

Genetics (BISC 336) syllabus

Description: A study of current genetics, including form, function, regulation and utility. This course is designed to present an overview of genetics for Biology majors. Students are expected to become familiar with basic principles of the patterns of inheritance and mechanisms of gene action. Prerequisites: grade of C or better in BISC 160, 161, 162 and 163. Credits: 4, lecture/lab.

Instructors: Dr. Ryan Garrick (rgarrick@olemiss.edu), and Dr. Sarah Liljegren (sjliljeg@olemiss.edu)

Graduate Teaching Assistants: Abhishesh Bajracharya (abajrach@go.olemiss.edu), Akacia Halliday (akhallid@go.olemiss.edu), Xia Li (xli13@go.olemiss.edu), and Thuy Nguyen (tmnguye1@go.olemiss.edu).

Official lecture times: **Mon, Wed, Fri: 9:00–9:50am, or 10:00–10:50am.** Given that the format this semester is “remote” there is some flexibility around these times. However, please note that although many lectures will be delivered asynchronously (i.e., can be viewed / listened to at any time of day), there will be some instances of synchronous delivery of material (i.e., within a scheduled lecture time block), most likely using Zoom web conferencing. For this reason, it is advisable to keep your official lecture (and lab) time blocks reserved for Genetics.

Required text book: *Essentials of Genetics 10th Edition* Authors: William S. Klug, Michael R. Cummings, Charlotte Spencer, Michael A. Palladino & Darrell Killian. ISBN-13: 9780134898414. Publisher: Pearson. [Note: earlier editions of this book will also work].

Office hours & email protocol: **Lecture-based office hours (i.e., Garrick, or Liljegren),** Mon 9:00–9:30am & 10:00-10:30am, Fri 9:00–9:30am & 10:00-10:30am (no appointment necessary). For questions sent via email, please always include the following two elements: (1) BISC 336 in the subject line, and (2) your first and last name, and student ID #, at the end of the message. You should receive a response within 24 hours.

Blackboard: Log on at <https://blackboard.olemiss.edu>. This is the first place to look for any information regarding the course during the semester, including syllabus, announcements, grades, etc. Dr. Garrick will post his slides with audio on YouTube, with links provided via Blackboard. Dr. Liljegren will post Zoom recordings of slides with audio on Blackboard. The same slides with audio will be posted on YouTube, with links provided via Blackboard. You will be notified of any modifications to the course through Blackboard, so please check it regularly.

Grading: Lectures and labs will be worth 75 points and 25 points, respectively. Please note that the plus/minus grading system will be used for this course. Grades for the overall course will be determined using the following cut-offs: A (94-100), A- (90-93), B+ (87-89), B (84-86), B- (80-83), C+ (77-79), etc.

Lectures. **Four exams**, including the final, will be given during the semester. While the final will not be cumulative, it may include some extra-credit questions on material covered throughout the semester. Each of your top three exams will be worth 16 points (your lowest exam score will be

dropped). Your exams, including the final will be given on Blackboard. If you suspect that a question was graded improperly, you have one week from the date of exam grade posting to contact your instructor about it. Make-up exams will be offered (1) in the event of serious illness or COVID-19-related absences necessary for isolation or quarantine, or (2) if you have a documented school function. Documentation should be provided before the day of the exam. Make-up exams must be taken at a date and time chosen by the instructor(s), generally within 2–3 days of the original exam date. **Short quizzes** associated with each lecture will be worth a total of 13 points. **Presentations** will be worth 14 points (a 2-point news article individual presentation; and a 12-point gene function group presentation). Since this is a large class, presentations will be given to the classmates in your assigned lab sections either during a synchronous class period or as a posted Zoom recording. With permission, the best presentations may be selected for viewing by the entire class and considered fair game for lecture exam questions. Additional instructions will be posted on Blackboard about these presentations.

Labs. Your lab syllabus will include details about points awarded for the virtual lab assignments.

