PCB3063 Genetics
Fall 2024 Section 4608

I. Class Meetings Little Hall 0109. M & W 9:35 am -11:30 pm

II. Instructor:
Xiaofei Bai Ph.D., Department of Biology; Genetics Institute
Office: CGRC Room 438
Office Hours: Thursday, 2-3 pm, or by appointment at baixiaofei@ufl.edu.

Graduate TAs:
1) Palash Sethi,
Office: Bartram Hall Rm 122
Office Hours: Mon-Thu 1pm-3pm or by appointment at palash.sethi@ufl.edu

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Office Hours: Wed/Thu 2 pm, or by appointment at m.rifat@ufl.edu

III. Course Description

PCB 3063 is an introduction to genetics course covering topics from Mendelian genetics to molecular biology and genomics. The class will provide students with a solid foundation in genetics either as a stand-alone course or as a prerequisite to other life sciences courses offered on campus. The course emphasis is on problem-solving and conceptual synthesis. Course performance will be measured by **11 homework assignments (1 with the lowest score dropped)**, **three exams**, **a class project (details in class)**, **two-seminar attendance (extra credit)**, and **class attendance (extra credit)**.
We will have many assignments and problems that will assist you in learning the material, attaining greater understanding and higher grades. Each module has associated graded assignments intentionally designed to promote hands-on learning. My recommended strategy for success is: 1) Read the textbook Chapter; 2) attend lectures; 3) work through homework assignments.

Each student is solely responsible for reading and following the instructions, guidelines, and schedules in this syllabus. Not reading the information in this syllabus or instructor announcements will not constitute an excuse for missing an assignment, exam, or other assessment.

IV. Course Objectives:

Upon completion of this course, students will have built core knowledge of the field of genetics, including both Mendelian and molecular genetics. Students will be able to use this core knowledge to analyze scientific literature and make connections within and between other life sciences and translational medicine coursework.

V. E-mail Communication

All e-mail correspondence to course instructors **must originate from your UFL account and have your full name in the body of the e-mail**. E-mails not meeting these requirements may not be recognized by our e-mail filters, and thus may not be answered.

VI. Course Resources

A. Textbook – *Concepts of Genetics*, 12th Edition, William S. Klug, Pearson Education, Inc. (publisher), with *MasteringGenetics* online learning system.
One physical copy of 12th and 11th editions each are put on Course Reserves and will be available to loan for 2 hours from Marston Science Library.

B. Online Resources and Electronic Textbook - This course will be participating in the UF All Access program. Login at the following website and Opt-In to receive your required Pearson access code, which will be used to register from within Canvas
- https://www.bsd.ufl.edu/G1CO/IPay1f/start.aspx?. Follow the UF All Access Student Instructions. Any code obtained outside of UF All Access will not work for the course. When setting up your account, **you must use your Gatorlink (@ufl.edu) e-mail address.**
Next, register for Mastering Genetics using your access code.

1. Sign into Canvas and enter your Canvas course.
2. Do one of the following: Select any Pearson link from any module.
   OR Select an Access Pearson link in the Course Navigation.
3. Next, select OpenMyLab and Mastering or a content link.

Never use temporary access because all work will be lost when you purchase Mastering Genetics.
From the You're Done page, select Go to My Courses.
Note: We recommend you **always enter Mastering Genetics through Canvas.** Also, it is recommended that you use **Google Chrome** as your browser and **turn off pop-up blockers** when doing assignments in Mastering to avoid issues.
For help with All Access registration, email: allaccess@bsd.ufl.edu
For help with the Pearson site, contact their Technical Support. Contact information and support hours will be posted on the Canvas webpage for the course.
https://help.pearsoncmg.com/integration/cg/canvas/student/en/content/get_started.htm

C. Course Website (e-Learning) - Class material, including the syllabus, problem sets, exam results, lecture slides, and other assignments and information related to the course will be posted on the course e-Learning site http://elearning.ufl.edu/ The course is found under "e-Learning in Canvas." You are responsible for **all** announcements, whether made by email or Canvas inbox and/or posted on the course website for this class. So, please be sure to check into the online course often.
For help with e-Learning, call the UF Computing Help Desk at 352-392-4357, or visit the e-Learning support website: http://helpdesk.ufl.edu/

VII. Assessments and Grading.

Students are expected to check the course website daily for announcements, assignment due dates, and other course related information.

