

PCB 3063 – Genetics – Spring 2020

(Section 0001) Tues & Thurs 4:30 – 5:50 pm (CB2-101)

(3 credit hours)

Instructor: Dr. Cynthia Bayer

Office (BIO 202D) Hours: M & W 12:30 – 2:00

Communication: Webcourses *Inbox*
or *Announcements*

T 12:00 – 1:00

F 1:00 – 2:00

Course Description: This general Genetics course will cover the basic concepts of transmission (classical) genetics and molecular genetics. Transmission genetic principles include chromosome dynamics during cell division, disorders of chromosome segregation in humans, Mendelian and non-Mendelian inheritance of characters, sex determination, pedigree analysis, and eukaryotic gene mapping. Molecular genetic principles include DNA structure and replication, storage and expression of genetic information, regulation of gene expression, mutation and repair, epigenetics, and biotechnology.

Course Prerequisites: An upper division course for students who have completed two semesters of Chemistry (CHM 2045 and CHM 2046) and earned a grade of C or higher in Biology 1 (BSC 2010C).

Student Learning Outcomes: Successful Genetics students will demonstrate a broad understanding of the basic principles of Genetics, demonstrate an ability to use information in new situations to solve problems, and be able to draw connections between concepts. Students will be expected to:

- **Demonstrate** how the inheritance of alleles and characters correlates with chromosome dynamics during cell division.
- **Apply** the principles of Mendelian and non-Mendelian inheritance of characters to a variety of pedigrees and be able to distinguish between different modes of inheritance.
- **Calculate** the genetic distance between linked genes using the concepts underlying gene mapping in eukaryotes.
- **Define** an allele at the molecular level and as a unit of inheritance.
- **Deduce** connections and **distinguish** between the cellular processes of DNA replication, transcription and translation.
- **Compare** and **contrast** the control of gene expression in bacteria and eukaryotes.

Students will be evaluated on meeting these objectives via participation in lecture discussion and group activities, on-line homework and quizzes, 4 lecture exams and a comprehensive final exam

Academic Activity requirement:

- In order to document that you have participated in this course, please complete the **Syllabus Quiz**, found in our Webcourse's Quiz section, by **5:00 pm JAN 10**. Failure to do so will result in a delay in the disbursement of your financial aid.
- All students will receive credit for completion of the Syllabus Quiz.

Course website:

Access our course website at Webcourses@UCF via the myUCF portal using your NID and password. You will find links to the **Syllabus, Weekly Modules, Sapling Learning Homework & Quizzes, Active Learning Exercises, End-of-Chapter Problems, Web Resources, and Grades**. Within the **Weekly Modules** you will find **Chapter PowerPoints** for you to download or print and bring to lecture. These PowerPoint slides are sized to be legible when printed at 6 slides per page.

REQUIRED Textbook: Participation in the on-line course **Sapling Learning Genetics**, which contains graded quizzes, homework, and a link to the electronic textbook **Pierce Genetics: A Conceptual Approach, 6th ed.** Three options for purchasing access to this course and eBook, one of which offers a loose-leaf text for an additional \$15, are described in the **Course Introduction & Getting Started** page in Webcourses.

REQUIRED iClicker: We will use the iClicker classroom response system on a regular basis for class points. You will need to purchase an **iClicker remote** and bring it to every class. (It would be wise to bring extra batteries.) **WE WILL NOT USE THE WIFI-VERSION REEF.** The purchase of a remote is NOT optional; it will be used as integral part of this course. You must register for this course, no later than **JAN 16**, in **Webcourses** via the iClicker tab. Follow the instructions to enter your remote ID (under the barcode on the back of your remote). You may use either a multiple choice-only **iClicker+**, or the alphanumeric-capable **iClicker2** remote, as I will only utilize multiple-choice responses to questions in this course.

Course Grade:

60% = Best 3 out of 4 Lecture Exams (100 points/exam)

20% = Required Final Exam (100 points)

10% = Sapling Learning: Homework & Quizzes

10% = iClicker points (*Participation* = 3 pts. & *Graded*; correct = 1 pt., incorrect = 0.25 pt.)

- Students are responsible for keeping track of their own grades and identifying issues within 2 weeks of any grade posting in Webcourses.
- Letter grades for the semester will be awarded according to the scale below. Letter grades will adhere to this percentage range with no exceptions. There will be **no curving** of final grades.

A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = 59% and below

Lecture Exams: There will be 4 lecture exams, each worth 100 points. Exams will be based on assigned readings, Sapling Learning Homework & Quizzes, Active Learning Exercises, recommended End-of-Chapter Problems, and material covered in lecture, including notes and diagrams that are not included in the PowerPoint files posted at Webcourses. Therefore, students who routinely skip lectures will be at a significant disadvantage. **NO CALCULATORS** use will be needed or allowed during any exam. The lowest score of the 4 lecture exams will be dropped automatically.

