Human Genomics – PCB 4666/ MCB 6937
Fall 2022
3 Credits

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 Microbiology and Cell Science
Wednesdays 10 - 11am

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Course Description

Increasingly, researchers and health care providers are mining the genome to uncover the basis
of disease susceptibility and treatment. Genome-based strategies are used for the detection,
treatment, and prevention of many diseases. This course will discuss the field of genomics, how
genome sequence data is obtained and analyzed, and most importantly, what can be learned from
an individual's genome. Students will conduct genomics research by working with human
genome data and conduct a small analysis of associations between genetic variants and the
diet. The course will address cutting-edge research in epigenetics, pharmacogenomics,
molecular diagnostics, and the microbiome. The course will also include timely topics such as
GMO's, stem cells, genetic testing and genome editing. This course will reinforce fundamental
concepts in molecular biology and genetics.

The course will be entirely web-based, and all lectures will be delivered online and
asynchronously. The reading assignments, course lecture materials and online activities will be
posted each week. There will be a quiz each week over module's material.

Course Objectives

The goals of this course are:

1. To reinforce a solid foundation in molecular biology in order to fully understand how the
   genome determines traits, including susceptibility to disease.
2. To understand the role of the genome in the development, detection, prevention and
   treatment of disease.
3. To conduct and interpret basic genomics research approaches and outcomes.
4. To appreciate how advances in biotechnology and genomics are personalizing all aspects
   of medicine including prevention, diagnostics, and treatment.
5. To frame and to participate in broader discussions of the ethics and complexities of this
   era of biotechnology and precision medicine.

Course Requirements

Recommended textbook

The textbook is recommended but not required. Genetics From Genes to Genomes by Hartwell, Goldberg, Fischer, Hood. 7th Edition. Published by McGraw Hill, 2021.

Other online resources will be posted.

Minimum technology requirements

The University of Florida expects students to acquire computer hardware and software appropriate to his or her degree program. Most computers are capable of meeting the following general requirements. A student's computer configuration should include:

- Webcam
- Microphone
- Broadband connection to the Internet and related equipment (Cable/DSL modem)
- Microsoft Office Suite installed (provided by the university)

Individual colleges may have additional requirements or recommendations, which students should review prior to the start of their program.

Please refer to the Student Computing Requirement policy from UF: https://it.ufl.edu/policies/student-computing-requirements/

Access to and on-going use of a computer is required for all students. Competency in the basic use of a computer is require.

Honorlock

Honorlock is an online proctoring service that allows students to take exams on-demand 24/7. There are no scheduling requirements or fees. You will need a laptop or desktop computer with a webcam, a microphone, and a photo ID. The webcam and microphone can be either integrated or external USB devices. Honorlock requires that you use the Google Chrome (Links to an external site.) browser; furthermore, the Honorlock extension (Links to an external site.) must be added to Chrome. For further information, FAQs, and technical support, please visit Honorlock.

Zoom

Zoom is an easy to use video conferencing service available to all UF students, faculty, and staff that allows for meetings of up to 100 participants.You can find resources and help using Zoom at https://ufl.zoom.us.

Assessments

Exams

Three proctored, non-cumulative exams will be administered throughout the semester. Each exam is worth 15% of your grade. If an exam is taken without approved proctoring arrangements and without adhering to proctoring criteria (eyes only on the screen, closed book/notes, no talking or other devices, etc) credit will not be given and the score will be a zero. If it is detected that a student's LMS account was signed into by more than one instance during an exam (i.e., two individuals signed into the same student account during an assessment), credit will not be given and the score will be zero. An optional, final exam will be given during finals week. The exam will be cumulative and can be used to replace a lower in term exam. Exam windows will be open for 4 days. Because of the expanded windows, there is no possible conflict with exams from other courses. The windows will open at 8 AM EST and close at 11:59 PM EST. If you live in a different time zone please take this into account. Canvas will cut your exam off at 11:59 PM Eastern Standard Time. Exam Windows will be posted in Week 1.

Quizzes

Brief quizzes will be assigned for each module. Quizzes can be taken up to **two times each** and only your highest score per quiz will be recorded for a grade. Your quiz average will count for **15%** of your final grade. Quizzes cannot be taken late so missed quizzes will count as a zero and can count towards a quiz drop. However, to enhance flexibility and give a little breathing room, the 3 lowest quiz grades will be dropped. The quiz window closes once the due date passes so students will not have access to quizzes if they have not been attempted at least once. One of the quizzes is a syllabus quiz to make sure the policies and format of the course are understood.

