

Syllabus: Genetics (PCB 3063)

Summer D Semester 2024

Class: Tuesday and Thursday 11-1:50pm (CB2 106)

Instructor:

Dr. Laurence von Kalm

Office: Biological Sciences room 433

Phone: (407) 823-6684

Email: Please use Webcourses for email.

UTAs and S.I. Leader

Jake Colon (S.I. Leader)

Elizabeth Ommi (UTA)

Manaal Sheikh (UTA)

Office hours: Office hours for myself, the UTAs and S.I. leader will be on the course home page.

Course Material: The course will emphasize molecular and transmission genetics. Molecular genetics will cover DNA structure and replication, storage and expression of genetic information, regulation of gene expression, and applications of genetic technologies. Transmission genetics will include chromosome segregation and disorders of chromosome segregation in humans, and the mechanisms of inheritance of genetic characters. Genetics is an upper division class designed for students who have completed Biology 1 (BSC 2010C) and two semesters of general chemistry (CHM 2045 and CHM 2046).

Course Learning Outcomes: Students will understand the basic concepts of Genetics and develop problem solving skills. In addition, students will be able to draw connections and distinguish between concepts.

Specific learning outcomes:

- Understand how the cellular processes of DNA replication, transcription, and translation are different yet connected.
- Understand the principles of gene regulation in bacteria and eukaryotes.
- Understand and apply information as it relates to molecular genetic techniques such as cloning, PCR and RNA interference.
- Understand how the inheritance of alleles and characters relates to chromosome dynamics during cell division.
- Understand the principles of Mendelian and non-Mendelian inheritance of characters and apply this knowledge as well as be able to distinguish between different modes of inheritance.

How to do well in this class:

- Come to class.
- Do the assigned reading right before or right after we cover material in class.
- Don't leave homework and problem sets until the last minute.
- Do the chapter problem sets at least twice. The problem sets and solutions are available on Webcourses.
- Talk to one of us as soon as you realize you don't understand something.
- If you are struggling with a chapter, try the Adaptive Learning module for that chapter on the Achieve site.

Communication with the class:

All announcements will be made in class and on Webcourses. All students are required to check for Webcourse announcements and will be responsible for being aware of content in announcements.

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.

Changes to the Syllabus

I reserve the right to make changes to the syllabus during the semester. Changes may include, but are not limited to, test dates, assignment due dates, and relative assessment weights. If a change to the syllabus is made, an announcement will be made on Webcourses and in class.

Required Class Materials:

All students have the option to use the First Day Inclusive Access Program to purchase class materials at reduced cost. The cost is \$75 and includes access to the textbook and all course materials from the Macmillan Achieve website including iClicker access. You can purchase course materials through the 'Course Materials' link in Webcourses. *The last day to opt in is Sunday May 19th*. Regardless of whether you choose to use the First Day Inclusive Access Program, all students must purchase access to the Macmillan Achieve website. If you do not opt in or opt out the cost will be \$117.33.

The text is 'Genetics: A Conceptual Approach: B.A. Pierce, 7th edition. W.H. Freeman and Company' and is available as an ebook with the online package.

Grading Scale and Assessment:

All grades will be posted on Webcourses. **I strongly encourage all students to review their tests.**

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.

Grading will be divided into five components.

- Syllabus quiz due Friday May 24th at midnight - 1% extra credit
- Tests - 75%
- Class participation iClicker exercises - 5%
- Achieve Learning site Homework exercises - 15%
- Achieve Learning site Quiz Exercises - 5%

Due dates for all assessments will be announced in Webcourses and in the course calendar.

Syllabus Quiz (1% of grade - extra credit)

There will be a short online syllabus quiz worth 1% extra credit. *If you receive financial aid, you should submit the quiz by Friday May 17th.* The quiz will remain open until midnight Friday, May 24th. If you do not complete the quiz by the deadline, you will not be allowed to take the quiz. *You must answer all questions correctly to get credit for the quiz.*

Tests (75% of grade)

There will be three tests in multiple choice format each worth 25% of the final grade. The material to be covered on each test is on pages 6 and 7 of this syllabus. The best way to prepare for tests is to do the problems sets more than once as well as the Achieve Homework. Test dates are as follows:

Test 1	Tuesday June 4 th
Test 2	Tuesday June 18 th
Test 3	Thursday July 11 th

Electronic devices are not allowed during tests. Use or display of any unauthorized electronic device will result in a zero for the test and disciplinary action (see below under Academic Integrity).

Missed test(s):

If you are unable to take a test due to illness, injury, or other reasons such as military service or official University business at which your presence was required, a makeup test will be scheduled as soon as possible at a time convenient for both the student and the instructor. Documentation showing that events beyond your control were responsible for missing the test *must* be provided. I will not accept medical notes that say you were seen by a doctor without an explanation that an illness or injury was involved. All notes must be on letterhead with a phone number. In the absence of acceptable documentation, a grade of 0 will be assigned. You must notify me in advance if you will miss a test for a religious observance. For more information, see the UCF policy at <http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALJan19.pdf>.

