

PREREQUISITES: Successful completion (C or better) of GEN 3020 & BIOCH 3010 (BIOCH can be concurrent)

MWF (8:00-8:50 AM) A-102 Poole Professor: Dr. Julia Frugoli
 Grad & Honors sections meet Email JFRUGOL@clemsun.edu
 extra times @ E142 Poole

Office 206 Biosystems Research Complex
 Office hours by email appointment

Required Texts: *Molecular Biology of the Gene*, 7th edition, Watson, Baker, Bell, Gann, Levine, and Losick, Pearson/Benjamin Cummings, pub.
 &
MyLab & Mastering Biology Digital Access for the above book, embedded as a course tool in Blackboard.

The bookstore carries the new print book & the coded access (you cannot share a code because you will be doing homework at the site) bundled for about \$237. The book has been in print 3 years, so if you buy a used copy online you can purchase just the electronic access through Blackboard or the bookstore for about \$115. At the site below (and maybe through Blackboard-I would try Blackboard first) you can also purchase the eText for \$94, or a loose-leaf version of the print text for \$155 (both without the access-you buy it separately for these options). As long as you have any combination of the text & access, you are fine so do whatever meets your preferences.

<http://www.mypearsonstore.com/bookstore/molecular-biology-of-the-gene-0321762436>

Honors & Graduate only: *Advanced Genetic Analysis*, Hawley & Walker, Blackwell pub (I will post a pdf e-copy of the chapters we are using on Blackboard so you do not need to purchase this)

THIS COURSE WILL BE RUN AS A FLIPPED CLASSROOM, explained during our first meeting. You will be responsible for a significant amount of material & lectures online and we will have reduced class time during which we will review difficult material and work problems. It is important you pay attention to the irregular due dates, meeting dates, and exam dates.

Goals: The goal of this course is to gain a fundamental understanding of the molecular basis of genetics: DNA and RNA structure, replication, transcription, translation, and the network of regulatory interactions that contribute to the development of an organism. Another goal is to understand the tools and techniques molecular geneticists use every day. Successful completion of the course will give you familiarity with the model systems and techniques that geneticists use to answer molecular questions and the broader implications of molecular genetics for disease research, aging and evolution.

Class rules: When we have Class Exercises, they start at 8:00 AM. If we have started, please enter quietly and do not disturb others. Please silence your cell phone and/or pager, close your laptop and do not access the internet during class on any device unless I ask you to. If I am not here at 8:00 *on a scheduled class day*, you are expected to wait 15 minutes before leaving.

The slides I use in the online lectures are posted on the Blackboard space for this course, and I occasionally post extra readings and exam answer keys after the exam. You are responsible for all announcements sent by email and on Blackboard as well as those made in class. The homework is on Blackboard under “Course Tools”.

PowerPoint presentations made available to the class contain the intellectual property of the instructors, and images from the book that are legally protected for free use in education (copyrighted). Redistribution of class notes, recorded lectures and supplemental material is strictly prohibited, particularly through formats placing materials for sale (e.g. Notehall). Adding your own notes to PowerPoint presentations does not change these conditions and does not mean that you own the material. Understand that you can be legally prosecuted by the publisher as well as being convicted of academic dishonesty by the university for doing this. Sharing notes for free with your fellow classmates (students registered in GEN 4200/6200 during this term) is fine.

Grading: Your course grade is a combination of your exam grades (80%) and your homework grade (20%) unless you are registered for 4200H or 6200, in which case the distribution is exams (70%) homework (20%) and special project (10%). Your homework grade includes completion of an introduction to the web-based system, and exercises for each chapter to be completed before each exam; however completing them as we cover the material is more helpful, as I can answer questions in the class meetings. Your exam grade is the average of five exams. Exam dates are fixed, and makeup exams are strongly discouraged. In the case of an occasional, absolutely unavoidable conflict, prior arrangements can be made. Please see me at least 2 class periods in advance to arrange an alternative exam. If you miss the exam for any reason without prior notice, makeup is at my discretion. I understand that there may be situations beyond your control that lead to missing an exam, but they should be serious and extreme to be considered as sufficient excuse for a makeup exam. If you miss an exam and do not contact me within 1 class period of the exam to arrange a makeup date within the week, I will record a zero for the exam. A medical excuse requires a doctor’s note. I do NOT drop an exam grade or routinely offer extra credit. An exam scheduled for a class cancelled due to inclement weather will be given at the next class meeting unless I tell you otherwise.

Homework: Homework must be completed online through the Pearson Mastering Biology tool for this course embedded in Blackboard, which requires a digital subscription to access. You will register for this through Blackboard and pay there, or enter a code if you purchased the book bundle through the Bookstore. Once you are registered you will be able to see a calendar with due dates for each assignment. Except

for the first assignment, which is due a week from the start of class, the homework for each chapter is due the day before the exam at 11:59 PM. That does **NOT** mean you should wait until then to do it, but after that date you will receive no credit for completing the homework for those assignments. The digital nature of the assignments requires you to give the correct answer before you can proceed to the next question in a series, and rewards you for how many attempts it takes to answer the question correctly or how many hints you use. Therefore it's an effective way to study.

There are problem sets at the end of each chapter in the book with answers to the even numbered questions in the Appendix. These questions are intended to help you master the material. I do not actually assign them, but I will occasionally take an exam question from them and they are also a good way to study. I will gladly answer questions about a particular solution during office appointments (made by email).