Final Exam: All students are required to take the COMPREHENSIVE (covering all material from the semester) Final Exam, worth 100 points. The Final Exam will be given in our lecture classroom, CB2-201 according to the UCF Final Exam Schedule for Spring 2020, on **Thurs Apr 23, 4:00 - 6:50 pm.**

Sapling Learning: Homework & Quizzes are assigned for each chapter, and together make up **10%** of your course grade. *Availability* and *due dates* are listed in the Sapling course. After the due date for any assignment has passed, you will not be able to get credit for that assignment. Homework (unlimited attempts, hints provided) and Quizzes (1 attempt, no hints) will be automatically graded and synched weekly to Webcourses gradebook. **BE SURE TO SELECT THE SUBMIT BUTTON AT THE END OF THE ASSIGNMENT TO SUBMIT ALL ANSWERS.** The lowest grade of all quizzes will be dropped automatically. The lowest grade of all Homework assignments will be dropped automatically.

iClicker points earned from class participation and graded questions each day will make up **10%** of your course grade. For each class period, 3 points are earned for participation (= answering at least 75% of the questions) plus additional points for graded questions (1 point for each correct answer and 0.25 point for each incorrect answer). Only a subset of questions will be graded each day. The 2 lowest iClicker day scores will be dropped automatically.

End-of-Chapter Problems are listed in Webcourses as recommended practice and review for each chapter. You will not submit answers or receive credit but are strongly encouraged to complete these problems for a better understanding and review of the concepts discussed in lecture.

Active Learning Exercises provide an opportunity for students to work together or individually on a worksheet in the classroom to reinforce a critical concept. Student understanding will be assessed via iClicker questions.

Taking Exams:

- Exam questions will be multiple choice. You will use scantrons provided by me.
- You need to bring a #2 pencil and your UCF ID number to fill in the scantron.
- You **MUST** show your UCF ID card to a proctor when you turn in your exam and scantron.
- You may **NOT** use a phone or calculator during any exam.
- If you arrive **within 15 minutes** after the start of an exam, you will be allowed to take the exam. However, you must turn in the exam paper at the scheduled end of the exam period. You will not be allowed extra time unless a documentable emergency has occurred (see below).

Excused Missed Exams:

- If an exam is missed due to an official, documented, University-accepted absence, a makeup exam will be permitted. Excused absences include special curricular requirements (e.g. field trip, professional conference), official UCF business at which your presence is required (e.g. university sponsored team event), U.S. Military-related business (e.g. Reserve Duty), legal obligation (e.g. jury duty).
 - You must provide to me documentation with your name and the date affected **1 week prior** to the posted exam date.
 - Students are responsible for arranging with me a time to take the makeup exam so that it is completed before grades and exam solution keys are released to all students.
- A makeup exam **may** be permitted if any other legitimate* documented reason that circumstances beyond your control prevented you from taking the scheduled exam (including, but not limited to, major illness, death in the immediate family)
 - *If I approve the absence based on your documentation from an appropriate authority (doctor, police, judge, etc.) **provided within 48 hours of the missed exam**, I will arrange a time and place for a makeup exam. THE MAKEUP EXAM WILL INCLUDE SHORT ANSWER QUESTIONS IN ADDITION TO MULTIPLE CHOICE.*
 - A doctor's note must be on letterhead with a contact phone number and must indicate that a medical condition was treated. *A note stating that you visited the UCF Health Center is **not** acceptable documentation of a major illness preventing you from taking an exam.

Unexcused Missed Exams: If a student misses an exam for an unexcused event (e.g. forgetting there was an exam, oversleeping, arriving > 15 min late) or *cannot provide acceptable documentation*, then they will receive a score of zero for that exam. The first zero score will be dropped as the lowest scoring exam. Any additional zero exam scores due to unexcused absences will count towards the final course grade.

Reviewing Exams:

- Scantrons & exams will **NOT** be returned to students. Exam solution keys will be posted in Webcourses.
- You may request a printout of your exam score sheet (with all correct and incorrect responses indicated) during office hours **within 2 weeks** of an exam grade being posted in Webcourses.
 - You must resolve **any** grade concerns within the 2 week window.

Excused iClicker points: In order for any absence from class that results in missed iClicker points to be excused, documentation must be provided according to the same policy described above for missed exams.

Classroom Conduct: Because of the challenges inherent with a class of this size, **please be sure to**

- arrive and depart on time
 - refrain from talking during class while I am talking
 - place cell phone on vibrate
- Students who fail to follow these basic courtesy rules will be asked to leave.
 - Laptops are allowed for course-related use only. If I receive complaints that your YouTube or Netflix viewing interferes with the ability of other students to concentrate and learn in this classroom, I will have to prohibit ALL laptop use in the classroom.
 - Audio recording of lectures is permitted.

