

## Syllabus – BIO SCI 99 Spring 2019

**Welcome to Molecular Biology!** The goal of this course is for you to gain an understanding of biology from a much broader perspective than you may have received from previous courses. We will cover the core processes of a cell, that of DNA replication, transcription and translation, in addition to equally important topics including molecular biology lab techniques, the organization of the genome, and viruses. Most importantly, we hope this class will give you a new outlook on studying biology. You may be accustomed to classes which reward you for memorizing the proteins in a complex or intermediates in a pathway, but we will focus more on understanding the mechanism of a process and how each process affects the cell as a whole.

My name is Brian Sato and I will be your instructor this quarter. I am a faculty member in the Department of Molecular Biology and Biochemistry. Feel free to email me **anytime** with questions at [bsato@uci.edu](mailto:bsato@uci.edu). My office is 2238 McGaugh Hall.

**Office Hours** –1246 McGaugh Hall  
Monday 11-12p and Thursday 9:00-10:00a

If you cannot make these office hours, **please email me** and we will set up another time to meet.

### **How to succeed in this (or any) class?**

1. Play an active role in your education (don't just sit there and wait for things to happen)

-Be prepared for lecture – do the textbook reading, take the pre-lecture quizzes seriously

-Ask questions – in class, in OH, by email, on the message board, by text, etc.

-Let me know if there are things you like/dislike

2. Focus on learning and the grades will follow

-Grades are important, but students often focus more on what needs to be done to earn a grade instead of the course material. Learning and grades won't correlate 100% of the time, but the better grasp you have on the material, the better your grade will be.

3. Trust yourself!

-While it is great to work well with others, you are a knowledgeable, independent scientist.

Trust your ability to make decisions and don't wait for constant reassurance from others!

### **Bio99 Course Learning Objectives**

Following completion of the course, you should be able to:

1. Illustrate the molecular mechanisms of DNA, RNA and protein synthesis
2. Demonstrate understanding of the concept of a gene and how expression of a gene is regulated at the DNA, RNA and protein levels
3. Draw conclusions from data found in primary scientific literature
4. Propose a strategy to solve a biological problem utilizing molecular biology techniques

In addition, each lecture will be accompanied by a set of learning objectives. These objectives are not a complete list of what you should be able to do but are a good way to focus your studying.

## Canvas

Check the Canvas page often as I will use it to post class news, reading quizzes, homeworks, lecture slides, videos, class notes, and all other kinds of molecular biology goodness. If you have questions of a non-personal nature, please post them on the discussion board. This will let your classmates see whether they truly understand a concept by being able to explain it.

## Requirements/Grading

<b>Quizzes (3)</b>	<b>180 points</b>
<b>Final</b>	<b>181 points</b>
<b>Pre-lecture Quizzes</b>	<b>40 points</b> – At least 60% correct is required for completion credit -2 pt per successfully complete quiz (26 lectures total)
<b>Clickers – Lecture</b>	<b>40 points</b> – Credit for participation only (not for correct answers) -2 pt for each lecture with clicker participation (26 lectures total) -For flipped (online) lectures, completion of the lecture assignment will count towards clicker points for that day
<b>Homework</b>	<b>39 points</b> – At least 60% correct is required for completion credit -6.5 pt per HW successfully completed (9 HW assignments total)
<b>Prerequisite Quiz</b>	<b>20 points</b> – Monday of Week 2
<b>Discussion</b>	<b>10 points</b> – 2 points for each discussion attended
<b>Total</b>	<b>510 points</b>

Exams must be taken at the indicated times. They are open note, including anything with the exception of the textbook or any type of technology (calculators, phones, etc). If an emergency (a real emergency!) arises, you must let me know as early as possible before the actual exam. In the case of excusable emergencies for the quizzes, your other quizzes exam will carry more weight to make up the differences. Emergencies during finals will be handled with a make-up oral exam. Students with learning disabilities recognized by the university, please let me know in advance so I can set up whatever you need.

The course grade will be determined based on the class average on all assignments. The mean will be roughly the cut-off for the B-/C+. There is not a pre-set distribution of A's, B's, etc.

