students.** To disregard these policies is considered cheating and may result in a failing grade in the course.

Assignments

Assignment Descriptions

Lecture Attendance (1.0 point x 36 days, for a total of 36 pts)

Due: Each lecture day at the beginning of class.

I expect you to attend lecture. You may be brilliant and feel like you don't need to come to class, but I'm forcing you. Plus, these are the easiest points of the semester. Each day at the beginning of class, mark the attendance in Learning Suite. Do not mark that you attended on Learning Suite if you don't attend. This would be cheating and result in you failing. I know that you may have a valid reason to miss class, so you can miss four times and still get all 36 points (there are a total of 40 class periods).

Weekly Group Study (1.0 point x 14, for a total of 14pts)

Due: Saturday of each week at 11:59 pm

For each week of the semester that you study for at least 30 minutes with at least 1 other student in our class, you will earn 1.0 pts (14 weeks in the semester, so 14 pts total possible). On Saturday of each week (starting this week 9/6) report your study on Learning Suite before 11:59 pm. The last day for reporting is Saturday 12/13.

Exam 1

Due: Monday, Sep 29 at 6pm

Exam 1, Fri Sept 26 to Mon Sep 29, Covers Topics 1-9, in the Testing Center.

Exam 2

Due: Wednesday, Oct 22 at 9pm

Exam 2, Mon Oct 20 to Wed Oct 22, Covers Topics 10-18, in the Testing Center.

Exam 3

Due: Monday, Nov 17 at 6pm

Exam 3, Friday Nov 14 to Mon Nov 17, Covers Topics 19-28, in the Testing Center.

Final Exam

Online during finals week

Extra Credit Opportunities

Extra credit for course ratings

Due: Thursday, Dec 11 at 11:59 pm

Complete the BYU course ratings, opt to "release your name" at the end so that we know that you completed the evaluation, get 3 points extra credit. Must be completed before Finals begin.

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University Policies

Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and every instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

Preventing Sexual Misconduct

Brigham Young University prohibits all forms of sexual harassment—including sexual assault, dating violence, domestic violence, and stalking on the basis of sex—by its personnel and students and in all its education programs or activities. University policy requires all faculty members to promptly report incidents of sexual harassment that come to their attention in any way and encourages reports by students who experience or become aware of sexual harassment. Incidents should be reported to the Title IX Coordinator at t9coordinator@byu.edu or (801) 422-8692 or 1085 WSC. Reports may also be

submitted online at <https://titleix.byu.edu/report> or 1-888-238-1062 (24-hours a day). BYU offers a number of resources and services for those affected by sexual harassment, including the university's confidential Sexual Assault Survivor Advocate. Additional information about sexual harassment, the university's Sexual Harassment Policy, reporting requirements, and resources can be found in the University Catalog, by visiting <http://titleix.byu.edu>, or by contacting the university's Title IX Coordinator.

Student Disability

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. A disability is a physical or mental impairment that substantially limits one or more major life activities. Whether an impairment is substantially limiting depends on its nature and severity, its duration or expected duration, and its permanent or expected permanent or long-term impact. Examples include vision or hearing impairments, physical disabilities, chronic illnesses, emotional disorders (e.g., depression, anxiety), learning disorders, and attention disorders (e.g., ADHD). If you have a disability which impairs your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 801-422-2767 to request a reasonable accommodation. The UAC can also assess students for learning, attention, and emotional concerns. If you feel you have been unlawfully discriminated against on the basis of disability, please contact the Equal Opportunity Office at 801-422-5895, eo_manager@byu.edu, or visit <https://hrs.byu.edu/equal-opportunity> for help.

Academic Honesty

The first injunction of the Honor Code is the call to "be honest." Students come to the university not only to improve their minds, gain knowledge, and develop skills that will assist them in their life's work, but also to build character.

"President David O. McKay taught that character is the highest aim of education" (The Aims of a BYU Education, p.6). It is the purpose of the BYU Academic Honesty Policy to assist in fulfilling that aim. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid

academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication or falsification, cheating, and other academic misconduct.

Deliberation Guidelines

To facilitate productive and open discussions about sensitive topics about which there are differing opinions, members of the BYU community should: (1) Remember that we are each responsible for enabling a productive, respectful dialogue. (2) To enable time for everyone to speak, strive to be concise with your thoughts. (3) Respect all speakers by listening actively. (4) Treat others with the respect that you would like them to treat you with, regardless of your differences. (5) Do not interrupt others. (6) Always try to understand what is being said before you respond. (7) Ask for clarification instead of making assumptions. (8) When countering an idea, or making one initially, demonstrate that you are listening to what is being said by others. Try to validate other positions as you assert your own, which aids in dialogue, versus attack. (9) Under no circumstances should an argument continue out of the classroom when someone does not want it to. Extending these conversations beyond class can be productive, but we must agree to do so respectfully, ethically, and with attention to individuals' requests for confidentiality and discretion. (10) Remember that exposing yourself to different perspectives helps you to evaluate your own beliefs more clearly and learn new information. (11) Remember that just because you do not agree with a person's statements, it does not mean that you cannot get along with that person. (12) Speak with your professor privately if you feel that the classroom environment has become hostile, biased, or intimidating. Adapted from the Deliberation Guidelines published by The Center for Democratic Deliberation.