A. Exams – 300 points - There will be three "unit" exams, but no cumulative "final" exam. Each exam will cover material from PowerPoint lectures, the assigned reading in the

textbook, homework and in-class learning activities, and discussions. Exams questions include multiple-choice and numerical answer. You may use a calculator during exams – graphing calculators can be used, if the student demonstrates to the proctor that the memory has been cleared. Expect exams to require the full 2 hours allotted.

Regrades must be requested in writing and be taken within 7 days of return of exam.

No **make-up exams** will be given without prior permission or documentation of illness. In case of illness, a letter from your primary care provider is required. A personal matter requires a note from the Dean of Students (P202 Peabody Hall). Any request for a makeup exam must be submitted by email prior to the exam or within a week after the exam.

B. Mastering Genetics Homework Assignments – 150 points total (15 points each).

As part of PCB 3063, you are required to complete (almost) weekly online assignments. Due dates are posted within the individual Modules on Canvas. All assignments must be completed by the stated due date and time for credit.

(a) Dynamic Study Modules – DSMs are overall reviews of each Chapter's material. Full points are awarded upon completion before the due date. There is no penalty for using hints or for multiple attempts before the due date.

(b) Practice Problems/Questions: No hints available, but 6 attempts per question are allowed. You can take the entire homework assignment up to 3 times and keep the best score. One homework assignment with the lowest grade out of eleven total will be dropped. Once assigned, online assignments are available at all times up until the deadlines. Usually, assignments are due on Sundays. Because they are assigned well ahead of time, documentation of illness or a personal matter must be provided for at least **five of the seven days** of the week of the assignment's deadline **by the Dean of Student's Office or DRC** for accommodations to be made.

It is in your best interest to plan to submit all online assignments well ahead of the posted deadlines, so that you have time to deal with technical problems should they arise. If there is a technical problem with website access or a particular assignment within *CANVAS*, you must contact ***eLearning*** **technical support and the instructor at least 48 hours prior to the deadline,** so appropriate steps can be taken to fix the issue and appropriate extensions can be given, if necessary. Thus, check early that you can access the assignments. **You will not be granted an extension for technical problems if you do not contact the instructor well before the deadline**. A late penalty of 25% per day applies (except HW 1, for which there is no penalty).

C. Course Project – **50 points** – In-class group poster presentation. Teams of ~10 or 11 students (a total of 10 groups) are assigned to a specific genetic/genome/gene editing paper. Members of each team will present the poster to your classmates and TAs. More details will be announced in the middle of the Fall semester.

D. iClicker questions – **up to 20 bonus points.** In-class iClicker surveys will be used in (almost) each lecture and will be counted as extra credit toward the final grade (20 points maximum, 1 point for participation in each class, up to 4% of total course points). Some of

the iClicker questions will appear on exams. If you haven't done so already, please install the app and create an iClicker student account: **https://at.ufl.edu/service-teams/classrooms/classroom-technology/iclicker-response-system/**

E. Biology Department seminar attendance – **up to 20 bonus points.** I will invite two leading scientists, including Dr. Shaohe Wang from HHMI Janelia Research Campus, on Sep. 17th at 3:30 pm and Dr. Amit Joshi from the University of Tennessee, Knoxville, on Oct 1st at 3:30 pm to present their research during the Biology Department seminar. The seminar will be either on-site at Bartram 211 or on Zoom. The Zoom link will be provided before the seminar. You will be requested to submit a post-seminar summary with at least half-page/single-space writing. You will receive 10 points extra credit for each seminar.

F. Two online lecture assignments – **up to 20 bonus points.** I will assign two online videos provided by world-leading scientists introducing the important genetic concept or technology that we will lecture on during the class. We will assign simple questions based on the answers included in the videos. You will receive up to 10 points extra credit for each video assignment.

