

Genetics (BISC 336)

Instructor: Dr. Ryan Garrick, office: Room 508 Shoemaker Hall, e-mail: rgarrick@olemiss.edu

Class time & location: **Mon, Wed, Fri: 9:00–9:50am, Turner Room 205.** Regular attendance is expected. Use of **cell phones** not permitted, including sending text messages. Please turn them off during class. Use of **laptop computers** for note-taking is fine, but it is not appropriate to be to be facebookering, twitting, or sending emails, etc.

Required text: *Essentials of Genetics 8/E*. Authors: William S. Klug, Michael R. Cummings, Charlotte Spencer & Michael A. Palladino. ISBN-13: 9780321803115. Publisher: Benjamin Cummings, San Francisco, California.

Office hours: **Mon 10:00-11:00am, Wed 2:00-3:00pm (no appointment necessary).** If you cannot meet during scheduled office hours, an appointment will need to be made by email. Please include the following: (1) BISC 336 in the subject line, (2) what you would like some help with in the main text of the email (that way I can be better prepared), and (3) your first and last name at the end of the message. You should receive a response from me within 24 hours.

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 form and function of genetic material, modes of inheritance and change. Prerequisites: Grade of a C or better in BISC 160, BISC 161, BISC 162 and BISC 163.

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Blackboard: Log on at www.olemiss.edu. This is the first place to look for any information regarding the course during the semester, including syllabus, announcements, grades, etc. I will post my **PowerPoint slides** the evening prior to the lecture, but they **will deliberately have missing keywords, incomplete bullet points, and some slides omitted**. You will be notified of modifications through your registered email address on Blackboard, and in class.

Grading: Exams: 75 points (there will be 3 exams during the semester plus the end-of-semester final exam. The first exam is worth 15 points, whereas all others are worth 20 points each. For all exams, the following standard grading scheme applies: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, < 60 = F. However, I *may* adjust these thresholds slightly downwards (i.e., only to your benefit), depending on overall performance of the class. Note also that for the overall grade for this course, the +/- grading scheme will be used. **Lab: 25 points.**

Exams: Bring your **student ID, #2 pencil, a calculator, and one Scantron form # F-289** to every exam (I will not provide these). The Scantron form # F-289 (1/2 page, red print) can be purchased at the Bookstore in the Student Union. **Other than calculators, no electronic devices are allowed to be turned on during exams.** This includes cell phones, computers, i-pads, etc. Exam grades will be posted as soon as possible. If you suspect that a question was graded improperly, you have one week from the date of test return to contact me about it. **Exam dates are non-negotiable;** make-up exams are not given except (1) in the event of *serious illness*, in

which case a medical doctor's letter is required, or (2) if you have a documented school function, in which case you will need to provide documentation *before* the day of the exam. Make-up exams must be taken at a date and time chosen by me, generally within 2–3 days of the original exam date.

Cheating: An amazingly bad idea. Cheaters will be assigned a zero for the test in question.

Genetics in the news: Each week, I will present a brief (~5 min) overview of some recently-reported genetics research that was covered by science writers in the popular press (e.g., BBC, Discovery, NY Times etc). Part of the reason for doing this is to keep you guys up to date with what's going on, and to highlight the diversity of genetics research. Also, owing to the 3 x 50min format for BISC 336 this semester, nearly every week there will be a lecture in which material from two different chapters in *Essentials of Genetics* is dealt with. In these cases, Genetics in the news (indicated by the ⓘ symbol, below) should help mark a transition between different topics. I'll try to find a story that is relevant to the topics being covered. Note that 'Genetics in the news' material will not be posted on PowerPoint slides on Blackboard, but may be included on exams.

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 Office of Student Disability Services (662-915-7128). SDS will then provide the student with an Instructor Notification of Classroom Accommodations form. You will need to provide me with this documentation *before* the day of the exam.