Academic Integrity: As reflected in the UCF creed, integrity and scholarship are core values that should guide our conduct and decisions as members of the UCF community. Plagiarism and cheating contradict these values and are serious academic offenses. Students enrolled at UCF are expected to familiarize themselves and uphold the standards of academic behavior defined in the University's *Rules of Conduct* (Section UCF-5.008) in the Golden Rule handbook <http://goldenrule.sdes.ucf.edu>.

"Academic misconduct includes but is not limited to cheating, plagiarism, assisting another in cheating or plagiarism, and commercial use of academic materials." (Section UCF-5.015 The Golden Rule handbook) This includes using unauthorized materials or electronic devices during an exam, copying from another student's exam or on-line quiz, signing another student's name on an exam or other assignment, using another student's iClicker remote for them in their absence, or in any way falsifying or misrepresenting your academic work. Violations of the UCF *Rules of Conduct* may result in a score of 0 on an assignment, an F in the course, or formal documentation through an Academic Misconduct Report submitted to the Office of Student Conduct <http://osc.sdes.ucf.edu> for disciplinary action. Possible sanctions include Disciplinary Suspension, a "Z Designation" placed on the student's official transcript indicating academic dishonesty, <http://goldenrule.sdes.ucf.edu/zgrade>, or Disciplinary Expulsion from UCF.

Course Accessibility: It is my goal that this class be an accessible and welcoming experience for all. If anyone believes the design of this course poses barriers to effectively participating and/or demonstrating learning in this course, please meet with me (with or without a Student Accessibility Services (SAS) accommodation letter) to discuss reasonable options or adjustments. You may also want to contact SAS <http://sas.sdes.ucf.edu> (Ferrell Commons 185; 407-823-2371) to talk about academic accommodations.

Help & SARC: Please ask for help if you need it! I am here to answer your questions. Additionally, help is available through SARC (Student Academic Resource Center, Howard Phillips Hall, Room 113: 407-823-5130; <http://sarc.sdes.ucf.edu>). SARC provides students with free individual and small-group tutoring for Genetics with Supplemental Instruction (SI). Students can also request a Learning Consultation with a Learning Skills Specialist or attend Academic Success Workshops to improve study skills & strategies.

UCF Cares: UCF and I care not only about your academic success, but also your overall well-being. Please visit UCFcares.com <http://cares.sdes.ucf.edu/> if you are seeking resources or support, or if you are worried about a friend or classmate. Free services and information are included for a variety of student concerns, including but not limited to alcohol use, bias incidents, mental health concerns, sexual harassment or assault, and financial challenges. You can also e-mail ucfcares@ucf.edu with questions or for additional assistance. You can reach a UCF Cares staff member Student Care Services, <http://scs.sdes.ucf.edu>, Ferrell Commons 142, between 8 a.m. and 5 p.m. by calling 407-823-5607.

If you are in immediate distress, please call Counseling and Psychological Services (CAPS), Counseling Center 101 <http://caps.sdes.ucf.edu> to speak directly with a counselor 24/7 at 407-823-2811, or call 911.

Academic Services and Resources: A list of available academic support and learning services is available at [UCF Student Services](#). Click on "Academic Support and Learning Services" on right-hand side to filter.

Non-Academic Services and Resources: A list of non-academic support and services is also available at [UCF Student Services](#). Click on "Support" on the right-hand side to filter.

Campus Safety Statement: Emergencies on campus are rare, but if one should arise in our class, we will all need to work together. Everyone should be aware of the 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. Please make a note of the guide's physical location and consider reviewing the online version at http://emergency.ucf.edu/emergency_guide.html.
- Familiarize yourself with evacuation routes from each of your classrooms and have a plan for finding safety in case of an emergency.
- If there is a medical emergency during class, we may need to access a first aid kit or AED (Automated External Defibrillator). To learn where those items are located in any building, see <http://www.ehs.ucf.edu/AEDlocations-UCF> (In our building **CB2**, they are located on the **1st floor near the elevators.**)
- To stay informed about emergency situations, sign up to receive UCF text alerts by going to my.ucf.edu and logging in. Click on "Student Self Service" located on the left side of the screen in the tool bar, scroll down to the blue "Personal Information" heading on your Student Center screen, click on "UCF Alert", fill out the information, including your e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
- If you have a special need related to emergency situations, please speak with me during office hours.
- Consider viewing this video [You CAN survive an active shooter](#) about how to manage an active shooter situation on campus or elsewhere.

iClicker Instructions

You may use an **iClicker+** or **iClicker2** polling remote. You may purchase a remote at the UCF Bookstore or online at <https://www.iclicker.com/>. Instructions are on the back of the remote.