Students who are deployed active-duty military and/or National Guard personnel and require accommodation should contact me as soon as possible after the semester begins, and/or after they receive notification of deployment.

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 you can provide evidence of a documentable event that prevented you from getting to the test on time.

iClicker exercises (5% of grade)

We will be using iClicker polling during every class beginning Tuesday May 21st. This will provide you with feedback on how well you are comprehending course concepts, help you to master challenging concepts, and allow you to review material after class. You will earn 0.75pts for answering a question (participation) and an additional 0.25pts for a correct answer.

We will be using the iClicker Student app (formerly *iClicker Reef*) on a smartphone, tablet, or laptop. iClicker remotes will not work. The cost of iClicker access is included in Macmillan Achieve access. It is your responsibility to properly register your *iClicker* account in a timely manner (by Tuesday May 21st).

See the module 'iClicker Account Set Up' in Webcourses for guidance in setting up your account and device.

To accommodate occasional absences and technical issues, 10% of the iClicker grade will be dropped at the end of the semester. For example, if there were 100 questions and you scored 80 points, your iClicker grade will be 80/90 instead of 80/100. If you score more than 100% of the iClicker grade it will be capped at 5%; i.e., you cannot score excess points. There will be no alternative method (e.g., writing answers down on paper and turning in) for recording your responses even if you were in attendance.

Achieve Homework Exercises (15% of grade):

These exercises will be available on the Achieve Learning site, and you should do them before you take the quizzes. You should take the homework exercises seriously as they are designed to help you learn and understand the material. You have an unlimited number of attempts at the questions and there is no penalty for incorrect answers. If you do all the homework exercises you will automatically earn 15% of your grade. If you fail to complete all the questions for a given homework exercise you will receive a partial grade for that exercise. *You must solve a question to receive credit for the question. If you opt to see the solution or skip the question you will not receive credit for that question.* The final homework grade will be calculated as an average across all homework exercises. Each homework question will have equal weight in the final grade.

You must complete the homework exercises by the due date. Students are responsible for knowing the homework due dates which will be announced in Webcourses and the course calendar. If you fail to submit a homework exercise by the due date you will receive a zero for that exercise. There will be no makeups or excused absences for missed homework exercises unless you can provide documentation that an event beyond your control prevented computer access for the 24-hour period prior to the assignment due date and time (e.g., hospitalization etc.). Technical or internet difficulties will not be accepted as an excuse for missing homework exercise deadlines. Do not wait until the last minute to do the homework.

Achieve Quiz Exercises (5% of grade):

These exercises will be available on the Achieve Learning site. *You should do the homework exercise and the relevant chapter problem set before attempting the quiz for a chapter.* Quizzes are a good way for you to test your knowledge prior to a test. You will have one attempt to answer a question. Each quiz question will have equal weight in the final grade.

You must complete the quiz exercises by the due date. Students are responsible for knowing the quiz due dates which will be announced in Webcourses and the course calendar. If you fail to submit a quiz exercise by the due date you will receive a zero for that exercise. There will be no makeups or excused absences for missed homework exercises unless you can provide documentation that an event beyond your control prevented computer access for the 24-hour period prior to the assignment due date and time (e.g., hospitalization etc.). Technical or internet difficulties will not be accepted as an excuse for missing quiz exercise deadlines. Do not wait until the last minute to do the quizzes.

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 you meet the following criteria:

- two of the three tests are at or above the higher grade

and

- the iClicker exercise grade is at or above the higher grade, or the homework and quiz exercise final scores are both at the higher grade

For example, if your final grade is 89.2/100 and two tests and the iClicker exercises score at 90/100 or above, your grade will be rounded up from an A- to an A. Alternatively, if your final grade is 89.2/100 and two tests and the homework and quiz exercises score at 90/100 and above, your grade will be rounded up from an A- to an A. *There will be no exceptions to this policy.*

Important Academic Dates:

May 13	Classes begin
May 13-17	Late Registration
May 17	Drop/Swap/Add deadline
May 24	Payment deadline
June 21	Withdrawal deadline
July 13	Grade Forgiveness deadline
July 13	Last Day of classes (July 11 for this class)
July 18	Grades available (may be posted earlier if available)
August 2-3	Commencement

Holidays:

May 27	Memorial Day holiday
July 4	Independence Day holiday (no class that day)

Order of material to be covered. The actual order may vary.