<i>Date</i>	<i>Topic(s)</i>	<i>Chapter(s)*</i>
Week 1.		
Jan 22	<i>Introduction</i>	1
Jan 24	<i>Mitosis & Meiosis</i>	2
Week 2.		
Jan 27	<i>Mitosis & Meiosis; ⓘ; Mendelian Genetics</i>	2, 3
Jan 29	<i>Mendelian Genetics</i>	3
Jan 31	<i>Modification of Mendelian Ratios</i>	4
Week 3.		
Feb 03	<i>Modification of Mendelian Ratios; ⓘ; Sex Chromosomes</i>	4, 5
Feb 05	<i>Sex Chromosomes</i>	5
Feb 07	<i>Chromosome Mutations</i>	6
Week 4.		
Feb 10	<i>Chromosome Mutations; example Exam 1 questions (review)</i>	6
Feb 12	EXAM 1 (Ch. 1–6). Bring Scantron form F-289	
Feb 14	<i>Recap on Exam 1; Linkage & Mapping (eukaryotes)</i>	7
Week 5.		
Feb 17	<i>Linkage & Mapping (eukaryotes)</i>	7
Feb 19	<i>More Mapping (bacteria, phage)</i>	8
Feb 21	<i>More Mapping (bacteria, phage); ⓘ; DNA Structure & Analysis</i>	8, 9
Week 6.		
Feb 24	<i>DNA Structure & Analysis</i>	9
Feb 26	<i>Recombinant DNA Technology</i>	17

<i>Feb 28</i>	<i>Recombinant DNA Technology; ①; DNA Replication & Recombination</i>	17, 10
Week 7. Mar 03	<i>DNA Replication & Recombination</i>	10
Mar 05	<i>example Exam 2 questions (review)</i>	
Mar 07	EXAM 2 (Ch. 7–10 & 17). Bring Scantron form F-289	
Week 8. Mar10-14	SPRING BREAK (no class)	
Week 9. Mar 17	<i>Recap on Exam 2; Chromosome Structure & DNA Organization</i>	11
Mar 19	<i>Chromosome Structure & DNA Organization</i>	11
Mar 21	<i>Genetic Code & Transcription</i>	12
Week 10. Mar 24	<i>Genetic Code & Transcription; ①; Translation & Proteins</i>	12, 13
Mar 26	<i>Translation & Proteins</i>	13
Mar 28	<i>Gene Mutation, Repair & Transposition</i>	14
Week 11. Mar 31	<i>Gene Mutation, Repair & Transposition; ①; Regulation of Gene Expression</i>	14, 15
Apr 02	<i>Regulation of Gene Expression</i>	15
Apr 04	<i>Genomics, Bioinformatics & Proteomics; ①; Applications & Ethics of Genetic Engineering</i>	18, 19
Week 12. Apr 07	<i>Applications & Ethics of Genetic Engineering</i>	19
Apr 09	<i>Example Exam 3 questions (review)</i>	
Apr 11	EXAM 3 (Ch. 11–15 & 18–19). Bring Scantron form F-289	
Week 13. Apr 14	<i>Brief recap on Exam 3; Population & Evolutionary Genetics</i>	22
Apr 16	<i>Population & Evolutionary Genetics</i>	22
Apr 18	GOOD FRIDAY (no class)	
Week 14. Apr 21	<i>Population & Evolutionary Genetics</i>	22
Apr 23	<i>Conservation Genetics</i>	23
Apr 25	<i>Conservation Genetics</i>	23
Week 15. Apr 28	<i>Developmental Genetics</i>	20
Apr 30	<i>Developmental Genetics; ①; Genetics of Cancer</i>	20, 16
May 02	<i>Genetics of Cancer</i>	16
May 07	FINAL, 8:00–11:00am (Ch. 16, 20 & 22–23). Bring Scantron form F-289	

* From Klug et al. (2013) – check Blackboard additional reading material that I will upload as PDF files or URL links, and flag via ‘announcements’