

Course Name: Introduction to Molecular Biology

Course Number: BB 331

Credits: 3

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Course Description

Course dealing with the molecular basis of cellular function, with emphasis upon modern developments, and the foundation for practical applications of this knowledge. The course will involve the conceptual background necessary to appreciate the applications of molecular biology. The course will also address public policy issues and questions: What are the moral and practical problems that flow from identification of an individual as being at risk for a late-appearing genetic disorder, such as Huntington's disease or certain cancers? Does the scientific or public value of knowing the entire DNA sequence of the human genome justify a situation in which individual or small-scale research cannot be supported? What issues arise when the fruits of biological research, mostly publicly funded, are commercialized? Should a novel organism be patented? How can biotechnology be applied to environmental problems?

Please note: Normally, a syllabus states the rules of a course explicitly, but I wish to include additional lenience toward any of you who may be facing difficulties due to the various ongoing disruptions caused by the Covid-19 pandemic. Let's all work together with that thought in mind. We want to get it right. Let's therefore recognize that some procedures related to the course, including due dates, may need to be modified during the term.

Prerequisites – CH [D-] or CH 202 [D-] or CH 222 [D-] or CH 225H [D-] or ((CH 232 [D-] or CH 232H [D-]) or (CH 262 [D-] or CH 262H [D-] or CH 272 [D-]))

Course Learning Outcomes

1. Students will learn to recognize and explain how past research in molecular biology has addressed scientific, technical and social problems.
2. Students will critically examine current research trends that are culminating today in working procedures that allow the inherited genomes of organisms to be manipulated and precisely edited.
3. As a class writing project, students will put together a comprehensive "molecular biology impact statement" (MBIS) to examine the scientific, technical and social impacts of a scientific project in molecular biology that represents the kinds of projects in today's news.

Bacc Core

This course fulfills the Baccalaureate Core requirement for the Science, Technology, and Society category. This course will:

1. Analyze relationships among science, technology, and society using critical perspectives or examples from historical, political, or economic disciplines.
2. Analyze the role of science and technology in shaping diverse fields of study over time.
3. Articulate in writing a critical perspective on issues involving science, technology, and society using evidence as support.

Communication

You will have ongoing access to your peers and me throughout the course. Email -- *not Canvas Messaging* -- is the primary form of communication with me. I check my Email twice each day, M-F and I will aim for a 1-day turnaround if you write me from your Oregon State University email account and include the course designator "BB331" in the heading of the message. If you use a different email account (e.g., Gmail) or you do not include "BB331" in the subject heading, I will not be alerted and therefore most likely will not respond. I will also be much slower to respond if you try to contact me through Canvas Messaging, so please use standard Email.

Please post all course-related questions in the Q&A Discussion Forum so that the whole class may benefit from our conversation. Please contact me privately by Email for matters of a personal nature.

If you are ill (or caring for someone who is)

If you (or a dependent or a close family member) are ill, please follow [guidance issued by the University](#) about next steps. If you have [symptoms](#), the recommendations as of the start of term are to self-isolate and call your health provider, or [Student Health Services](#) (<https://studenthealth.oregonstate.edu/>), or an emergency medical care provider.

I am here to support your success during these challenging times, too. Please reach out to me directly if you are concerned about your ability to engage in course activities while you are ill. You can do so by [sending me an email or Canvas message]. You need not disclose private medical information or provide documentation of your illness. The [Office of the Dean of Students](#) can also assist you if you are navigating a range of extenuating life circumstances including but not limited to prolonged illness, hospitalization, financial concerns, etc. They can be reached via Zoom chat or audio Monday through Friday from 9 a.m. to 5 p.m. at beav.es/4qQ or by email at support.odos@oregonstate.edu.

Course Credits

This course combines approximately 90 hours of instruction, online activities, and assignments for 3 credits.

Needed Technology and Level of Competence

See [Keep Learning](#) for Canvas and Zoom tutorials and contact information for OSU

technical support. There, you'll also find information about ways to access a free or low-cost internet connection during this time to support your learning. Technical competence should include basic knowledge of the internet, searching for technical references, electronic document preparation, and working with shared Google documents.

If you experience any technical errors or problems, contact 24-7 Canvas Support through the Help link within Canvas. If you experience computer difficulties, need help downloading a browser or plug-in, or need assistance logging into a course, contact the IS Service Desk for assistance. You can call (541) 737-8787 or visit the [IS Service Desk](#) online.

Learning Resources

You are not required to purchase any materials for this course. The textbook is a free, open educational resource, [Biochemistry Free for All](#), by Kevin Ahern, Indira Rajagopal, and Taralyn Tan. This text is provided under a Creative Commons license.

