

# GENE 3200

## Syllabus and Course Materials

### Tracie M. Jenkins, Ph.D

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Office	Office Hours	Phone #	Email
Redding Building #125	MW 11:00 AM-12:15 PM and by appointment	770-412-4093	<a href="mailto:jenkinst@uga.edu">jenkinst@uga.edu</a>

#### **Prerequisites**

[BIOL 1104 or BIOL 1108-1108L] and [BCMB (BIOL) (CHEM) 3100 or BCMB 4010/6010]

#### **Lectures**

11:00 – 12:45 PM Tues. and Thurs.  
Flynt Building Room #319  
Redding Building Room # 171

#### **Discussion/Problem Sessions**

Th 1:00 AM – 2:00 PM.  
Redding Building Rm 171

#### **Required Materials**

**Textbook:** Russel, P. J. *iGenetics: A Molecular Approach*. 2<sup>nd</sup> Ed.  
Benjamin Cummings. NY ISBN 0-8053-4665-1

**Study Guide:** *iGenetics: A Molecular Approach Study Guide and Solutions Manual*. Benjamin Cummings, NY. ISBN 0-8053-4694-5

#### **Course Description and Learning Outcomes**

GENE 3200 is designed to provide students with basic knowledge in three areas of modern genetics: core principles and concepts, recombinant DNA technology, DNA mutation, repair and recombination to include chromosomal changes, and evolution. Thus students will demonstrate a basic understanding of these areas by being able to:

- ◆ draw and explain the chemistry of the structure of DNA
- ◆ explain the difference between prokaryotic and eukaryotic transmission genetics: the chromosomal basis of inheritance through the relationship between molecular genetics and phenotype, the regulation of gene translation and transcription.
- ◆ discuss recombinant DNA technological advances to include restriction enzymes and their uses, polymerase chain reaction (PCR), DNA

- sequencing (including specific automated techniques), microarray expression technology
- ◆ demonstrate an understanding of DNA mutation, repair and recombination.
  - ◆ explain the implications of large-scale chromosomal changes
  - ◆ discuss developmental genetics and its impact on sexual development
  - ◆ discuss the general concepts of evolutionary genetics
  - ◆ demonstrating comprehension and understanding of concepts by teaching specific material to their peers (Oral presentation).
  - ◆ explain basic population genetics concepts

### **Statement of Academic Integrity**

It is expected that each student will behave honorably throughout this course. Thus all academic work must meet the standards contained in “A Culture of Honesty.” Each student is responsible for informing themselves about these standards before performing any academic work (refer to [http://www.uga.edu/ovpi/academic\\_honesty/academic\\_honesty.htm](http://www.uga.edu/ovpi/academic_honesty/academic_honesty.htm)). All violations of the *Honor Code* will be referred to the Assistant Dean for Academic Affairs’ office.

### **Documented Disability Statement**

*(For Griffin Campus)*

Students with a documented disability must inform the instructor at the close of the first class meeting. You will be referred to the Office of Academic Programs, Room 107 in the Flynt Building for consultation regarding evaluation, documentation of your disability, and a recommendation as to the accommodation, if any, to be provided. Students must provide instructors with an accommodation form from the Office of Academic Programs listing reasonable accommodation to sign and return to the Office of Academic Programs. Students who do not wish to receive services are still **strongly** encouraged to register with the Office of Academic Affairs.

### **Attendance**

- Attendance is mandatory. Students are expected to attend and participate in all class sessions.
- **Students are not allowed to make up a pop quiz.** The lowest quiz grade will, however, be dropped. Missed quizzes are recorded as a “0”.
- Students must take all exams at the time allotted. One missed exam may be made up. Students will not, however, be given the same exam that was missed.

### **Requirements**

- Students are expected to read assigned material before the corresponding lecture.
- Problems assigned for each chapter/topic should be completed before coming to class. Students are expected to understand and be able to work

all the homework problems. Thus, if a student is unable to work a problem they are expected to come to the review session and/or make an appointment with Dr. Jenkins.

- Quiz and exam questions may have problems similar or exactly like the problems assigned for homework. Thus, attendance of the study sessions, while not required, is strongly encouraged.
- Student oral presentations will count as **Exam 4**. Students will team up to teach a class on a specified topic in the syllabus, including explaining problem sets and submitting questions for the final exam. Each member of the team will be graded according to the following criteria. The chapters assigned are extensions of chapters that were covered in class. The objectives of this exercise are to provide students an opportunity to: apply their understanding of genetics concepts to learning new material, learn to work as a team and gain experience in oral presentations.