Course Research Project

Students will analyze real genomic data from an ongoing study to identify associations between genetic variants and dietary traits. The students will then use online tools and resources, including those from NCBI and the primary literature to synthesize a biological hypothesis to support their associations and to contribute to the field of genomics. This work will be structured through a series of assignments that involve individual and group work. It culminates in a poster presentation from each group. More detailed info will be provided. This work is worth 40% of final course grade.

Grading Policy

I will make every effort to have each assignment posted and graded within 10 days of its due date.

Point Adjustment Requests

Once an assessment is graded and returned, you have 10 calendar days to contest your grade in an email. Any requests for points must include a clear justification of your response and why it is as complete or better than the correct one. Please note that questions and comments about any

quiz/exam question are welcome at any time during the semester for the purposes of understanding and education.

Course Grading Policy

Assessments	Value of Total Grade
Exams (3 total)	45%
Research Project*	40%
Quizzes	15%
	100%

*Forty percent is divided among a series of individual/group work that builds towards a final poster presentation.

Graduate Students - For the research project related assignments, graduate students will receive a version of the assignment that is aligned with expectations of graduate level work emphasizing critical thinking and scientific design.

Grade Scheme

The cutoffs for letter grades will be as follows:

Grade	Range
A	100 % to 93.0%
A-	< 92.99 % to 89.0%
B+	< 88.99 % to 86.0%
B	< 85.99 % to 82.0%
B-	< 81.99 % to 79.0%
C+	< 78.99 % to 76.0%
C	< 75.99 % to 72.0%
C-	< 71.99 % to 69.0%
D+	< 68.99 % to 66.0%
D	< 65.99 % to 62.0%
D-	< 61.99 % to 59.0%
E	< 58.99 % to 0.0%

*Grade rounding will be done as outlined above. (for example, a final grade of 81.95 is a B-)

** It is recommended that you use your own calculations during the semester to get an estimate of your grade.

Please see the UF grading policies at this site: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Attendance/Participation Policies

Requirements for class attendance and make-up exams and assignments in this course are consistent with university policies that can be found at: catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/ Makeup exams will be provided for students who miss an exam due to documented circumstances that are consistent with the excused absences described in the university policy. Because the exam window will be open a minimum of 48 hours, it is not possible for exam overlap with exams from another course.

Tips for Success

- After teaching online for 10 years, I've accumulated some tried and true tips for success in an online course. These are real tips from my past students:
    - Schedule "class times" for yourself. It is important to do the coursework on time each week.
    - Read ALL of the material contained on this site. There is a lot of helpful information that can save you time and help you meet the objectives of the course.
    - Do not wait to ask questions! Waiting to ask a question might cause you to miss a due date.
    - Don't wait for the last minute. Even a little bit a deadline anxiety can affect your performance. Give yourself some breathing room.
    - Always have a backup plan: do you have the power cord ready in case your battery goes down in the middle of an exam? What if your internet is out on the day of any exam?
    - Use the learning objectives to study! (of students who regularly use the learning objectives, 100% said they were extremely helpful and valuable).

UF Policies

University Policy on Accommodating Students with Disabilities:

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://disability.ufl.edu/) by providing appropriate documentation. Once registered, students will receive an accommodation letter that must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

University Policy on Academic Conduct:

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Additional Statement on Course Decorum:

Students are encouraged to discuss material with each other from the course, help each other understand concepts, study together, and even discuss assessment questions with each other once the quiz window is closed. However, the following violate the student honor code:

- Have another person complete a quiz/assessment in this course
- Copy another student's work in this course
- Collaborate with anyone while working on a quiz or assessment in this course unless told otherwise
- Discuss the questions and answers with other students while the assessment window is still open
- Manipulate and/or distribute any materials provided in this course for any purpose (including course lecture slides).

Netiquette and Communication Courtesy:

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats.

Course Structure and Flow

Login to Canvas, select this course, and then go to the "Start Here" Module. This module will highlight all the important policies, features, and flow of the course. I've included an intro video of myself too so you can get to know me.

New modules are posted each week of the semester. For each module, there will be several items to complete. Click on the link for each item. The first item will always list the **learning objectives.** Keep these in mind as you learn the material. After reading the learning objectives, please go through the material in the order presented. The next item in the list will usually be the reading assignment, followed by the lectures, and links to any online tutorials or modules. After you go through the material in the order presented, you are always free to return and visit any of the content. The welcome video will give an example of the types of course content and how it will be presented. The pdf of the lecture slides of each module will also be posted for your

convenience. This convenience is for students who wish to print out the slides and follow along with the lecture, study the notes later, etc. The lectures slides will only be available in pdf format.

