

Syllabus: Honors Genetics (PCB 3063H)

Fall Semester 2015

Lectures: Tuesday/Thursday 3-4:15pm, BIO 212

1. Course Objectives: To understand the basic concepts of Genetics. The course will emphasize transmission (classical) and molecular genetic principles. Transmission genetics will include chromosome segregation and disorders of chromosome segregation in humans, mechanisms of inheritance of characters, sex determination, pedigree analysis, eukaryotic gene mapping and population genetics. Molecular genetics will cover DNA structure and replication, storage and expression of genetic material, regulation of gene expression, epigenetics and recombinant DNA technology. This is an upper division class designed for students who have completed Biology 1 (BSC 2010C) and two semesters of chemistry (CHM 2045 and CHM 2046).

2. Instructor:

Dr. Laurence von Kalm

Office: BL 433

Phone: (407) 823-6684

Email: lvonkalm@ucf.edu

Office hours: Tuesday/Thursday after class and by appointment.

3. Communication with the class:

All class materials are available on Webcourses. All communications will be posted on Webcourses.

If you email me and I don't respond within 24 hours call me or talk to me in class. Response time may be slower on weekends.

4. Text:

Genetics: A Conceptual Approach: B.A. Pierce, 5th edition. W.H. Freeman and Company
(ISBN-13: 978-1-4641-0946-1)

5. Behavior in class: It is assumed that all students will act in a mature manner in the classroom showing respect for their peers and the instructor. Any student who consistently distracts other students or the instructor will be removed from the course. Electronic devices must be on silent mode or turned off in the classroom. Laptops are to be used only for displaying the lecture slides and taking notes.

6. Grading Scale and Assessment:

Grade Scale:

Grade Range	Grade	GPA
90 - 100	A	4.0
87 - 89	A-	3.75
84 - 86	B+	3.25
80 - 83	B	3.0
77 - 79	B-	2.75
74 - 76	C+	2.25
70 - 73	C	2.0
60 - 69	D	1.0
Below 60	F	0

Note that the University considers any GPA above zero a passing grade. Specific program requirements may vary. Biology majors must earn a C in Genetics to take any Biology course for which Genetics is a prerequisite.

Academic Dishonesty.

Any form of cheating or academic dishonesty will result in an automatic F for the entire course and referral to The Office of Student Conduct for disciplinary action. In addition, a "Z Designation" may be placed on the student's official transcript indicating academic dishonesty, where the letter Z will precede the final grade for this course. For more information about the Z Designation, see <http://z.ucf.edu/>.

Unless specifically permitted all electronic devices must be inaccessible during tests. Use or display of any unauthorized electronic device will result in a zero for the test and referral to the office of student conduct.

Grading will be divided into two components.

- i. Tests - 75% of grade
- ii. Critical Thinking Exercises - 25% of grade

Test scores and grades from critical thinking exercises will be posted on Webcourses. **I strongly encourage all students to review their tests with me.**

i.) Tests (75% of grade) - Note: All tests will be in short answer format (i.e. no multiple choice).

There will be three tests each worth 25% of the final grade. Test 4 will be comprehensive and is optional (see below for details). Test questions will be based on material discussed in class and assigned problem sets. Test dates are shown below. **Note that with the exception of test 4 these dates are tentative; each test will be held in the second class after the relevant modules are completed.**

Test 1:	Tuesday Oct 6th	(modules 1-5)
Test 2:	Tuesday Oct 27th	(modules 6-9)
Test 3:	Tuesday Dec 1st	(modules 10-14)
Test 4: (optional)	Thursday Dec 10th 1-3:50pm	(modules 1-15)

Missed test:

Tests 1-3: If you miss one test for any reason you must take test 4 to make up the missing grade. No documentation is required. If you miss a second or third test you must provide acceptable documented evidence that your reason for missing the test was beyond your control. A make up test(s) will be scheduled during finals week. If acceptable documented evidence is not provided, a grade of 0 will be assigned for the missed test(s). If the missed test was due to official University business at which your presence was required (documentation must be provided), a makeup test will be scheduled as soon as possible at a time convenient for the student and the instructor.

Test 4: For students who have completed tests 1-3, test 4 is an optional comprehensive final that can be used to replace the lowest grade in tests 1-3. If test 4 is the lowest grade it will not be used in calculating the final grade.

Rounding up policy: If your final average across all grading components is less than or equal to one point below a higher grade, rounding up to the higher grade will occur if two of the three tests **and** the critical thinking exercises scored at the higher grade. For example, if your final grade is 89.2 and two tests and the critical thinking exercises scored at 90 or above your grade will be rounded up from an A- to an A. You will be eligible for rounding up if you use test 4 to replace a missed test or to replace a lower grade. **There will be no exceptions to this policy.**

Late for a test: If you arrive late for a test you will be allowed to take the test. However, you must turn in the test paper at the regular scheduled end of the test. You will not be allowed extra time unless a documentable emergency has occurred (see above).

