GENETICS LABORATORY - PCB 3063L
SPRING 2014

Laboratory Coordinator: Dr. Laurence Von Kalm
Office BIO 301
email: lvonkalm@ucf.edu

Instructors (Graduate Teaching Assistants):

Ms. Nicole Barnette
Room BIO 434
email: nbarnette@knights.ucf.edu
Office hours: Tuesdays 1-3PM and Thursdays 3-5PM

Mr. David Brown
Room BIO 434
email: da909898@knights.ucf.edu
Office hours: Wednesdays 3-5PM and Friday 1-3PM

Please allow 24 hours for a response to emails (response times will be longer on weekends)

Laboratory Manual: *Genetics Laboratory Investigations*, 13th ed. 2007
by Mertens and Hammersmith
Pearson Custom Publishing/Prentice-Hall

Course website: Access the course website at Webcourses@UCF via the myUCF portal https://my.ucf.edu/ using your PID and PID password. There you will find folders of **Lecture PPT** and **Lab Reports** for you to print and bring to the laboratory sessions.

***** OPEN TOED SHOES CANNOT BE WORN IN THE LABORATORY *****
*****YOU WILL NOT BE ALLOWED TO STAY IN THE LABORATORY IF YOU WEAR OPEN TOED SHOES*****

BEHAVIOR IN CLASS:

It is assumed that all students will act in a mature manner in the classroom, showing consideration for their peers and the instructor. Any student who consistently distracts other students or the instructor will receive a penalty of one letter-grade on the final grade. Seriously disruptive behavior will cause the student to be removed from the course and face disciplinary action for student misconduct.

All electronic devices must be turned off or set to silent mode in the classroom.

GRADING:
The final grade will be rounded up if 0.5 points or less away from the upper letter (e.g. 89.50 is an A). There will be no exceptions to this policy.

Grade Range %	Letter 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
67 - 69	C-	1.75
64 - 66	D+	1.25
60 - 63	D	1.0
below 60	F	0

Note: the University considers any GPA above 0 a passing grade. Specific Program requirements may vary.

Cheating = automatic F and referral to The Office of Student Conduct for disciplinary action.

1) Laboratory Assignments (44% of grade): Read over laboratory exercises prior to class.

There are eleven laboratory assignments worth 44% of the final grade. Each lab assignment is worth 4%. Assignments for all labs must be handed to the instructor at the beginning of the next scheduled lab session.

Late lab reports without a documentable excuse will not receive a grade. If you arrive more than 30 minutes late for a lab without a documentable excuse you will not receive a grade for that lab (additional penalties will apply if applicable - see below). If you leave the lab before the exercise is completed you will also lose the points for that lab and additional penalties will apply if applicable.

Additional Penalties: Missing or failing to complete a lab exercise means that you did not complete the assigned work. Penalty for missing one lab = loss of grade for the lab (4% of final grade). Second and third missed labs = double penalty. In other words, missing three labs will cost you 20% of your final grade. Fourth lab missed = automatic F. If you know you are going to miss a lab see your instructor before the lab and have a documentable reason. **If you miss a lab with two exercises, penalties for both labs will apply.**

2) Drosophila Dihybrid Cross (25% of grade):

The report for the Drosophila Dihybrid Cross is worth 25% of the final grade. Students will work in groups of four or five for this exercise. **Time outside of the assigned laboratory hours is required for this part of the lab.** Your final grade for this exercise will be influenced by peer evaluation of your relative level of contribution; *i.e.*, your group partners will grade your contribution on a scale of 0-100%. For example, if your joint lab report receives a grade of 100% and your partners estimate your relative contribution to be 60%, your final grade for the lab will be 60% of 25 points = 15 points. An average taken from all members of the group will be used to calculate the percent effort for each person. Peer assessment will be anonymous. Complaints about the contribution of a member of your group must be communicated to the GTA prior to the

final peer evaluation; otherwise your grievances will not be taken into consideration in the final grade. **Instructions for the experiment and the report are on Webcourses.**

Students are strongly advised to turn-in a rough draft of the report by March 24/25. Failure to turn in a rough draft and to make the adjustments advised by the GTA might result in a considerably lower grade on the final report.

3) Tests (26% of grade):

There will be two tests during the semester, each worth 13% of the final grade. The tests will have short-answer questions and will require you to calculate the answers to problems. **Bring a calculator for both tests.**

If you fail to attend the test for any reason you must provide documented evidence that circumstances beyond your control prevented you from taking the test. Failure to provide reasonable documentation will result in a grade of 0 for the test. If the reason for missing the test is acceptable to the instructor a makeup test will be scheduled.

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

The test will commence at the beginning of the lab period on the scheduled day and will end at the scheduled end of the lab period. **Students cannot keep any part of the test and all pages must be turned in for grading. Any student turning in a test paper that is missing pages or who attempts to steal a test will receive an automatic F for the entire course and face disciplinary action for student misconduct.** Test scores will be posted on Webcourses. Students are strongly encouraged to review their tests with their instructor.