## Lecture/Pre-lecture Quizzes

Lecture is MWF. Each lecture will have assigned reading, which you are responsible for understanding before you walk into class. The majority of this reading **will not be covered in lecture**, and instead we will focus on building off of the class reading. Thus, it is in your best interest to do the reading, as the lecture may be useless without that pre-learned knowledge.

To ensure that the reading is done, there will be short 5-10 question quizzes to be taken before each lecture on Canvas. Full credit will be earned as long as you get 60% of the questions correct. Below 60% will receive no credit. Each quiz can be taken up to 3 times to earn the 60%. 75% of pre-lecture quizzes (20 of 26) must be successfully completed for full credit.

I will be podcasting the lectures and posting the slides and lecture notes on the class website. The podcasts and notes are not to be used as replacements for lecture, but supplements to review specific areas you may not have understood in class. It is important that you try to focus on listening and understanding during lecture rather than copying everything being said.

As a major goal of this course is to provide you with experience independently and actively solving problems (as opposed to passively listening to me), we will have five lecture periods (**Flipped Fridays**) where the learning will happen on your own. For each of these lectures, I will post a short video, and there will be one or more problems that you solve (alone or with your classmates). The lecture period will allow you to work on these problems with your classmates, but attendance these days is completely optional. These assignments will be submitted to a canvas dropbox. Flipped Fridays will be **April 12<sup>th</sup>**, **April 26<sup>th</sup>**, **May 10<sup>th</sup>**, **May 20<sup>th</sup>** (Monday), and **May 31<sup>st</sup>**.

### **Clickers**

Clickers will be used in the course to provide instant feedback. Only 1 clicker is allowed per student. Disciplinary action will result if you are found using multiple clickers for classmates. For lecture credit, you must answer clicker questions in 75% of the lectures (20 of 26). **Please do not ask about forgotten clickers, dead batteries, etc**, as 100% participation is not required to earn the full clicker points. Be sure to register your clicker if you have not done so previously. For days where we do not meet for lecture, completion of the lecture assignment will count towards your clicker points for that day.

### **The Book/Reading Guides**

*Molecular Biology: Principles and Practices*, by Cox, Doudna, O'Donnell 2nd edition is the course textbook. You can also use the 1st edition, (readings for this version are on the Canvas page as well) but you are responsible for any discrepancies between editions.

Each reading assignment will also have a reading guide, a series of questions that you should be able to answer after completing the reading. These are completely optional and the answers will not be posted.

### **Homework**

At the end of each week, problem sets will be released through Canvas. These questions will be more elaborate than the pre-lecture quizzes and test for your ability to do more than recall facts. You must earn a 60% to receive full credit. Each homework assignment can be completed up to 3 times to earn the 60%. You must successfully complete 6 of the 9 homework assignments for full credit. The week 10 homework will be released but not assigned for a grade due to the proximity to the final exam.

### **Prerequisite Quiz**

To get to this point, you have successfully completed a number of other biology courses. It is important that you understand that knowledge needs to be brought to this course in order to be successful. To highlight this point, you will be taking a brief multiple-choice prerequisite test based on the basic concepts from Bio Sci 97 (Genetics) at the beginning of week 2. Bio97 lecture slides will be available on our canvas page for you to review if needed.

**Discussion sections**

The purpose of discussion sections is to review the previous week's material and examine it in a new scenario. Each week there will be group activities that will allow you to build off of the class information and work with your peers. Discussions will be held during weeks 2, 3, 4, 6, 7, 8 and 10. Attendance at each discussion earns you 2 points with a maximum of 10 points that can be earned. Please attend the discussion section you are enrolled in.

**Academic Honesty**

All students are expected to follow UCI's policy of academic integrity (for more info go to <http://www.editor.uci.edu/catalogue/appx/appx.2.htm#academic>). While it is acceptable and even encouraged for you to study with your classmates, all exams are to be completed on your own. Failure to comply with this policy **will** result in disciplinary action which may include a failing grade in the class, suspension or expulsion from the university. It will also be accompanied by a letter which is placed in your student file, that may be requested by prospective graduate school.