(<http://cdd.la.psu.edu/education/The%20CDD%20Deliberation%20Guidelines.pdf/view?searchterm=deliberation%20guidelines>)

Devotional Attendance

Brigham Young University's devotional and forum assemblies are an important part of your BYU experience. President Cecil O. Samuelson said, "We have special and enlightening series of devotional and forum assemblies...that will complement, supplement, and enrich what will also be a very productive period

in your classrooms, laboratories, and libraries. We look forward to being with you each Tuesday...and hope that you will regularly attend and bring your friends and associates with you...A large part of what constitutes the unique 'BYU experience' is found in these gatherings where the Spirit has been invited and where we have the opportunity to discuss and consider things of ultimate worth and importance that are not afforded to the academic community on almost any other campus" (from the address "The Legacy of Learning", 30 August, 2005). Your attendance at each forum and devotional is strongly encouraged.

Diversity and Inclusion in the Classroom

"Because we feel the depth of God's love for His children, we care deeply about every child of God, regardless of age, personal circumstances, gender, sexual orientation, or other unique challenges" (President Russell M. Nelson, "The Love and Laws of God," September 2019). As a university community we strive to foster an educational environment that promotes the personal dignity of every student and accept individual responsibility to eliminate racism, sexism, and nationalism. Our course participation reflects our understanding that every individual is a child of Heavenly Parents. We create learning environments in which every individual is motivated to express their opinions and perspectives and ask questions to augment discussions and learning. We listen to, learn from, and strive to consider thoughtfully the opinions of others. We use language that is polite, considerate, and courteous—even when we strongly disagree.

Inappropriate Use of Course Materials

All course materials (e.g., outlines, handouts, syllabi, exams, quizzes, PowerPoint presentations, lectures, audio and video recordings, etc.) are proprietary. Students are prohibited from posting or selling any such course materials without the express written permission of the professor teaching this course. To do so is a violation of the Brigham Young University Honor Code. It is also unethical to post your own work (study sheets, papers) from the course on file sharing websites as you are encouraging others to engage in plagiarism.

These policies continue indefinitely (not limited to the duration of the semester or term you take this course).

Mental Health

Mental health concerns and stressful life events can affect students' academic performance and quality of life. BYU Counseling and Psychological Services (CAPS, 1500 WSC, 801-422-3035, caps.byu.edu) provides individual, couples, and group counseling, as well as stress management services. These services are confidential and are provided by the university at no cost for full-time students. For general information please visit <https://caps.byu.edu>; for more immediate concerns please visit <http://help.byu.edu>.

Plagiarism

Intentional plagiarism is a form of intellectual theft that violates widely recognized principles of academic integrity as well as the Honor Code. Such plagiarism may subject the student to appropriate disciplinary action administered through the university Honor Code Office, in addition to academic sanctions that may be applied by an instructor. Inadvertent plagiarism, which may not be a violation of the Honor Code, is nevertheless a form of intellectual carelessness that is unacceptable in the academic community. Plagiarism of any kind is completely contrary to the established practices of higher education where all members of the university are expected to acknowledge the original intellectual work of others that is included in their own work. In some cases, plagiarism may also involve violations of copyright law.

Intentional Plagiarism-Intentional plagiarism is the deliberate act of representing the words, ideas, or data of another as one's own without providing proper attribution to the author through quotation, reference, or footnote.

Inadvertent Plagiarism-Inadvertent plagiarism involves the inappropriate, but non-deliberate, use of another's words, ideas, or data without proper attribution. Inadvertent plagiarism usually results from an ignorant failure to follow established rules for documenting sources or from simply not being sufficiently careful in research and writing. Although not a violation of the Honor Code, inadvertent plagiarism is a form of academic misconduct for which an instructor can impose appropriate academic sanctions. Students who are in doubt as to whether they are providing proper

attribution have the responsibility to consult with their instructor and obtain guidance. Examples of plagiarism include: Direct Plagiarism-The verbatim copying of an original source without acknowledging the source. Paraphrased Plagiarism-The paraphrasing, without acknowledgement, of ideas from another that the reader might mistake for the author's own. Plagiarism Mosaic-The borrowing of words, ideas, or data from an original source and blending this original material with one's own without acknowledging the source. Insufficient Acknowledgement-The partial or incomplete attribution of words, ideas, or data from an original source. Plagiarism may occur with respect to unpublished as well as published material. Copying another student's work and submitting it as one's own individual work without proper attribution is a serious form of plagiarism.

Respectful Environment

"Sadly, from time to time, we do hear reports of those who are at best insensitive and at worst insulting in their comments to and about others... We hear derogatory and sometimes even defamatory comments about those with different political, athletic, or ethnic views or experiences. Such behavior is completely out of place at BYU, and I enlist the aid of all to monitor carefully and, if necessary, correct any such that might occur here, however inadvertent or unintentional. "I worry particularly about demeaning comments made about the career or major choices of women or men either directly or about members of the BYU community generally. We must remember that personal agency is a fundamental principle and that none of us has the right or option to criticize the lawful choices of another." President Cecil O. Samuelson, Annual University Conference, August 24, 2010 "Occasionally, we ... hear reports that our female faculty feel disrespected, especially by students, for choosing to work at BYU, even though each one has been approved by the BYU Board of Trustees. Brothers and sisters, these things ought not to be. Not here. Not at a university that shares a constitution with the School of the Prophets." Vice President John S. Tanner, Annual University Conference, August 24, 2010

Schedule

The comprehensive schedule for this course is found on Learning Suite under the “Schedule” tab at:

https://learningsuite.byu.edu/.QjLn/cid-_bG1ll_fxZMm/student/calendar

The same information for the next ~6 days can be found on the “Home” tab under “Dashboard.”