Honor system for distribution of tests: To facilitate learning, tests 1 and 2 will be returned to the student. Tests 3 and 4 will not be returned but can be reviewed by appointment. By registering for this class each student agrees that the tests are the intellectual property of the instructor, Laurence von Kalm, and may not be sold, reproduced, shared, or used for any purpose that would provide assistance to students in future classes. The contents of the test are to be shared only with individuals registered in this class (fall 2015).

ii.) Critical Thinking Exercises (25% of grade)

Seventeen critical thinking exercises will be offered throughout the semester. Each exercise is worth 2% of the final grade. A maximum of 25% of the final grade may be accrued from these exercises. Specific guidelines and submission dates will be provided for each exercise. The guidelines will be discussed in class and posted on Webcourses. If you fail to submit an exercise by the submission deadline you will not receive credit for that exercise. For these exercises you may work with other students enrolled in the class. You may not seek advice or any form of assistance from individuals not registered in the class.

Important Academic Dates:

August 24	Classes begin
August 27	Drop deadline
August 28	Add deadline
September 4	Payment deadline
November 2	Grade Forgiveness and Withdrawal deadline
December 7	Last day of class
December 21	Grades available (may be posted earlier if available)
December 18-19	Commencement

Holidays:

September 7	Labor Day
November 11	Veterans day
November 26-27	Thanksgiving

Football Game Days: (no class)

September 3
November 19

ORDER OF MATERIAL TO BE COVERED (actual order may vary)

Reading is from Genetics: A Conceptual Approach: B.A. Pierce, 5th edition. W.H. Freeman and Company (Problem sets and solutions are on Webcourses.)

Tues Aug 25th	Syllabus, Introduction Reading: Chapter 1 (no problem set: this material will not be examined)
	TRANSMISSION GENETICS
Thurs Aug 27th	Module 1: Chromosomes and Cellular Reproduction - Problem set 1 Reading: Chapter 2; Chapter 8 section 8.3
Tues Sept 1st	Module 1: Chromosomes and Cellular Reproduction - continued
Thurs Sept 3rd	No Class: Football Game
Tues Sept 8th	Module 2: Basic Principles of Heredity - Problem set 2 Reading: Chapter 3
Thurs Sept 10th	Module 3: Sex Determination and Sex-Linked Characteristics - Problem set 3 Reading: Chapter 4
Tues Sept 15th	Module 3: Sex Determination and Sex-Linked Characteristics - continued
Thurs Sept 17th	Module 4: Extensions and Modifications of Basic Principles - Problem set 4 Reading: Chapter 5; Chapter 24 introduction and section 24.1
Tues Sept 22nd	Module 4: Extensions and Modifications of Basic Principles - continued
Thurs Sept 24th	Module 4: Extensions and Modifications of Basic Principles - continued
Tues Sept 29th	Module 5: Pedigree Analysis - Problem set 5 Reading: Chapter 6 introduction and sections 6.1 and 6.2
Thurs Oct 1st	Module 6: Linkage, Recombination and Eukaryotic Gene Mapping - Problem set 6 Reading: Chapter 7
Tues Oct 6th	Test 1 (modules 1-5)
Thurs Oct 8th	Module 6: Linkage, Recombination and Eukaryotic Gene Mapping - continued Module 7: Population Genetics – Problem set 7 Reading: Chapter 25 introduction and sections 25.1 and 25.2
Tues Oct 13th	Module 7: Population Genetics – continued
	MOLECULAR GENETICS
	Module 8: DNA: The Chemical Nature of the Gene - Problem set 8 Reading: Chapter 10

Thurs Oct 15th	Module 8: DNA: The Chemical Nature of the Gene - continued
	Module 9: DNA Replication - Problem set 9 Reading: Chapter 12 introduction and sections 12.1 - 12.4
Tues Oct 20th	Module 9: DNA Replication – continued
Thurs Oct 22nd	Module 10: Transcription - Problem set 10 Reading: Chapter 13
Tues Oct 27th	Test 2 (modules 6-9)
Thurs Oct 29th	Module 10: Transcription – continued
Tues Nov 3rd	Module 11: RNA Molecules and RNA Processing - Problem set 11 Reading: Chapter 14: Introduction and sections 14.1 - 14.2
Thurs Nov 5th	Module 12: The Genetic Code and Translation - Problem set 12 Reading: Chapter 14: sections 14.3 - 14.4; Chapter 15: Pgs. 415-417 (start at ‘The Structure and Function of Proteins’ on page 415; read everything on page 417) Pgs. 420-431 (start at ‘The Degeneracy of the Code’ on page 420; stop at beginning of ‘Messenger RNA Surveillance’ on pg. 431) Chapter 18: Introduction and section 18.1 (stop at Suppressor Mutations on page 498)
Tues Nov 10th	Module 12: The Genetic Code and Translation - continued
Thurs Nov 12th	Module 13: Control of Gene Expression in Bacteria - Problem set 13 Reading: Chapter 16: Introduction and sections 16.1 - 16.2
Tues Nov 17th	Module 13: Control of Gene Expression in Bacteria – continued
Thurs Nov 19th	No Class: Football Game
Tues Nov 24th	Module 14: Control of Gene Expression in Eukaryotes - Problem set 14 Reading: TBD
Thurs Nov 26th	No Class: Thanksgiving Break
Tues Dec 1st	Test 3 (modules 10-14)
Thurs Dec 3rd	Module 15: Molecular Genetic Analysis and Biotechnology - Problem set 15 Reading: TBD
Thurs Dec 10th	Test 4 (optional; modules 1-15)