Note to Students with Physical or Learning Disabilities: See statement at end of syllabus. Students with disabilities, including “invisible” disabilities such as chronic diseases and learning disabilities, are encouraged to discuss appropriate accommodations which might prove helpful to them with me after class or during office hours. **Please let me know as soon as possible and bring any appropriate documentation at least a week before the first exam (by August 29).**

Honors and Graduate Credit: If you are taking this course for honors or graduate credit, I will be lecturing on portions of the book *Advanced Genetic Analysis* during five extra sessions scheduled for this class time. We will meet in Poole E142 at scheduled days (see purple on lecture list) until midterm. At the end of the term, you will be turning in a paper on the use of analysis techniques we talk about in the honors/grad section of the class to elucidate a genetic pathway. You cannot use this paper to meet the requirements of another course you are taking, but you may use the same topic for more than one course if that works for you. Your grade in this extra project will count for 10% of your total course grade, giving a grade distribution of exams (70%) homework (20%) and special project (10%).

Honors/Grad assignments

Aug 22 Mutant hunts	Chapter 2 AGA
Sept 14 Genetic Complementation	Chapter 3 AGA
Sept 26 Genetic Suppression	Chapter 4 AGA
Oct 24 Determining Gene Function	Chapter 5 AGA
Oct 19 Catch-up day and paper questions	none
October 31- paper topic for review approved by me.	
Final project due Dec 5	

Course schedule:

	lectures online	pre reading
Fundamentals in Genetics II		
Aug 17 Course Intro		none
Aug 19 Genetics background		MBG Chapter 1
Aug 22 Honors & Grad students		AGA Chapter 2
Aug 24 Classroom Exercise (Intro homework due)(2 & 3)		MBG Chapter 2 & 3
Aug 26 Classroom Exercise (4-1, 4-2 & 5)		MBG Chapter 4 & 5
Aug 29 Classroom Exercise (6)		MBG Chapter 6
Aug 31 Classroom Exercise (7-1 & 7-2)		MBG Chapter 7
Sept 2 EXAM on above (homework due night before)		
Sept 7 Classroom Exercise (8-1 & 8-2)		MBG Chapter 8
Sept 14 Honors & Grad students		AGA Chapter 3
Sept 16 Classroom Exercise (9-1 & 9-2)		MBG Chapter 9
Sept 23 Classroom Exercise (10)		MBG Chapter 10
Sept 26 Honors & Grad students		AGA Chapter 4
Sept 28 Classroom Exercise (11-1 & 11-2)		MBG Chapter 11
Sept 30 Classroom Exercise (12-1 & 12-2)		MBG Chapter 12
Oct 3 EXAM on above (homework due night before)		
Oct 5 Classroom Exercise (13-1 & 13-2)		MBG Chapter 13
Oct 7 Classroom Exercise (14-1 & 14-2)		MBG Chapter 14
Oct 12 Honors & Grad students		AGA Chapter 5
Oct 14 Classroom Exercise (15-1 & 15-2)		MBG Chapter 15
Oct 17 Classroom Exercise (16 & 17)		MBG Chapter 16&17
Oct 19 Honors & Grad students		none-catch up day
Oct 21 EXAM on above (homework due night before)		
Oct 24 Classroom Exercise (18-1 & 18-2)		MBG Chapter 18
Nov 2 Classroom Exercise (19-1 & 19-2)		MBG Chapter 19
Nov 4 Classroom Exercise (20-1 & 20-2)		MBG Chapter 20
Nov 9 Classroom Exercise (21-1,-2, &-3)		MBG Chapter 21
Nov 14 EXAM on above (homework due night before)		
Nov 16 Classroom exercise (22, 23-1, 23-2)		MBG Chapters 22&23
Nov 18 Classroom exercise (Cancer Genetics)		Blackboard folder
THANKSGIVING BREAK		
Nov 28 Classroom Exercise (Movie 1)		none
Nov 30 Classroom exercise (Movie 2 & Epigenetics lecture)		Blackboard folder
Dec 2 Classroom Exercise (Extranuclear Inheritance lecture)		Blackboard folder
Dec 4 homework due for chapter 22)		
Dec 8-FINAL EXAM on above 11:30 AM-2PM		

Official stuff:**Academic Integrity**

“As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a “high seminary of learning.” Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form”

Please refer to the graduate academic integrity policy at <http://gradspace.editme.com/AcademicGrievancePolicyandProcedures#intergritypolicy>. Each graduate student should read this policy annually to be apprised of this critical information

Disabilities

Clemson University values the diversity of our student body as both a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848, by emailing studentaccess@lists.clemson.edu, or by visiting Suite 239 in the Academic Success Center building. Appointments are strongly encouraged – drop-ins will be seen if at all possible, but there could be a significant wait due to scheduled appointments. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student’s responsibility to follow this process each semester. You can access further information here: <http://www.clemson.edu/campus-life/campus-services/sds/>.

Title IX

Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran’s status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at <http://www.clemson.edu/campus-life/campus-services/access/title-ix/>. Mr. Jerry Knighton is the Clemson University Title IX Coordinator. He also is the Director of Access and Equity. His office is located at 110 Holtzendorff Hall, 864.656.3184 (voice) or 864.656.0899 (TDD).