PBIO 331, Plant Genetics

Spring 2006, Call # 04915
T, F 2:10 – 4:00, Th, 2:10 – 3:00
Porter 417

Instructor: Dr. Arthur Trese
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593-0260
Email: trese@ohio.edu
Office hours, 10:00 – 11:00 Tuesday & Thursday or by appointment, any time

Home page: https://blackboard.ohiou.edu/
Use Oak ID (2 letters, 6 numbers) as Username
Use your typical OAK password

Textbook: ***Principles of Genetics***, 3rd edition
D.P. Snustad and M.J. Simmons, published by John Wiley Inc.
This is not the latest edition… but because it is one edition older, it can be had for much less as a used book, and therefore should be more reasonable in its cost.

STATEMENT OF PURPOSE: Much as quantum mechanics provides a unifying theory for the study of matter, energy and the universe, **evolution** provides the "unifying theory" for all of biology. Virtually every detail of biology is derived from the process of evolution. In turn, evolution is derived from the mechanics of genetics and natural selection. Thus, genetics provides us with the most basic understanding of the diversity and complex function of life on earth. In essence, every other field of biology is built upon genetics. It forms the pedestal upon which the other disciplines stand.

Genetics is a vast and rapidly expanding field, both in terms of our knowledge of how genes define cells, organisms, and populations, and in terms of constant innovation in techniques and applications. It is impossible to cover all the important areas in a ten-week course. Instead, my intention in this course is to give you an introduction to genetics. We will cover two of the three major fields within genetics: Mendelian inheritance and molecular genetics (replication and gene expression), leaving population genetics for a more advanced course (PBIO 480 Molecular Approaches in Plant Systematics, Ecology and Evolution). Although this course is titled Plant Genetics it will **not** deal with plant genetics **exclusively;** instead, plants will be used wherever appropriate, while providing a thorough coverage of the basic concepts. An outline of the chapters and topics covered is provided below.

Particulars: I expect attendance at all class meetings. You will be allowed two missed classes without any penalty, but each absence beyond that will cost you 1/3 of a grade. In other words, a total of 4 missed class meetings will drop a B+ to a B-. Handouts and homework assignments will be given only once, and must be completed by the assigned date or they will not be accepted. Missed exams will not be made up without adequate proof of legitimate student absence as defined by the University Handbook. Cheating, of any kind, is a violation of academic honesty and will result in dismissal from the course with a grade of F.

Grading: 25% homework (7 assignments)
75% exams (2 midterms & final = 25% each)

The homework assignments are intended to help you fully understand the material; teamwork is allowed, if you feel it will help you. You are also encouraged to ask me for help if needed, during office hours or during class. Please note; I do **not** provide extra credit opportunities. Grades will be assigned on a standard grading scale:

≥92 A	78 < 80 C+	60 < 62 D-
90 < 92 A-	72 < 78 C	≤ 60 F
88 < 90 B+	70 < 72 C-	
82 < 88 B	68 < 70 D+	
80 < 82 B-	62 < 68 D	

Week of		**Chapter**
March 28	Introduction, History of Science, and three Revolutions in genetics	Handouts 1
April 4	Probability and Mendelian genetics	3
11	Non-Mendelian inheritance; Sex linked genes, Self-incompatibility in plants	4, 6
19	Chromosomes, mitosis, meiosis, polyploidy	2, 6, 7
April 21 Thursday	**First Exam**	
26	DNA chemistry and structure, complexity, replication and recombination	10, 11
May 3	Transcription and RNA processing	12
10	Translation, ribosomes, codons	13
May 12 Thursday	**Second Exam**	
17	Plant molecular genetics, techniques	20
24	Regulation of gene expression Genetic shuffling, genetic imprinting	23 27
31	Developmental genetics, homoeotic genes	25

Final Exam **Tuesday, June 6, at 12:20 p.m.**