Each module includes a quiz. The quizzes are due on the last day of the module week by 11:59 PM. The material will be available to you throughout the semester, but once a quiz due date passes, this means that you can no longer access the quiz. If you only attempt a quiz once before due date, that quiz grade is the only one that will count. (See below for more info on quizzes).

List of Topics - *Subject to Change*

- Start Here - Welcome Module
- Module 1 - Introduction to Structure and Function of Genome
- Module 2: Diversity in the Genome
- Module 3: Chromosomes and Inheritance
- Module 4: Biotechnology
- Module 5: Sequencing Analysis and Bioinformatics
- Module 6-7: Genetic Disease: Mendelian Disorders
- Module 8: Genetic Disease: Common and Complex Disorder
- Module 9: Epigenomics
- Module 10. Genetic Disease: Cancer
- Module 11. Genetic Disease: Detection and Diagnostics
- Module 12. Genetic Disease: Genetic-based therapy
- Module 13/14: Precision Medicine and Beyond *LAST MODULE OF COURSE

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Canvas Information

Canvas is where course content, grades, and communication will reside for this course.

- ufl.instructure.com
- For Canvas, Passwords, or any other computer-related technical support contact the IT Service Desk.
  - 123 123-1234
  - 877 878-8325

- o http://it.myinstitution.edu
- o itsupport@myinstitution.edu

Getting Help

Technical Difficulties:

For issues with technical difficulties for Canvas, please contact the UF Help Desk at:

- http://helpdesk.ufl.edu
- (352) 392-HELP (4357)
- Walk-in: HUB 132

Any requests for make-ups due to technical issues should be accompanied by the ticket number received from the Help Desk when the problem was reported to them. The ticket number will document the time and date of the problem. You should e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Health and Wellness

- **U Matter, We Care**: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit umatter.ufl.edu to refer or report a concern and a team member will reach out to the student in distress.
- **Counseling and Wellness Center:** Visit counseling.ufl.edu or call 352-392-1575 for information on crisis services as well as non-crisis services.
- **Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need, or visit shcc.ufl.edu.
- **University Police Department**: Visit police.ufl.edu or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room/Trauma Center:** For immediate medical care in Gainesville, call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; ufhealth.org/emergency-room-trauma-center.

Academic and Student Support

- **Career Connections Center:** 352-392-1601. Career assistance and counseling services career.ufl.edu/.
- **Library Support:** Various ways to receive assistance with respect to using the libraries or finding resources. cms.uflib.ufl.edu/ask
- **Teaching Center:** 352-392-2010 General study skills and tutoring: teachingcenter.ufl.edu/
- **Writing Studio:** 352-846-1138. Help brainstorming, formatting, and writing papers: writing.ufl.edu/writing-studio/

Online Proctoring

In order to maintain a high standard of academic integrity and assure that the value of your University of Florida degree is not compromised, course exams will be proctored. Some students will take their exams online and will be proctored by Honorlock. You will take your exam electronically using the course website. You **do not** need to register for your exam. However, you will need to have installed and enabled the Google Chrome Honorlock extension prior to taking your exams. You will need a webcam, speakers, external camera, microphone, laptop or desktop computer, and reliable Internet connection to be able to take your exams. Wireless internet is not recommended. You may also need a mirror or other reflective surface. Google Chrome is the only supported browser for taking exams in Canvas.

Before Your Exam

Prior to each exam and in the same environment you plan to take the exam, review the [Honorlock Guidelines (Links to an external site.)](#), and go to [Honorlock Support (Links to an external site.)](#) to run a system check. This process takes just a few minutes and is completely free. If your course offers an Honorlock Practice Quiz, it is strongly recommended that you take it to practice using Honorlock before your exams.

Important: If you are unable to take an exam because of a technical glitch on your end, that is your responsibility. However, if you do experience technical difficulties during the exam, Honorlock's support menu will visible on-screen for you to contact a support agent.

Getting Help

Honorlock offers 24/7/365 technical support to assist students before, during, and after exams. If you experience any trouble with Honorlock, begin a live chat on the [Honorlock Support page (Links to an external site.)](#), call +1 (844) 243-2500, or email Support@Honorlock.com.