Reading is from Genetics: A Conceptual Approach: B.A. Pierce, 7th edition. W.H. Freeman and Company

May 14	Course Introduction Chapter 10: DNA: The Chemical Nature of the Gene Reading: Chapter 10 entire chapter
May 16	Chapter 12: DNA Replication Reading: Chapter 12 sections 12.1 - 12.3
May 21	Chapter 13: Transcription Reading: Chapter 13 entire chapter
May 23	Chapter 14: RNA Molecules and RNA Processing Reading: Chapter 14 sections 14.1, 14.2 (skip the section on RNA Editing) Chapters 15/18: The Genetic Code and Translation Reading: Chapter 15 sections 15.1 - 15.3; Chapter 18 section 18.1 (stop at Suppressor Mutations)
May 28	Chapters 15/18: The Genetic Code and Translation (cont.)
May 30	Chapters 16: Control of Gene Expression in Bacteria Reading: Chapter 16 sections 16.1 and 16.2
June 4	<i>Test 1 (Chapters 10, 12, 13, 14 and 15/18)</i> Chapter 16: Control of Gene Expression in Bacteria (cont.)
June 6	Chapters 17: Control of Gene Expression in Eukaryotes Reading: Chapter 11 section 11.1 (stop at Changes in Chromatin Structure); Chapter 17 sections 17.1-17.3
June 11	Chapter 19: Molecular Genetic Analysis and Biotechnology Reading: Chapter 14 section 14.5; Chapter 19 sections 19.1-19.3 (skip the section on Engineered Nucleases in 19.2) and 19.6 (read only the sections on Silencing Genes with RNAi and Using RNAi to Treat Human Disease)
June 13	Chapters 2/8: Chromosomes and Cellular Reproduction Reading: Chapter 2 entire chapter; Chapter 8 sections 8.1 and 8.3
June 18	<i>Test 2 (Chapters 16, 11/17 and 19)</i> Chapters 2/8: Chromosomes and Cellular Reproduction (cont.)
June 20	Chapter 3: Basic Principles of Heredity Reading: Chapter 3 sections 3.1 to 3.3 (skip the section on Binomial Expansion and Probability in section 3.2) Chapter 4: Sex Determination and Sex-Linked Characteristics Reading: Chapter 4 entire chapter
June 25	Chapter 4: Sex Determination and Sex-Linked Characteristics (cont.)
June 27	Chapters 5/24: Extensions and Modifications of Basic Principles

Reading: Chapter 5 entire chapter; Chapter 24 section 24.1

July 2	Chapters 5/24: Extensions and Modifications of Basic Principles (cont.)
July 4	Independence Day (no class)
July 9	open day to be used if needed
July 11	Test 3 (Chapters 2/8, 3, 4 and 5/24)

Academic Integrity:

Academic dishonesty in any form will not be tolerated. At the discretion of the instructor, penalties will range from loss of credit for the test or assignment to an F for the entire course.

Students should familiarize themselves with UCF's Rules of Conduct at

<https://regulations.ucf.edu/chapter5/documents/5.008RulesofConductFINALSept21.pdf>

According to Section 1, "Academic Misconduct," students are prohibited from engaging in

(a) Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course related material also constitutes cheating.

(b) Communication to another through written, visual, electronic, or oral means. The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination, course assignment or project.

(c) *Commercial Use of Academic Material: Selling of course material to another person and/or uploading course material to a third-party vendor without authorization or without the express written permission of the University and the Instructor. Course materials include but are not limited to class notes, instructor's power points, tests, quizzes, labs, instruction sheets, homework, study guides, and handouts.*

(d) Falsifying or misrepresenting the student's own academic work.

(e) Plagiarism: Whereby another's work is used or appropriated without any indication of the source, thereby attempting to convey the impression that such work is the student's own.

(f) Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.

(g) Any student who knowingly helps another violate academic behavior standards is also in violation of the standards.

(h) Soliciting assistance with academic coursework and/or degree requirements. The solicitation of assistance with an assignment, lab, quiz, test, paper, etc., without authorization of the instructor of record or designee is prohibited. This includes but is not limited to asking for answers to a quiz, trading answers, or offering to pay another to complete an assignment. It is considered Academic Misconduct to solicit assistance with academic coursework and/or degree requirements, even if the solicitation did not yield actual assistance (for example, if there was no response to the solicitation).

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, The Golden Rule (<https://goldenrule.sdes.ucf.edu/>). UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and when necessary, respond to academic misconduct. Penalties can include a failing grade in an assignment or in the course, suspension, or expulsion from the university, and/or a "Z Designation" on a student's official transcript indicating academic dishonesty, where the final grade for this course will be preceded by the letter Z.

Course Accessibility Statement:

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need disability-related access in this course should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) <<http://sas.sdes.ucf.edu/>> (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). Through Student Accessibility Services, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student.

Campus Safety Statement:

Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.
- Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide's physical location and review the online version at <http://emergency.ucf.edu/emergency_guide.html>.
- Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency.
- If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see <<https://ehs.ucf.edu/automated-external-defibrillator-aed-locations>>.
- To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <<https://my.ucf.edu>> and logging in. Click on "Student Self Service" located on the left side of the screen in the toolbar, scroll down to the blue "Personal Information" heading on the Student Center screen, click on "UCF Alert", fill out the information, including e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
- Students with special needs related to emergency situations should speak with their instructors outside of class.
- To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video (<<https://youtu.be/NIKYajEx4pk>>).