

THE GEORGIA INSTITUTE OF TECHNOLOGY

Biology 2354 HP: Honors Genetics

Fall 2008 Tentative Syllabus

Course Description and Goals

3.0 Credits Honors Genetics 2354HP is designed for the honors students, with purpose of expansion of knowledge beyond the typical undergraduate textbook. The main goal of this class is better understanding and appreciation of fundamental concepts in genetics, as well as application of the knowledge in solving problems and interpreting experiments.

This course covers all the basic disciplines of genetics, both historically and through the most recent discoveries and applications. Course is aimed at the students with a significant previous background in biology, and includes in-depth coverage of some specific topics, in addition to the comprehensive coverage of the general genetic principles. In-depth coverage emphasizes the operational approach with the focus on how are genetic analysis techniques used for uncovering the genetic rules and mechanisms of inheritance. Lecture course is strictly coordinated with 2355HP Honors Genetics Lab. In addition to listed reading, students will be given papers in the field, for discussing them in the class. Student's reading material is either available in the reading section (PDF format), or as web links and references.

Professors: Contact Information

Dr. Mirjana M. Brockett, School of Biology
Email: mirjana.brockett@biology.gatech.edu
Phone: 385-6885 Office: A323 Cherry Emerson

Dr. Yury O. Chernoff, School of Biology
Email: yury.chernoff@biology.gatech.edu
Phone 894-1157 Office: 2304 IBB

Prerequisites: Biol 1510 or 1511 or consent of the school. **Co-requisite:** Biol 2355HP

**Eligibility: Any student in Honors Program who has taken BIOL 1511, or any other student who has received an A or B in either BIOL 1510 or BIOL 1511 and currently has an overall GPA 3.0 or above.*

Textbooks: *L. H. Hartwell, L. Hood, M.L. Goldberg, A. E. Reynolds, L. M. Silver and R.C. Veres (2008) Genetics: From Genes to Genomes (3d Edition). McGraw-Hill Higher Education (required).*

Attendance: If you miss lecture, *you* are responsible for obtaining all notes, announcements, and assignments. If you know that you must leave class early, sit in the back and leave quietly.

NOTE: Periodic attendance polls might be taken without warning. Attendance records will be taken into account in the borderline grade situations. Student with highest attendance records may get extra points at the end of the semester.

Assessments:

Exams (3 best results out of 4) - 25% each (total of 75%)

Quizzes, homework, paper discussions and class participation - 25%

The most stringent scale used will be: 90-100% an A, 80-89% a B, 70-79% a C, 60-69% a D, 59% or less an F. Scale is subject to adjustment according to class performance.

Written confirmation of a legitimate excuse, such as a severe illness, will be required for missing an exam. Exam missed without a satisfactory reason will count as one of 3 exams contributing to the total grade. **NO EXCEPTIONS!** Your conduct in the course should conform to the Student Honor Code (<http://www.honor.gatech.edu/>).

Tentative Lecture Schedule: *Class meets on Tuesday and Thursday 9:30 to 11 AM*

Week 1	(08/19)	Introduction (Ch. 1)	Brockett
	(08/21)	Patterns and Principles of Heredity (Ch. 2)	Brockett
Week 2	(08/26)	Extensions to Mendel (Ch. 3)	Brockett
	(08/28)	Chromosome Theory of Inheritance (Ch. 4)	Brockett
Week 3	(09/02, 04)	Linkage and Mapping (Ch. 5 except pp. 142-155)	Brockett
Week 4	(09/09)	Reading and Problem Solving Session	Brockett
	(09/11)	Exam I (covers weeks 1-4)	Brockett
Week 5	(09/16)	Genetic Analysis in Eukaryotic Microorganisms (Ch. 5 pp. 142-155)	Chernoff
	(09/18)	Genetic Analysis in Bacteria (Ch. 15)	Chernoff
Week 6	(09/23)	DNA (Chapter 6)	Brockett
	(09/25)	Eukaryotic Chromosome (Ch. 13)	Brockett
Week 7	(09/30)	Chromosome Rearrangements (Ch. 14)	Brockett
	(10/02)	Population Genetics (Ch. 21)	Brockett
Week 8	(10/07)	Reading and Problem Solving Session	Brockett
	(10/09)	Exam II (covers weeks 1-8)	Brockett
Week 9	(10/14)	Fall Recess	
	(10/16)	Gene Anatomy and Function I (Ch. 7)	Chernoff
Week 10	(10/21)	Gene Anatomy and Function II (Ch. 7)	Chernoff
	(10/23)	Gene Expression I (Ch. 8)	Chernoff
Week 11	(10/28)	Gene Expression II (Ch. 8)	Chernoff
	(10/30)	Genetic Engineering I (Ch. 9)	Chernoff
Week 12	(11/04)	Genetic Engineering II (Ch. 9)	Chernoff
	(11/06)	Reading and Problem Solving Session	Chernoff
Week 13	(11/11)	Exam III (covers weeks 9-12)	Chernoff
	(11/13)	Genomics (Ch. 10, 11)	Chernoff
Week 14	(11/18)	Proteomics (Ch. 12)	Chernoff
	(11/20)	Gene Regulation in Prokaryotes (Ch. 17)	Chernoff
Week 15	(11/25)	Reading and Problem Solving Session	Chernoff
	(11/27)	Thanksgiving Holiday	
Week 16	(12/02)	Gene Regulation in Eukaryotes (Ch. 18)	Brockett
	(12/04)	Molecular Evolution (Ch. 22)	Brockett
Finals week		Final exam (covers weeks 9-16)	Chernoff