

## Genetics Biology 304

<b>Lecture:</b>	MWF 10:00 am – 10:50 in BS 116
<b>Recitation:</b>	Day and time varies by section
<b>Instructor:</b>	Dr. Charles Fox (fox@uky.edu)
<b>Office:</b>	Ag Science Center North Room S-307B
<b>Office Hours:</b>	Immediately after class (in S-307B) or by appointment
<b>Telephone:</b>	859-257-7474 (Office)
<b>TAs:</b>	Tom Gawriluk, Tseten Yeshi ("Yeshe"), and Travis Sexton

**Text:** Snustad and Simmons, Principles of Genetics, 4<sup>th</sup> Edition. Wiley, ISBN 0-471-69939-X.

**Course Website:** <http://www.uky.edu/~cfox/Courses/Genetics/>

**Objective:** The objective of this course is to introduce you the principles of transmission genetics, molecular genetics, and population genetics. You should come away from this course with a good understanding of basic principles and a good vocabulary of genetics terminology. Genetics is an exciting and very important field of biology; which is why this is a required course for many majors. But it can also be a lot of fun! My primary objective is to ensure that you learn basic genetics, but I also hope that you will enjoy this course and want to pursue further study in this field.

Because this is an introductory course, we will not delve too deeply into any of the topics that we cover. For students that are interested in further study in genetics, consider enrolling in ABT 460 (molecular genetics), ABT 461 (population genetics), or ASC 362 (animal genetics), each of which builds on the basic concepts that you will learn in this course.

**Prerequisites:** I will assume that you have passed the equivalent of one year of general biology (including an introduction to cell biology and genetics) and one semester of general chemistry. If you do not meet these prerequisites, come see me after the first class.

**Reading Assignments:** Readings in the textbook are listed on the syllabus. Although you *might* pass the class by skipping the reading assignments, you will not get a good grade. If you want to do well, read the assigned chapters! If you want to do really well, read the chapters *before* the class in which they will be discussed!

**Course materials:** The syllabus and other course materials, including all overheads used in lecture, will be presented on the web at <http://www.uky.edu/~cfox/Courses/Genetics>. You are encouraged to download class overheads *before each lecture* so that you can write on them during class. You will not have time during class to copy the information presented on the overheads.

**Attendance:** I will not take attendance for lecture and will not deduct points from your grade for missing class. However, exams will be based on material presented in class. If you do not attend class, you will not do well on exams. In contrast, recitation sections are required and your TA may take attendance. Also, quizzes given during your recitation section will *not* be announced in advance, so you must attend your section to ensure you get credit for each quiz.

**Exams and Grading:**

*Exams:* (600 points) There will be five exams, one exam approximately every three weeks. Each exam will be worth 100 points and will cover only material from that section of the class.

*Recitation sections:* (100 points) There will be various quizzes and problem sets assigned during sections. Attendance at recitation sections is required. Quizzes will not be announced in advance, so you must attend recitation sections to ensure receiving credit for the quiz. Make-up quizzes will be given according to the exam make-up policy (see below).

Final grades will be based on the total points from the four exams plus recitation section.

Lecture exams: 500 points

Recitation section: 100 points

Total: 600 points

Grades will then be awarded based on the following scale:

90 % or greater – A

80% to 89.9% – B

70% to 79.9% – C

60% to 69.9% – D

Less than 60 % – E

If final grades are lower than I consider appropriate, I *might* impose a curve that results in higher grades. I will not impose curves on individual exams, but may do so on the final grades in the class. However, I will not impose a curve that results in lower grades than students earn using the scale indicated above.

**Missed Exams:** Make-up exams or quizzes will be given *only if an absence is pre-arranged (at least one week in advance) or if a valid excuse is provided (as per university regulations which are posted at <http://www.uky.edu/Ombud/>)*. An unexcused absence from an exam or quiz will result in a zero for that exam or quiz. There will be *no exceptions* to this rule. A missed exam or quiz *will not* be dropped from the final grade. Make-up exams will be given during my office hours immediately following your return.

**Note to student athletes:** You must make arrangements *at least one week in advance*, with a note from the athletics department, if you will miss an exam or recitation section for a sporting event.