- **Be sure to consider which of your other courses may require an iClicker2 remote.** I will only ask Multiple Choice questions in class. However, you may need an iClicker2 remote to answer numeric/alphanumeric questions in another course.
- We will NOT use REEF polling in this course.

INSTRUCTIONS FOR iCLICKER COURSE REGISTRATION: iClicker is a response system that allows you to answer questions I pose during class. You will be graded on that feedback and your in-class participation. In order to receive this credit, you will need to register your iClicker remote in Webcourses by **JAN 16**. You must have come to class at least once and voted on at least one question in order to complete registration.

- Log into our **Webcourses** page and choose the iClicker link in the left hand toolbar. Follow the instructions to enter your remote ID (under the barcode on the back).
- It is not necessary to register your remote at iClicker.com as well. If you register a used remote at their national database, you may be charged a fee.
- Please choose **CB** (my initials) as the radio frequency to communicate with my receiver.

iCLICKER POLICIES:

Cheating policy: I consider bringing a fellow student's iClicker remote to class to be cheating and a violation of UCF's *The Golden Rule* of Conduct. If you are found with a remote other than your own or have votes in a class that you did not attend, you will **forfeit all** clicker points and face additional disciplinary action.

Forgotten remote policy: Note that we will be using iClicker in almost every class and iClicker points will make up 10% of your final grade. Please remember that it is your responsibility to come prepared to participate with a functioning remote every day. However, I do realize that unforeseen circumstances do arise, and for this reason I will drop the **two** lowest iClicker days from your total participation grade.

Broken/lost remote policy: If you have lost or broken your iClicker remote, you will have to purchase another one. Please email me with your new remote ID so that I can manually register your new remote.

Awarding points policy: The iClicker software has the final say in awarding points. **DO NOT** stop by the lectern, email after class, or come to office hours to ask for points not awarded. If you were in class and using your registered remote properly, you will see a check mark, and my receiver will record your response. If there is an issue with your remote, you must address it immediately (e.g. re-register, change the batteries, ensure you have the right frequency, etc.) in order to earn clicker points.

Course Schedule

Jan 07: Introduction & *Chapter 1* Fundamental Concepts

Jan 09: *Chapter 2* Chromosomes & Cellular Reproduction

DROP deadline Thurs, Jan 9 11:59pm

ADD deadline Fri, Jan 10 11:59pm

Jan 14: *Chapter 3* Basic Principles of Heredity

Jan 16: *Chapter 3* Basic Principles of Heredity

Jan 21: *Chapter 4* Sex Determination & Sex-linked Characteristics

Jan 23: *Chapter 4 & Chapter 5* Extensions & Modifications of Basic Principles

Jan 28: *Chapter 5* Extensions & Modifications of Basic Principles

Jan 30: **EXAM 1 (Chapters 1, 2, 3, 4, 5)**

Feb 04: *Chapter 7* Linkage, Recombination & Gene Mapping

Feb 06: *Chapter 7 & Chapter 6* Pedigree Analysis

Feb 11: *Chapter 8* Chromosome Variation

Feb 13: *Chapter 10* DNA: The Chemical Nature of the Gene

Feb 18: *Chapter 10* DNA: The Chemical Nature of the Gene

Feb 20: *Chapter 11* Chromosome Structure

Feb 25: **EXAM 2 (Chapters 6, 7, 8, 10, 11)**

Feb 27: *Chapter 12* DNA Replication

Mar 03: *Chapter 12* DNA Replication

Mar 05: *Chapter 13* Transcription

Mar 09-14: **SPRING BREAK**

Mar 17: *Chapter 13* Transcription

Mar 19: *Chapter 14* RNA Molecules & Processing & *Chapter 15* Genetic Code

WITHDRAWAL deadline

Fri, Mar 20 11:59pm

Mar 24: *Chapter 15* Genetic Code & Translation

Mar 26: **EXAM 3 (Chapters 12, 13, 14, 15)**

Mar 31: *Chapter 16* Control of Gene Expression in Bacteria & *Chapter 17* Eukaryotes

Apr 02: *Chapter 17* Control of Gene Expression in Eukaryotes

Apr 07: *Chapter 18* Gene Mutations & DNA Repair

Apr 09: *Chapter 19* Molecular Genetic Analysis & Biotechnology

Apr 14: *Chapter 19* Molecular Genetic Analysis & Biotechnology

Apr 16: **EXAM 4 (Chapters 16, 17, 18, 19)**

Apr 23: **Comprehensive FINAL EXAM** (Thursday 4:00 - 6:50 PM)

Note that the instructor reserves the right to make changes to the syllabus or other aspects of the course at any time. These changes will be announced in class and in Webcourses.