4) Quizzes (5% of grade):

Ten quizzes, each worth 0.5% of the final grade, will be offered during the semester. The quizzes will test your knowledge of the material for that day's laboratory. Quizzes will be in short-answer format and may require you to calculate the answer to a problem. You can prepare for quizzes by reviewing the laboratory exercise before coming to class.

***** Important safety note for a woman expecting a child - Lab 9: Gene action**

Lab 9 will require the use of toluene. Since toluene is listed as "possible risk of harm to the unborn child" any pregnant student will be excused from taking this lab. Please communicate your situation to the instructor and bring a statement from your physician. If you have any medical condition that makes you sensitive to toluene we need to know as well. We always follow stringent safety procedures, but in case of an accidental spill these students should not be present in the lab.

Important Academic Dates:

Jan 6	Classes begin
Jan 9	Drop/Swap deadline (11:59 pm)
Jan 9	Last Day for Full Refund
Jan 10	Add deadline (11:59 pm)
Jan 17	Payment Deadline
Mar 18	Withdrawal deadline (11:59 pm)
Mar 18	Grade Forgiveness Deadline (11:59 pm)
Apr 21	Classes end; Last Day to Remove Incomplete
Apr 23 - 29	Final Exam Period
May 1 - 3	Commencement
May 05	Grades Available on my UCF

Holidays:

Jan 20	Martin Luther King Jr. Day
Mar 3	Spring Break

SCHEDULE OF LABORATORY EXERCISES

Order is subject to change. The Investigation in parentheses corresponds to the experiment in the laboratory manual *Genetics Laboratory Investigations*, 13th ed. Mertens and Hammersmith, 2007.
Readings are from *Genetics: A Conceptual Approach,* 4th ed. Benjamin A. Pierce, 2012.

January 6/7 — Syllabus and Introduction

January 13/14 — Lab 1: Principles of Probability (Investigation 2, pp. 19-25 sections I - IV)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 3: pp. 52-55 (start at 'Probability as a tool in genetics,' stop at 'The Testcross')

Lab 2: Chi Square Test (Investigation 3, pp. 27-30)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 3: section 3.4 pp. 61-63
Bring a calculator

January 20/21 — Martin Luther King Jr. day (no lab)

January 27/28 — Review of Chi Square exercise

Lab 3: Human Chromosomes (Investigation 10, pp. 91-102)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 4: pp. 79-81 (start at 'Sex Determination in Humans,' stop at 'Section 4.2')
Chapter 9: pp. 239-256 (stop at 'Aneuploidy and maternal age')

Lab 4: Applied Human Genetics (Investigation 25, pp. 261-267; Investigation 2, section V, p 25-26)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 6: section 6.2, pp. 137-143

February 3/4 — Lab 5: Polytene Chromosomes from *Drosophila* Salivary Glands (Investigation 7, pp. 71-74)

Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 11: pp. 297 ('Polytene chromosomes' only)

Drosophila Dihybrid Cross (Investigation 1, pp. 11-13)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 3, pp. 44-51 and 55-59 (start at 'The Testcross,' stop at 'Worked Problem')

February 10/11 — Lab 6: Chromatographic Characterization of *Drosophila melanogaster* Mutants. (Investigation 19, pp. 211-217)
Reading: None

February 17/18 — Lab 7: Population Genetics: The Hardy-Weinberg principle.
(Investigation 23, pp. 241-248)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 25: sections 25.1-25.2, pp. 694-701.
Bring a calculator

February 24/25 — TEST 1 (Labs 1-6)

March 3/3 — Spring Break

March 10/11 — Lab 8: The Genetic Material: Isolation of DNA
(Investigation 14, omit steps 1-5 on pages 158-159)
Reading: None

March 17/18 — **DUE: Preliminary peer assessment for the Dihybrid Cross**

Lab 9: Gene Action: Synthesis of β-galactosidase in *E.coli*
(Investigation 18, 205-210)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 16: pp. 432-446 (stop at 'The trp operon of E. coli')

Before next lab (Lab 10) read DNA Restriction Enzyme Digestion and Electrophoresis,
Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 19: pp. 515-518 (start at sec 19.2, stop at 'Locating DNA Fragments with Southern Blotting')
Chapter 20: pp. 560-561 (start at 'Physical Maps,' stop at 'Sequencing an Entire Genome')

March 24/25 — **DUE: Dihybrid Report Draft**

Lab 10: DNA Restriction Enzyme Digestion and Electrophoresis (week 1)

Lab 11: Polymerase Chain Reaction (week 1)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 19: pp. 523-525 (start at 'Amplifying DNA Fragments with the Polymerase Chain Reaction, stop at 'Application: The Genetic Engineering of Plants')

March 31/Apr 1	Lab 10: Complete Restriction Enzyme Digestion and Electrophoresis (week 2)
	Lab 11: Complete Polymerase Chain Reaction (week 2)
April 7/8	**DUE: Dihybrid Report Final and final peer assessments (at the beginning of this lab session)**
	Review for TEST 2
April 14/15	**TEST 2 (Labs 7-11)**