**Cheating:** University cheating policies have been provided to every student by the university and are available on the internet. Cheating will not be tolerated. Students are encouraged to study together, but you will take your exams by yourself. Students caught cheating will automatically fail the class and will be referred to the Academic Ombud and their College Dean.

This schedule is flexible; we may get ahead of or behind this schedule at any time. I also reserve the right to reorganize the schedule if necessary. Attend class for announcements/schedule changes.

<b>Week</b>	<b>Topic</b>	<b>Reading</b>
Wed., Aug. 27	Introduction	Chapter 1
Fri., Aug. 29	Principles of genetic transmission	Chapter 3
Mon., Sep. 1	<i>Labor Day – no class</i>	
Wed., Sep. 3	Principles of genetic transmission	Chapter 3, 4
Fri., Sep. 5	Principles of genetic transmission	Chapter 3, 4, 5(part)
Mon., Sep. 8	Chromosomes; Mitosis and meiosis	Chapter 2
Wed., Sep. 10	Chromosomes; Mitosis and meiosis, life cycles	Chapter 2, 5
Fri., Sep. 12	Genetic linkage; Genetic mapping	Chapter 5, 7
Mon., Sep. 15	Genetic linkage; Genetic mapping	Chapter 7
Wed., Sep. 17	Variation in chromosome numbers and structure	Chapter 6
Fri., Sep. 19	Variation in chromosome numbers and structure	Chapter 6
Mon., Sep. 22	<b>Exam 1</b>	
Wed., Sep. 24	Variation in chromosomes; Model organisms in genetics	Chapter 6
Fri., Sep. 26	Population genetics	Chapter 26
Mon., Sep. 29	Population genetics	Chapter 26
Wed., Oct. 1	Population genetics	Chapter 26
Fri., Sep. 3	Quantitative genetics	Chapter 25
Mon., Oct. 5	Quantitative genetics	Chapter 25
Wed., Oct. 8	Quantitative genetics	Chapter 25
Fri., Oct. 10	Molecular structure of genes	Chapter 9
Mon., Oct. 13	<b>Exam 2</b>	
Wed., Oct. 15	Molecular structure of genes	Chapter 9
Fri., Oct. 17	Molecular structure of genes/chromosomes	Chapter 9
Mon., Oct. 20	DNA replication	Chapter 10
Wed., Oct. 22	DNA replication	Chapter 10
Fri., Oct. 24	DNA replication	Chapter 10
Mon., Oct. 27	<i>No class</i>	
Wed., Oct. 29	DNA expression; Transcription and RNA processing	Chapter 11
Fri., Oct. 31	DNA expression: Transcription and Translation	Chapter 11, 12
Mon., Nov. 3	<b>Exam 3</b>	
Wed., Nov. 5	DNA expression; Genetic code	Chapter 12
Fri., Nov. 7	Sources of genetic variation	Chapter 13
Mon., Nov. 10	Sources of genetic variation	Chapter 13
Wed., Nov. 12	Bacterial and viral genetics	Chapter 8
Fri., Nov. 14	Bacterial and viral genetics	Chapter 8
Mon., Nov. 17	Bacterial and viral genetics	Chapter 8, pp 537-541
Wed., Nov. 19	Techniques in molecular genetics	Chapter 15, 16
Fri., Nov. 21	Techniques in molecular genetics	Chapter 15, 16
Mon., Nov. 24	<b>Exam 4</b>	
Wed., Nov. 26	<i>Thanksgiving Break – no class</i>	
Fri., Nov. 28	<i>Thanksgiving Break – no class</i>	
Mon., Dec. 1	Extra-nuclear inheritance	Chapter 19
Wed., Nov. 3	Regulation of gene expression	Chapter 20, 21
Fri., Dec. 5	Regulation of gene expression	Chapter 20, 21
Mon., Dec. 8	Regulation of gene expression	Chapter 20, 21
Wed., Dec. 10	Regulation of gene expression	Chapter 20, 21
Fri., Dec. 12	Genetic control of development	Chapter 22
	<b>Final Exam</b>	