

Course Syllabus BISC 370/579 Molecular Genetics

Instructor: Dr. Yongjian Qiu

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Office Location: Shoemaker Room 406

Office Hours: Weds 3:00-4:00 pm

Semester: Fall 2019

Lecture: Shoemaker Room 408

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 to 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 7th Ed. Watson, et al. Pearson.

Attendance: The students are responsible for all material presented during class. Attendance is required.

Exams: There will be three semester exams and one comprehensive final. All exams will be short answer/essay questions. Each 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: 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 = 59% or less. 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 for assistance.

Class Schedule:

| Date | Lecture | Readings MGB 7th ed. |
|-------------|----------------------------------|--|
| 27-Aug | History of Genetics | Chapter 1 |
| 29-Aug | DNA is the Genetic Material | Chapter 2 |
| 3-Sep | DNA Structure | Chapter 4 pg 78-93 |
| 5-Sep | DNA Topology | Chapter 4 pg 93-103 |
| 10-Sep | Chromosome Structure | Chapter 8 pg 200-229 |
| 12-Sep | The Nucleus | |
| 17-Sep | Exam 1 | |
| 19-Sep | DNA Replication | Chapter 9 |
| 24-Sep | DNA Mutation and Repair | Chapter 10 |
| 26-Sep | Gene Analysis | |
| 1-Oct | Homologous Recombination | Chapter 11 |
| 3-Oct | Site-Specific Recombination | Chapter 12 pg 378-392 |
| 8-Oct | Genome in Flux | Chapter 12 pg 393-414 |
| 10-Oct | Exam 2 | |
| 15-Oct | Prokaryotic Transcription | Chapter 13 pg 429-445 |
| 17-Oct | Lambda Phage I | Chapter 18 pg 636-651, Appendix 1 |
| 22-Oct | Lambda Phage II | |
| 24-Oct | Operons | Chapter 18 pg 620-635 |
| 29-Oct | Eukaryotic Transcription | Chapter 13 pg 448-460 |
| 31-Oct | Regulation of Chromatin | Chapter 8 pg 229-254 |
| 5-Nov | Transcriptional Activation | Chapter 19 pg 659-680 |
| 7-Nov | Chromosomal Silencing | Chapter 19 pg 681-695 |
| 12-Nov | Exam 3 | |
| 14-Nov | Transcript Processing I | Chapter 14 pg 467-488 |
| 19-Nov | Transcript Processing II | Chapter 14 pg 497-505 |
| 21-Nov | Translation | Chapter 15 pg 509-548 |
| 26-Nov | Thanksgiving Holidays (no class) | |
| 28-Nov | Thanksgiving Holidays (no class) | |
| 3-Dec | Translational Regulation | Chapter 15 pg 549-558 |
| 5-Dec | Regulatory RNAs | Chapter 20 |

Final Exam: **Wednesday, December 11** **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.