Evaluation of Student Performance

- Discussions – 20%
- Quizzes– 30%
- Molecular Biology Impact Statement – 25%
- Final Exam – 25%
- **Total – 100%**

Letter Grade

Grade	Percent Range
A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	Below 60

Course Content

Week	Topic and Central Investigative Question	Assignments and Learning Activities
1	Welcome Are you willing to identify as a molecular biologist?	<ul style="list-style-type: none">• Watch lecture videos.• Take molecular biology pre-test.• Participate in the Discussions
2-3	DNA and Genomes How has curiosity about genome replication driven the cycle of science and technology?	<ul style="list-style-type: none">• Watch lecture videos.• Read assigned textbook sections.• Watch TedTalk video• Participate in one Thought Questions Discussion each week.• Take the quiz.
4-5	RNA and Proteins How do genomes express information for natural and technological purposes?	<ul style="list-style-type: none">• Watch lecture videos.• Read assigned textbook sections.• Participate in one Thought Questions Discussion each week.• Take the quiz.
6-7	DNA Mutation How are genomes altered by natural damage, natural repair, and genome editing technologies?	<ul style="list-style-type: none">• Watch lecture videos.• Read assigned textbook sections.• Watch TedTalk videos.• Participate in one Thought Questions Discussion each week.• Take the quiz.
8-10	Synthesizing a Bigger Picture What are the impacts of molecular biology?	<ul style="list-style-type: none">• Watch lecture videos.• Read articles for class project.• Submit draft and final versions of MBIS. Participate in the Discussion.
11	Finals Week	<ul style="list-style-type: none">• Take the final exam.

Course Policies

Discussion Participation

Students are expected to participate in all graded discussions and group writing assignments. While there is great flexibility in online courses, this is not a self-paced course.

Late Work Policy

All assignments will be submitted via Canvas with an official due date and time. You are encouraged to submit assignments on time so that you maintain your progress in the class. Late work is generally not accepted, and when it is, the available points will be substantially lowered. If you encounter an emergency that disrupts your ability to submit a graded assignment, contact me right away to discuss options for completion.

Makeup Exams

There are no makeup exams for this course. Please free up your schedule to ensure you can complete the final exam during the window of time provided. If you encounter an emergency that disrupts your ability to complete the final exam in the time permitted, contact me right away to discuss options for completion.

Incompletes

Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or birth of your child), and if the student has turned in 80% of the points possible (in other words, usually everything but the final paper). If you are having any difficulty that might prevent you completing the coursework, please don't wait until the end of the term; let me know right away.

Guidelines for a Productive and Effective Online Classroom

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility. Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course, paying particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.

- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

Statement Regarding Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval, please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Accessibility of Course Materials

All materials used in this course are intended to be accessible. If you require accommodations, please contact [Disability Access Services \(DAS\)](#).

Additionally, Canvas, the learning management system through which this course is offered, provides a [vendor statement](#) certifying how the platform is accessible to students with disabilities.

Expectations for Student Conduct

Student conduct is governed by the university's policies, as explained in the [Student Conduct Code](#). Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the university's regulations regarding civility.

Academic Integrity

Integrity is a character-driven commitment to honesty, doing what is right, and guiding others to do what is right. Oregon State University students and faculty have a responsibility to act with integrity in all of our educational work, and that integrity enables this community of learners to interact in the spirit of trust, honesty, and fairness.

Academic misconduct, or violations of academic integrity, can fall into seven broad areas, including but not limited to: cheating; plagiarism; falsification; assisting; tampering; multiple submissions of work; and unauthorized recording and use.

It is important that you understand what student actions are defined as academic misconduct at Oregon State University. The OSU Libraries offer a [tutorial on academic misconduct](#), and you can also refer to the [OSU Student Code of Conduct](#) and [the Office of Student Conduct and Community Standard's website](#) for more information. More importantly, if you are unsure if something will violate our academic integrity policy, ask your professors, GTAs, academic advisors, or academic integrity officers.

If you are found responsible for academic misconduct, the College Hearing Officer (or other hearing body) will make a determination of sanctions that are appropriate to the violation and the surrounding context). College Hearing Officers are authorized to assign Academic Sanctions as described in the [Code](#).

Students are expected to comply with all regulations pertaining to academic honesty. For further information, visit [Student Conduct and Community Standards](#), or contact the office of Student Conduct and Mediation at 541-737-3656.

OAR 576-015-0020 (2) Academic or Scholarly Dishonesty:

- a) Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.
- b) It includes:
 - i) CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.
 - ii) FABRICATION - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.
 - iii) ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).
 - iv) TAMPERING - altering or interfering with evaluation instruments or documents.
 - v) PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.
- c) Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.

TurnItIn

Your instructor may ask you to submit one or more of your writings to Turnitin, a plagiarism prevention service. Your assignment content will be checked for potential plagiarism against Internet sources, academic journal articles, and the papers of other OSU students, for common or borrowed content. Turnitin generates a report that highlights any potentially unoriginal text in your paper. The report may be submitted directly to your instructor or

your instructor may elect to have you submit initial drafts through Turnitin, and you will receive the report allowing you the opportunity to make adjustments and ensure that all source material has been properly cited. Papers you submit through Turnitin for this or any class will be added to the OSU Turnitin database and may be checked against other OSU paper submissions. You will retain all rights to your written work. For further information, visit [Academic Integrity for Students: Turnitin – What is it?](#)

Student Evaluation of Courses

The online Student Evaluation of Teaching system opens to students during the week before finals and closes the Monday following the end of finals. Students receive notification, instructions and the link through their ONID. They may also log into the system via Online Services. Course evaluation results are extremely important and used to help improve courses and the online learning experience for future students. Responses are anonymous (unless a student chooses to "sign" their comments, agreeing to relinquish anonymity) and unavailable to instructors until after grades have been posted. The results of scaled questions and signed comments go to both the instructor and their unit head/supervisor. Anonymous (unsigned) comments go to the instructor only.