E. Grading Summary*

	Assignments	Points each	Total points	Percentage
iClicker	20	1	Extra credit	Extra credit
Homework	10	15	150	30
Course Project	1	50	50	10
Exams	3	100	300	60
Seminars	2	10	Extra credit	Extra credit
Online videos	2	10	Extra credit	Extra credit
Course total			**500**	**100**

***May be subject to minor changes at the discretion of the instructor**
Please note that Mastering grades can take up to a day to transfer to Canvas, so don't panic if you don't see them immediately.

Grading will be on a per-cent scale.
93 – 100% A
90 – 92.9% A-
87 - 89.9% B+
83 – 86.9% B
80 – 82.9% B-
77 – 79.9% C+
73 – 76.9% C
70 – 72.9% C-
67 – 69.9% D+
63 – 66.9% D

60 – 62.9% D-
<60 E

A curve may be applied at the instructor's discretion. The curve can only raise your grade, not decrease it. Please see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx for UFs policy for assigning grade points.

F. Computing Requirements - It is the sole responsibility of the student to maintain a functioning and compatible computing system, proper software, and a reliable internet connection. Computing/internet connectivity issues will NOT be acceptable excuses for missed deadlines, unless they are brought to the attention of the instructor **at least 48 hours prior to the deadline** and accompanied by the ticket number from technical support. See Resources for Technical Support contact information. Microsoft Office programs are required for many of the assignments; it can be accessed by current UF students through GatorCloud.

VIII. Attendance

Attendance in class is not required, but material covered only in lecture may appear on exams. iClicker assessments will often be taken during lecture to assess/improve comprehension. Some of the iClicker questions will appear on exams. iClicker points will be counted as extra credit toward the final grade (up to 4% of total points). Lectures are not a simple recapitulation of the textbook; they are designed to synthesize and embellish important concepts, to reinforce and provide a logical structure to the material. Students are strongly encouraged to read the assigned textbook Chapters before the lectures and attend lectures to make it easier to comprehend and remember the material.

IX. Guide for Success

The UF College of Liberal Arts and Sciences assumes that each student will devote 3-4 hours per week per credit-hour to each course, including time in lectures and labs. Because PCB 3063 is 4 credits, each student should therefore expect to devote 12-16 hours per week to this course during a regular semester, or 16-21 hours per week during Summer C. A recommended time allocation is below.

Activity	**Hours per Week**
Lectures	4
Online Exercises & Assignments	4-6
Textbook Readings	2-3
Review and Study	2-3

If you find yourself spending less than the recommended number of hours per week on average, you should recognize that you may have difficulty learning and comprehending the material in this time, and this will probably be reflected in poor performance on the various assessments. If you find yourself spending more than the recommended number of hours per week on average on these activities, discuss this with your course instructor to see if you can refine your study habits. Research shows that short but regular and consistent time commitment to an activity improves efficiency of learning. I.e., to get the

most out of the class, study almost every day, and every week. Do not delay the activities (reading, studying, homework, project assignment) until the last night before the deadline or the exam date.

X. Academic Honesty

On all work submitted for credit the following pledge is either required or implied:
"On my honor I have neither given nor received unauthorized aid in doing this assignment."
Note: I hope you work in study groups on assignments; explaining concepts in this group setting is expected, however, when you solve questions, you will learn the material best if you do all of the calculations on your own. It is not unusual for me to take a quiz or assignment question, replace the numbers, and place it on an exam. Be prepared, not sorry!

XI Diversity and Inclusion

Diversity and Inclusion: It is the course instructor's intention to respect and treat all students equally, regardless of their gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. This includes providing the necessary resources for every student's learning needs, respecting the students' right to self-identity, valuing their different beliefs and perspectives, and celebrating their differences. Similarly, the expectation for this class is that all the students treat and respect each other as described above. It is in the interest of all of us to foster a welcome and inclusive environment for each member of our class. Your concerns and suggestions for improving the inclusivity of the environment are encouraged and appreciated.

XII. Accommodations for Students with Disabilities

Students who will require an accommodation for a disability must contact the Dean of Students Office of Disability Resources, in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: https://disability.ufl.edu/students/accommodations/. Note that the student should provide documentation of a requirement for accommodation **by the second week of classes**. No accommodations are available to students who lack this documentation. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Dean of Students Office of Disability Resources will work with the instructor to accommodate the student.