<b>Organization and Content (45%):</b>	<b>Poor</b>		<b>Avg.</b>	<b>Excellent</b>	
Appropriate Introduction	1	2	3	4	5
<b>Clear Thesis</b>	1	2	3	4	5
Presentation Organization	1	2	3	4	5
Adequate <b>Support</b> for Ideas (Weighted 2x)	2	4	6	8	10
Definite Conclusion	1	2	3	4	5
PowerPoints (Appropriateness & Effectiveness)	1	2	3	4	5
Q & A Session-Knowledge of Topic	1	2	3	4	5
Use of Allotted Time	1	2	3	4	5
<b>Presence (15%):</b>					
Physical Appearance, Neatness, and Grooming	1	2	3	4	5
Posture, Gestures, and Movement	1	2	3	4	5
Eye Contact	1	2	3	4	5
<b>Delivery and Grammar (40%):</b>					
Enthusiasm and Vocal Variation (freedom from monotone)	1	2	3	4	5
<b>Preparation and Knowledge of Materials</b>	1	2	3	4	5
Effectiveness of Delivery Method (Powerpoint)	1	2	3	4	5
Vocabulary and Use of Appropriate Words	1	2	3	4	5
Freedom from Distracting "Uh"s & "Like"s, etc.	1	2	3	4	5
Pronunciation, Enunciation, Audibility, and Clarity	1	2	3	4	5
Grammar (Weighted 2x)	2	4	6	8	10

### **Exams**

1. Three scheduled in the syllabus
2. Must be taken at allotted time (refer to Attendance)

3. With doctor's excuse, can make-up one missed exam, which, although covering the same material, will be different from the exam given at the allotted time.
4. Oral presentation counts as **Exam # 4**.
5. Average of exam grades counts 50% of final grade (Refer to Grading).

### Quizzes

1. Must be taken at allotted time and will cover material since last quiz.
2. Given at the beginning of class
3. Can't be made up. Missed quiz counts as a 0. (Refer to Attendance)
4. One quiz will be dropped.
5. Average quiz grade counts 25% of final grade (Refer to Grading).

### Final Exam

1. 12/12/06: 12 PM – 3 PM
2. Redding Building #171
3. Counts 25% of final grade (refer to Grading)

### Grading

% Quiz Avg	% Exam Avg	% Final Exam	% Total
25	50	25	100

### Testing

- Each **exam** will cover about 75% new material and 25% old material, e.g. Exam 2 will cover about 75% of the material from the first exam.
- The **Final Exam** will cover 75% new material and 25% old material as with the other exams.
- Quizzes will be given during the first 15 minutes of class and will cover the previous lecture and present material.

**The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.**

### Assignments

DAY/DATE	TOPIC	CHAPTER	HOMEWORK	NOTES
	<b>MOLECULES</b>			
Th, Aug 17	OVERVIEW	1		
Tu, Aug 22	DNA: The Genetic Material	2	Problems: 1st half	
Th, Aug 24	DNA: The Genetic Material	2	Problems: 2nd half	Quiz 1
Tu, Aug 29	DNA Replication	3	Problems: 1st half	
Th, Aug 31	DNA Replication	3	Problems: 2nd half	Quiz 2
Tu, Sept 5	Gene Function	4	Problems: all	Quiz 3
Th, Sept 7	Gene Expression: Transcription	5	Problems: 1st half	
Tu, Sept 12	<b>EXAM 1</b>		Chap 5: Read	
Th, Sept 14	Gene Expression: Transcription	5	Problems: 2nd half	Quiz 4

Tu, Sept 19	Gene Expression: Translation	6	Problems: 1st half	
Th, Sept 21	Gene Expression: Translation	6	Problems: 2nd half	Quiz 5
Tu, Sept 26	DNA Mutation, DNA Repair	7	Problems: 1st half	
Th, Sept 28	DNA Transposable Elements	7	Problems: 2nd half	Quiz 6
Tu, Oct 3	Recombinant DNA Technology <b>MIDTERM</b>	8	Problems: all	
Th, Oct 5	Applications of Recombinant DNA Technology	9	Problems: 1st half	Quiz 7
Tu, Oct 10	Applications of Recombinant DNA Technology	9	Problems: 2nd half	
Th, Oct 12	<b>EXAM 2</b>		Read Ch. 10	
	<b>GENOMICS</b>			
Tu, Oct 17	Structural and Functional Genomics	10	Problems: all	Quiz 8
Th, Oct 19	Mendelian Genetics: Monohybrid Crosses	11	Problems: 1st half	
Tu, Oct 24	Mendelian Genetics: Dihybrid Crosses	11	Problems: 2nd half	Quiz 9
Th, Oct 26	<b>FALL BREAK</b>			
Tu, Oct 31	Chromosomal Bases of Inheritance	12	Problems: 1st half	Quiz 10
Th, Nov 2	Chromosomal Bases of Inheritance cont.	12,	Problems: 2 <sup>nd</sup> half	
Tu, Nov 7	<b>EXAM 3</b>		<i>Nature</i> 419: 583-587	
Th, Nov 9	Sex Determination, Sex-Linkage, cloning (Ch 21: pp 577-579)	21		Quiz 11
Tu, Nov 14	Variation in Chromosome number: pp 453-465			
Th, Nov 16	Regulation of Gene Expression in Bacteria and Bacteriophages	19	Problems: odd	Quiz 12
Tu, Nov 21	Non-Mendelian Inheritance	23	Problems: all	
Th, Nov 23	<b>THANKSGIVING HOLIDAY</b>			
Tu, Nov 28	Population Genetics	24	Problems: all	Quiz 13
Th, Nov 30	Mendelian Genetics Extended (Student presentation)	13 and/or others assigned	Problems assigned and explained by students	
Tu, Dec. 5	Quantitative Genetics (Student presentation)	14 and/or others assigned	Problems assigned and explained by students	
Tu, Dec. 12	<b>FINAL EXAM: Redding Building #171 12 PM – 3 PM</b>			