

**GEORGIA INSTITUTE OF TECHNOLOGY**  
**BIOLOGY 2344 A; SPRING 2015**  
**GENETICS LECTURE SYLLABUS**

Instructors: Dr. Michael Goodisman, School of Biology,  
michael.goodisman@biology.gatech.edu, 404-385-6311, A110 Cherry Emerson Bldg.  
Office hours: by appointment. And  
Dr. Patrick McGrath, School of Biology, patrick.mcgrath@biology.gatech.edu, 404-385-0071,  
Molecular Sciences & Engr G205. Office hours: by appointment.  
Teaching Assistant: Mr. Sat Balachander, School of Biology, balachan@gatech.edu, Cherry  
Emerson Bldg. 303. Office hours: TR 9:30-10:30 or by appointment.

Class description: Lecture is Tuesday and Thursday 8:05 - 9:25, Coll of Computing #17, Jan 05, 2014 - May 01, 2015, 3.0 Credits. Prerequisites: BIOL 1510 or BIOL 1511 with minimum grade of D.

Goals: The goal of this class is to understand and appreciate fundamental and applied concepts in genetics by solving problems and interpreting experiments. This course will foster the development of critical scientific skills including hypothesis testing, experimental design, and data analysis.

Class attendance: Class time will be used for lectures, quizzes, group activities, and exams. If you miss lecture, *you* are responsible for obtaining all notes, announcements, and assignments. Written confirmation of a legitimate excuse, such as a severe illness, will be required if any exam or quiz is missed. *No exceptions!*

Lecture is a time when we all work together, so be courteous to your fellow students and do not disrupt class by entering and leaving the room during class, reading, talking, allowing cell phones to ring, etc. In addition, do not use your electronic devices (laptops, tablets, smartphones, etc.) for non-class use.

Textbooks: WS Klug, MR Cummings, CA Spencer, and MA Palladino. Concepts of Genetics. 11<sup>th</sup> edition. Pearson . The textbook is an excellent resource for learning and understanding genetics. To maximize your understanding of course material and do well on the class assignments, you will need to complete each reading assignment before the relevant class. The textbook contains problems at the end of each chapter that you should attempt to solve. These textbook problems will not be handed in or graded. However, your success in answering these problems will be a good indication of how you will do on the exam. In addition, some questions for the exams will be taken directly from the textbook.

Homework: Throughout the semester you will have online homework assignments administered through Mastering Genetics. The Mastering Genetics assignment scores are recorded and will comprise part of your overall course grade. Homework will test your understanding of course material, and will serve as a guide for exams. Homework deadlines will be provided in class on a rolling timeline and will be due on the date specified in class.

In-class quizzes: We will use Learning Catalytics for interactive lecture sessions. You can use any internet-enabled mobile device (laptop, tablet, smartphone) to access Learning Catalytics and respond to questions during class. However, the professors reserve the right to administer written quizzes if deemed necessary.

In-class activities: Many classes will feature activities designed to increase your comprehension of important topics in genetics. Some of these activities will require the use of a laptop computer.

Exams: The class will include three exams. The exams will be held during class time on the dates provided on the class schedule. The last exam, Exam III, will not be comprehensive and will, instead, cover material from the last third of the semester. Exams are closed-book and will be made up of multiple-choice and short-answer questions based on topics, materials, and discussions presented in lecture, through Learning Catalytics quizzes, in the assigned readings, and in the Mastering Biology assignments.

Assessments: Your grade in genetics will be determined by your performance on three exams, Mastering Genetics homework, in-class activities, and Learning Catalytics quizzes. The relative values of these assignments are:

Assessment	Value
Mastering Genetics Homework	10%
Learning Catalytics in-class Quizzes	10%
In class activities	15%
Exam I	20%
Exam II	20%
Exam III	25%
Total	100%

The most stringent scale used for grading will be 90-100% an A, 80-89% a B, 70-79% a C, 60-69% a D, and 59% or less an F. This scale is subject to adjustment at the professor's discretion. All problems regarding grades on assignments must be handled through the regrade system.

