

## Course Syllabus BISC 579 Advanced Topics in Biology

**Instructor:** Dr. Yongjian Qiu

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**Office Location:** Shoemaker Room 406

**Office Hours:** Weds 3:00-4:00 pm (Zoom meeting)

**Semester:** Fall 2020

**Lecture:** Online/Recorded video

**Lecture times:** Tues, Thurs 4:00-5:15 pm

### Course Description:

Molecular Genetics introduces the student to the structure, maintenance and expression of the genome. We will examine both prokaryotic and eukaryotic genomes in this course, with an emphasis on genetic analysis. After completing this course, students should be able integrate the structure and function of the genome, describe how gene expression is regulated in multiple paradigms, and be able to understand how genetic analysis is used to dissect complex regulatory processes.

### Textbook:

Molecular Biology of the Gene 7<sup>th</sup> Ed. Watson, et al. Pearson. The students are responsible for all material presented during class.

### Additional Readings:

One research article published in major journals (e.g. *Nature*, *Science*, *Cell*, *PNAS*, *Plant Cell*, etc.) will be assigned to students through Blackboard each week. Students are required to read these research articles and short-answer questions related to these articles will be included in exams.

### Attendance:

Attendance is required and counts for 15% of the final grade. Students attending the virtual component of this online course are subject to the same attendance policy and procedures as traditional students (<https://catalog.olemiss.edu/academics/regulations/complete>). However, participation is tracked by the completion of online assignments. One or two short-answer questions related to the lectures will be assigned on each Tuesday through Blackboard and due on next Tuesday by midnight. Failing to submit answers to each assignment on time will be considered as an absence. Students who have three or more absences will get a score of zero for Attendance Grade.

### Exams:

There will be three semester exams and one comprehensive final. All exams will be a combination of multiple choice and short-answer questions. Each of the three semester exams counts for 20% of the final grade and the final exam counts for 25% of the final grade. Students can make-up missed exams only under the following circumstances: 1) family emergency with supporting contact or documentation provided, 2) Illness with physicians note, 3) University-sponsored event with supporting documentation from the sponsoring department. The Student needs to contact the instructor either before the exam or within 24 hours after the normally scheduled exam to arrange a time to make-up the exam.

**Grades:***Weight*

a. Attendance	15%
b. Exam 1	20%
c. Exam 2	20%
d. Exam 3	20%
e. Final Exam	25%
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TOTAL	100%

*Scale*

A	= 93-100%
A-	= 90-92.99%
B+	= 87-89.99%
B	= 83-86.99%
B-	= 80-82.99%
C+	= 77-79.99%
C	= 73-76.99%
C-	= 70-72.99%
D	= 60-69.99%
F	= lower than 60%

This scale is non-negotiable.

**Academic Integrity:**

Students are expected to abide by the University's policies on academic honesty and conduct:

<https://secure4.olemiss.edu/umpolicyopen/ShowDetails.jsp?istatPara=1&policyObjidPara=10817696>. Failure to abide by these policies will result in action that may include exam and/or course failure, or even suspension from the University.

**Accommodations:**

Whenever possible, and in accordance with Federal 504/ADA guidelines, the University of Mississippi will attempt to provide reasonable academic accommodations to students who request and require them. Please call 662-915-7128 or email [sds@olemiss.edu](mailto:sds@olemiss.edu) for assistance.

Students are encouraged to visit the University's Keep Learning site (<https://olemiss.edu/keeplearning/>) to access information and resources related to COVID-19 support. The site provides links to University student services to facilitate and support learning.

Students with diagnosed health concerns that may affect their compliance with COVID-19 health requirements should contact UM's Student Disability Services (SDS) Office (<https://sds.olemiss.edu>) to see if they are eligible for an SDS accommodation as soon as possible.

The University must have accurate contact information, including cell phone numbers, to facilitate student communications and contact tracing. Students should check and update their University contact information (<https://olemiss.edu/mystudentprofile>).

**Class Schedule:**

<b>Date</b>	<b>Lecture</b>	<b>Readings MGB 7<sup>th</sup> ed.</b>
25-Aug (Tue)	History of Genetics	Chapter 1
27-Aug (Thur)	DNA is the Genetic Material	Chapter 2
1-Sep (Tue)	DNA Structure <a href="#">Assignment 1 due</a>	Chapter 3 pg 51-62; Chapter 4 pg 78-93
3-Sep (Thur)	DNA Topology	Chapter 4 pg 93-103
8-Sep (Tue)	Chromosome Structure & Nuclear Organization <a href="#">Assignment 2 due</a>	Chapter 6 pg 121-129; Chapter 8 pg 200-236
10-Sep (Thur)	<b>Exam 1</b>	
15-Sep (Tue)	DNA Replication <a href="#">Assignment 3 due</a>	Chapter 9
17-Sep (Thur)	DNA Mutation and Repair	Chapter 10
22-Sep (Tue)	Gene Analysis <a href="#">Assignment 4 due</a>	
24-Sep (Thur)	Homologous Recombination	Chapter 11
29-Sep (Tue)	Site-Specific Recombination <a href="#">Assignment 5 due</a>	Chapter 12 pg 378-392
1-Oct (Thur)	Genome in Flux	Chapter 12 pg 393-414
6-Oct (Tue)	<b>Exam 2</b> <a href="#">Assignment 6 due</a>	
8-Oct (Thur)	Biotechnology	
13-Oct (Tue)	Prokaryotic Transcription <a href="#">Assignment 7 due</a>	Chapter 13 pg 429-445
15-Oct (Thur)	Lambda Phage & Operons	Chapter 18 pg 620-651; Appendix 1
20-Oct (Tue)	Eukaryotic Transcription <a href="#">Assignment 8 due</a>	Chapter 13 pg 448-460
22-Oct (Thur)	Regulation of Chromatin	Chapter 8 pg 229-254
27-Oct (Tue)	<b>Exam 3</b> <a href="#">Assignment 9 due</a>	
29-Oct (Thur)	Transcriptional Activation	Chapter 19 pg 659-680
3-Nov (Tue)	Chromosomal Silencing <a href="#">Assignment 10 due</a>	Chapter 19 pg 681-695
5-Nov (Thur)	Transcript Processing I	Chapter 14 pg 467-488
10-Nov (Tue)	Transcript Processing II <a href="#">Assignment 11 due</a>	Chapter 14 pg 497-505
12-Nov (Thur)	Translation	Chapter 15 pg 509-548
17-Nov (Tue)	Translational Regulation <a href="#">Assignment 12 due</a>	Chapter 15 pg 549-558

**Final Exam:**                    **Friday, November 20**                    **4:00 p.m.**

**Please Note:**

1. This syllabus is subject to change at the discretion of the instructor to accommodate instructional and/or student needs.
2. Course materials, extra reading or assignments, course communications, and grades will be available through BlackBoard. It is your responsibility to check Blackboard regularly.