Attendance: We strongly recommend that you listen to the lectures soon after they are posted and actively participate in the class throughout the semester by taking the short quizzes posted on Blackboard. Access to student information, services and resources related to COVID-19 support is available at the University's Keep Learning site (<https://olemiss.edu/keeplearning/>). **Attendance verification will be documented on Friday, August 28, via your completion of one of the quizzes offered during the first week of classes. Failure to complete this on time will result in a student being automatically dropped from the class.**

Students with disabilities: University policy provides for reasonable accommodations to be made for students with verified disabilities on an individualized and flexible basis. It is the responsibility of any student to contact the Student Disability Services (phone: 662-915-7128; web: <https://sds.olemiss.edu>). Please notify your Instructors and graduate Teaching Assistant about accommodations as soon as possible.

Lecture schedule

<i>Date</i>	<i>Topic(s)</i>	<i>Chapter(s)*</i>	<i>Instructor</i>
Week 1.			
Aug 24	<i>Introduction to Genetics</i>	1	Garrick & Liljegren
Aug 26	<i>Mitosis & Meiosis</i>	2	Liljegren
Aug 28	<i>Mitosis & Meiosis</i>	2	Garrick
Week 2.			
Aug 31	<i>Mendelian Genetics</i>	3	Liljegren
Sep 02	<i>Mendelian Genetics</i>	3	Liljegren
Sep 04	<i>Modification of Mendelian Ratios</i>	4	Liljegren
Week 3.			
Sep 07	<i>No class (Labor Day)</i>	-	-
Sep 09	<i>Modification of Mendelian Ratios</i>	4	Liljegren
Sep 11	<i>Recombinant DNA Technology (PCR); DNA Forensics</i>	17; Special Topics 5	Liljegren

Week 4. Sep 14	<i>Genetic Testing</i>	Special Topics 2	Liljegren
Sep 16	EXAM 1		Liljegren
Sep 18	<i>DNA Structure and Analysis</i>	9	Garrick
Week 5. Sep 21	<i>DNA Replication</i>	10	Garrick
Sep 23	<i>DNA Replication</i>	10	Garrick
Sep 25	<i>Chromosome Structure and DNA Sequence Organization</i>	11	Garrick
Week 6. Sep 28	<i>Epigenetics</i>	Special Topics 1	Garrick
Sep 30	<i>Chromosome Mutations</i>	6	Garrick
Oct 02	<i>The Genetic Code and Transcription</i>	12	Garrick
Week 7. Oct 05	<i>The Genetic Code and Transcription</i>	23	Garrick
Oct 07	EXAM 2		Garrick
Oct 09	<i>Translation and Proteins</i>	13	Liljegren
Week 8. Oct 12	<i>Translation and Proteins</i>	13	Liljegren
Oct 14	<i>Gene Mutation, DNA Repair, and Transposition</i>	14	Liljegren
Oct 16	<i>Gene Mutation, DNA Repair, and Transposition</i>	14	Liljegren
Week 9. Oct 19	<i>Developmental Genetics</i>	TBD	Liljegren
Oct 21	<i>Developmental Genetics</i>	TBD	Liljegren
Oct 23	<i>Genomics and Precision Medicine</i>	Special Topics 7	Liljegren
Week 10. Oct 26	<i>Genomics and Precision Medicine</i>	Special Topics 7	Liljegren
Oct 28	EXAM 3		Liljegren
Oct 30	<i>Regulation of Gene Expression in Bacteria</i>	15	Garrick
Week 11. Nov 02	<i>Regulation of Gene Expression in Eukaryotes</i>	16	Garrick
Nov 04	<i>The Genetics of Cancer</i>	19	Garrick
Nov 06	<i>The Genetics of Cancer</i>	19	Garrick
Week 12. Nov 09	<i>Population and Evolutionary Genetics</i>	21	Garrick
Nov 11	<i>Population and Evolutionary Genetics</i>	21	Garrick
Nov 13	<i>Conservation Genetics</i>	TBD	Garrick
Week 13. Nov 16	<i>Genetically Modified Foods</i>	Special Topics 6	Liljegren
Nov 20-24	EXAM 4		Garrick

* From *Essentials of Genetics* – check Blackboard for additional reading material.