Honor policy: Your conduct in the course should conform to the Student Honor Code (<http://www.honor.gatech.edu/>). Students caught cheating *will* be reported to the College for disciplinary action.

Regrade policy: The *only way* that changes to your grades will be considered is through the procedure below. Do not approach the professor or TAs and ask for credit for an already-graded question without a written description of the problem.

Regrades can be requested if:

- (1) there has been an error in adding together your score.
- (2) you did not receive credit for an answer as given on the key.

- (3) there is a difference between your score and that of another student who gave the same answer.
- (4) you did not receive credit for an answer that differs from that on the key but which is nevertheless correct.

In general, regrades will not be considered for issues concerning the amount of credit awarded for an answer. For example, questions such as ‘Why did I receive only two points for this answer instead of three?’ will not be addressed unless you find evidence of issue (3).

To have an assignment regraded, you must submit a *hard-copy, typewritten* explanation of the problem along with your original exam or quiz directly to the professor (email appeals will not be considered). For issues (1) and (2), it will generally suffice to simply describe the problem. For issue (3) you will need to submit an explanation of the problem, as well as both copies of the material. For issue (4) you must give a detailed and explicit account as to why your answer is correct. In general, this may require direct quotes from the text or precise mathematical treatments as to how your solution or model yields the correct ratios, genotypes, results, etc.

Deadlines for the submission of regrades will be given when assignments are handed back. *No regrades will be considered after the deadline.* Note that if you request a regrade for a particular question, your entire exam or quiz may be regraded, which could result in a lowering of your overall score.

## Tentative Lecture Schedule

Week	Date	Class	Topic	Chapter reading
1	6-Jan	1	Introduction on Genetics	1
	8-Jan	2	DNA Structure	10
2	13-Jan	3	DNA Organization in Chromosomes	12
	15-Jan	4	DNA Replication	11.1-11.7
3	20-Jan	5	DNA Replication	11.1-11.7
	22-Jan	6	Regulation of transcription I	13.8 – 13.14 and 16
4	27-Jan	7	Regulation of transcription II	17
	29-Jan	8	Regulation of transcription III	ST 1 and ST 2
5	3-Feb	9	Regulation of translation	13.1 – 13.7 and 14
	5-Feb	10	EXAM I	
6	10-Feb	11	Proteins and their functions I	14.11 -14.12
	12-Feb	12	Proteins and their functions II	14.11 -14.12
7	17-Feb	13	Gene Mutation, DNA Repair, and Transposition	15 and ST 3
	19-Feb	14	Chromosome Mutations	8
8	24-Feb	15	Single gene traits	
	26-Feb	16	Multigene traits	23
9	3-Mar	17	Mitosis and Meiosis	2
	5-Mar	18	Mendelian Genetics	3
10	10-Mar	19	Extensions to Mendelian genetics	4
	12-Mar	20	EXAM II	
11	17-Mar		No class – spring break	
	19-Mar		No class – spring break	
12	24-Mar	21	Chromosome mapping	5
	26-Mar	22	Sex Determination	7
13	31-Mar	23	Recombinant DNA Technology	20
	2-Apr	24	Recombinant DNA Technology	20 and ST 5 and 6
14	7-Apr	25	Genomics, Bioinformatics, and Proteomics	21
	9-Apr	26	Genomics, Bioinformatics, and Proteomics	21
15	14-Apr	27	Applications and Ethics of Genetic Engineering	22 and ST 4
	16-Apr	28	Population and Evolutionary Genetics	25
16	21-Apr	29	Population and Evolutionary Genetics	25
	23-Apr	30	Cancer and the Regulation of the Cell Cycle	19
17	<b>30-Apr</b>		EXAM III: 8:00-10:50 AM	

*This schedule is subject to change!*