XIII. Counseling Center

Many students experience test anxiety and other stress related problems. Go to "A Self Help Guide for Students" to view CWC suggestions. In addition, a number of support systems are available through the UF Counseling and Wellness Center (3190 Radio Road, 392 1575, https://counseling.ufl.edu/).

XIV. In-Class Recording:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes

are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

XV. Tentative Course Schedule

This is a tentative schedule; the dates and coverage of topics are subject to change. To allow more flexibility in student schedules, all assignments for each week are due at 11:59 PM. This is NOT an invitation to wait until the last minute to do all the assignments. Get them done early and avoid technical problems or rushing through them without learning the material.

	Week	Topic	Read	Due	subtopics
1	**26-Aug**	Course policies, introduction	Syllabus		
	28-Aug	Transmission Genetics I	CH 2	HW 1, Sep 1st, 11:59 pm	Genetics Introduction; mitosis & meiosis; Mendelian genetics: Punnett squares & probability
2	**2-Sep**	Labor Day break			
	4-Sep	Transmission Genetics I	CH 3	HW 2, Sep 8th, 11:59 pm	Mendelian genetics: Punnett squares & probability
3	**9-Sep**	Transmission Genetics II	CH 4	HW 3, Sep 15th, 11:59 pm	Extensions of Mendelian genetics
	11-Sep	Transmission Genetics II	CH 4/5		Extensions of Mendelian Genetics
4	**16-Sep**	Transmission Genetics II	CH 5	HW 4, Sep22nd, 11:59 pm	Linkage mapping Genome sequencing
	17-Sep	Biology seminar	3:30 PM		Zoom link TBD
	18-Sep		CH 6		Microbial Genetics

		Transmission Genetics II Transmission Genetics III	CH 7		Sex determination
5	**23-Sep**	Chromosomes	CH 8		Chromosome variation, Exam I Review
	25-Sep	**Exam I (CH 2-7)**			**Exam I (CH 2-7). 9:35 AM to 11:30 AM**
6	**30-Sep**	Molecular Genetics I Molecular Genetics I	CH 10,11	HW 5, Oct 6th, 11:59 pm	DNA: the genetic material; replication & recombination; chromatin structure
	1-Oct	Biology seminar	3:30 PM		Zoom link TBD
	2-Oct		CH 11,12		DNA: the genetic material; replication & recombination; chromatin structure
7	**7-Oct**	Molecular Genetics II	CH 13	HW 6, Oct 13th, 11:59 pm	RNA/Transcription
	9-Oct	Molecular Genetics II	CH 14		Translation
8	**14-Oct**		CH 15	HW 7, Oct 20th, 11:59 pm	DNA Repair
	16-Oct	Molecular Genetics III	CH 16		Regulation of Gene expression: Prokaryotes
9	**21-Oct**	Molecular Genetics IV	CH 17	HW 8, Oct 27th, 11:59 pm	Regulation of gene expression: Eukaryotes
	23-Oct	Molecular Genetics V	CH 18		Post Transcriptional Regulation
10	**28-Oct**		CH 19		Exam II Review, Epigenetics Biotechnology/Genomics
	30-Oct	**Exam II (CH 8,10-18)**			**Exam II (CH 8,10-18). 9:35 AM to 11:30 AM**
11	**4-Nov**	Genomics	CH 20,21	HW 9, Nov 10th, 11:59 pm	Biotechnology/Genomics
	6-Nov		CH 21,22		
12	**11-Nov**	Veterans Day			Veterans Day
	13-Nov	Molecular Genetics VI	CH 23		Developmental Genetics
13	**18-Nov**	Molecular Genetics VII	CH 24	HW 10, Nov 24th, 11:59 pm	Cancer Genetics Quantitative Genetics
	20-Nov	Transmission Genetics IV	CH 25		CRISPR/Cas9 gene editing
14	**25-Nov**	Class Project Presentations		HW 11, Dec. 1st, 11:59 pm	**Class Project Presentations**
	27-Nov	Transmission Genetics IV	CH 26		Brief introduction of population genetics
15	**2-Dec**	**Exam III review**			**Exam III review**

	4-Dec	**Exam III (CH 19-26)**		**Exam III (CH 19-26). 9:35 AM to 11:30 AM**