INTRODUCTORY GENETICS - BIOL 3350 - Fall 2017

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Office Hours: Tues. and Thurs . 2:15-3:45 **Rm: N-265**
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Purpose: This course will introduce you to the fundamental concepts of genetics that will serve as the conceptual foundation for all the other elective courses in genetics offered through the Biology Department. Given the background of the instructor, many of the examples provided will be based on human/medical genetics, which will hopefully provide a more personal relevancy of the information. The broad category of topics that will be covered in the course include:

Inheritance Patterns
Structure of DNA
Central Dogma (Replication, Transcription, Translation)
Recombinant DNA Technology and Genomic Analysis
Population Genetics

Each of these topics are explored in greater detail in the advanced elective genetics courses, which include: Medical Genetics, Recombinant DNA Technology, Genetic Biotechnology, and Population Genetics.

For this particular semester, you will be given the rare opportunity to participate in a study that allows you to opt-in getting your DNA tested through a direct to consumer company called 23andme in the Bay Area. The details of the study will be explained during the first couple of class meetings. Since 2 class assignments will involve looking at raw 23andme data, you will need to decide to use your own data by consenting to be tested through 23andme, or use anonymous 23andme raw data that will be provided to you by your instructor. You will need to notify the instructor by September 5 as to whether you will be tested through 23andme or not. If you decide to opt in for the testing, you need to provide the instructor with a signed copy of the consent form. An informed consent information session will be held on August 29th, and you must be in attendance in order to get tested through 23andme.

Grading Policy: This course can only be taken for a letter grade. Credit/no credit grading is NOT an option. The plus/minus grading system will be used as follows:

93.5-100%	= A
90-93%	=A-
87-89.5%	=B+
83.5-86.5%	=B
80-83%	=B-
77-79.5%	=C+
73.5-76.5	=C
70-73%	=C-
67-69.5%	=D+
63.5-66.5	=D
60-63%	=D-
<60%	=F

Required Text: Concepts of Genetics, by Klug and Cummings. Eleventh edition (©2015)

A copy of Mastering Genetics published by Pearson Education Inc. must be purchased for homework assignments.

You will need to purchase four sheets of Scantron Form NO. 882-E for the exams

Schedule of Lectures, Readings, Exams, Assignments

Week	Topic	Reading (chapter)
Aug. 24	An Introduction to Genetics	1
August 29-30	**TUESDAY- Informed Consent Session- MUST ATTEND CLASS**	
	Mitosis and Meiosis	2 and p.516-518
	Mendelian Genetics	3 (omit Chi Square 56-58)
Sept. 5-7	Extensions of Mendelian Genetics	4
	Tuesday (SEPT 5) - Decision date for 23andme testing	
Sept. 12-14	**INSTRUCTOR AT NSGC MEETING – Lectures provided online**	
	Sex Determination and Sex Chromosomes	7
Sept. 19-21	Chromosome Mapping in Eukaryotes	5
	CRISPR Reflection Paper due –Tuesday, Sept 19 5 pts.	
	LAST DAY TO DROP – Sept 20	
Sept. 26- 28	**TUESDAY (Sept 29)- EXAM #1**	
	Genetic Analysis and Mapping in Bacteria and Bacteriophages	6
Oct. 3-5	Tuesday – Video on Epigenetics	Special Topics p.674- 683
	Chromosome Mutations	8
Oct. 10-12	**TUESDAY- QUIZ #1 on Epigenetics**	
	23and me discussion and activity	**Homework assignments**
Oct. 17-19	Extranuclear Inheritance	9
	DNA Structure and Analysis	10
OCT 24-26	**TUESDAY - Exam #2**	
	DNA Replication and Recombination	11
Oct. 31-Nov. 2	DNA Organization in Chromosomes	12
	The Genetic Code and Transcription	13
Nov. 7-9	Translation and Proteins	14
Nov. 14-16	Recombinant DNA technology	20
	23andme Homework assignments due – Tuesday, Nov. 14	
Nov. 21	**Exam #3**	
	Thursday - Thanksgiving – NO CLASS	
Nov. 28-30	Applications and Ethics of Genetic Engineering and Biotechnology	22
	Reflection paper due-Tues, Nov 28 - In the Family video – 5 pts	
Dec. 5-7	Population Evolutionary Genetics	25
	23andme final discussion	
Dec. 19	**FINAL EXAM (COMPREHENSIVE) -TUESDAY, 8:30-10:30 - 75 pts.**	

NOTES:

- Pre-requisites for this course are BOTY 1050, ZOOL 1050, and CHEM 1100, 1110, or equivalent.. You must have passed all these classes.

- The exams will be based on lecture material, assigned chapter readings, and material covered in the Mastering Genetics homework assignments. Each exam will consist of 4 sections: multiple choice, matching or True/False, essays, and problems. **BRING SCANTRON FORM NO. 882-E for each exam, including the final.**

- **Exams -** There are a total of 3 midterm exams and one final. Each midterm exam is worth 50 pts. The final exam is cumulative and worth 75 pts. The total number of points for all the exams is 225 pts.

- **Quiz -** There will be one quiz worth 20 points. The quiz will be based on the epigenetics video and the "Special Topics" assigned readings in the text book.

- **Mastering Genetics –** A maximum total of 50 EQUIVALENT points can be obtained by turning in your Mastering Genetics assignments before the deadline for each assignment. **Please mark the due dates for each assignment on your calendar.** You will not be able to get any credit if you try to turn in your assignments past the due date. **However, you get ONE pass that allows you to turn in ONE of your chapter assignments up to 2 days late without any penalty.** You must notify me if you want to use this one time pass BEFORE 2 days post the deadline date for the chapter you want to have to have the deadline extension.

  To register for the Mastering Genetics program, go to http://www.masteringgenetics.com
  Click the "Student" button. You will need to provide your student access code. It is a printed code provided with the purchase of your new textbook and is located inside the Mastering Genetics Student Access Kit. If you purchased a used textbook, you have the option to purchase an access code online during your registration process. You do NOT need to buy access to Virtual Labs. You also have the option to purchase an electronic version of your textbook.

  In Mastering Genetics, the name of the course is BIOL 3350-Fall 2017- Janey Youngblom. To register, enter the course ID: **MGENYOUNGBLOM41982**

  If you encounter any technical problems while conducting your work online, click the "Support" tab located near the upper right hand corner of your page.

- **Homework assignments** – .

  1) Two 23andme data related assignments
     a) Pharmacogenomics – analyze 2 specific genes from demo 23andme dataset. Homework assignment – 10 pts.
     Due November 14
     b) Mendelian genes – analyze 2 specific genes from demo 23andme dataset. Homework assignment- 10 pts
     Due November 14

  2) Two writing assignments
     a) two page reflection paper on the CRISPR genome editing article – 5 pts.
     Due Tuesday, Sept 19
     b) two page reflection paper on the film "In the Family" – 5 pts.-
     Due Tuesday, Nov. 28

  Both reflection papers should be double spaced, 12 point font, with one inch margins on all sides.

- **Total maximum number of points** from all categories (exams, quizzes, assignments) = **325 points**

- There will be no make up for missed exams or quiz, unless you contact me before the test is given.