



BIOS 2600 A GENETICS FALL 2023

SYLLABUS

Class description: Genetics - 88352 - BIOS 2600 – A is TR 9:30-10:45 AM, Aug 21, 2023 - Dec 14, 2023 in Howey Physics L3. BIOS 2600 is a 3-credit class. Prerequisites: BIOL 1510 or BIOL 1511 or ((BIOS 1107 or BIOS 1207) and (BIOS 1107L or BIOS 1207L)).

Instructors: Dr. Michael Goodisman, Professor, School of Biological Sciences, michael.goodisman@biology.gatech.edu. <https://www.goodismanlab.biology.gatech.edu/>. Office hours: Tuesdays 4:00 – 5:00 PM in virtual office. Office hours also available by appointment or email. In person or virtually. Teaching assistants: Shenghan Wu, swu467@gatech.edu. Nicholas Rodda, nrodda3@gatech.edu. Office hours: TBA.

Learning Objectives (modified from the Genetics Society of America; <https://genetics-gsa.org/education/genetics-learning-framework/>): By the end of this class, you will be able to: (1) explain how DNA is organized, (2) describe the mechanisms necessary to preserve and duplicate an organism's genome, (3) deduce information about genes from analyses of genetic crosses, (4) demonstrate how genetic information is controlled and expressed, (5) explain the processes that can affect the frequency of genotypes over time, and (6) apply experimental methods to analyze gene structure, gene expression, gene function, and genetic variants.

Class attendance: Class time will be used for lectures, activities, and exams. If you miss lecture, *you* are responsible for obtaining all notes, announcements, and assignments. Written confirmation of a legitimate excuse, such as a severe illness, will be required if any assessment is missed. Georgia Tech's excused absence policy will be enforced in this course. <http://www.catalog.gatech.edu/rules/4/>. Lecture is a time when we all work together, so be courteous to your fellow students and do not disrupt class by entering and leaving the room, reading, talking, allowing cell phones to ring, etc.

Recordings of Class Sessions and Required Permissions: Classes may not be recorded by students without the express consent of the instructor unless it is pursuant to an accommodation granted by the Office of Disability Services. Class recordings, lectures, presentations, and other materials posted on Canvas are for the sole purpose of educating the students currently enrolled in the course. Students may not record or share the materials or recordings unless the instructor gives permission.

Learning management system: We will use Canvas as a learning management system for class communication and coordination. Assignments and messages will be sent through Canvas on a regular basis. <https://gatech.instructure.com/courses/337908>

Textbooks and learning materials: WS Klug, MR Cummings, CA Spencer, MA Palladino, and DJ Killian. Concepts of Genetics. 12th edition. Pearson. 2019. We will use Pearson's Mastering Genetics and Learning Catalytics throughout the class, which will require purchasing an access code. This should come bundled together with the electronic textbook if purchased through the bookstore. You can also purchase access to Mastering Genetics, Learning Catalytics, and the textbook through Pearson directly.

<https://www.pearson.com/us/higher-education/program/Klug-Modified-Mastering-Genetics-with-Pearson-e-Text-Standalone-Access-Card-for-Concepts-of-Genetics-12th-Edition/PGM1226214.html>

Student Use of Mobile Devices in the Classroom: You will need an electronic communication device (e.g., laptop, tablet, smartphone) for class. *Please resist using your electronic devices for non-class use.*

Homework: Throughout the semester, you will have online homework assignments administered through Mastering Genetics. The Mastering Genetics assignment scores will comprise part of your overall course grade. Homework deadlines will be provided in class on a rolling timeline and will be due on the date specified in class.

In-class activities: We will use Learning Catalytics for interactive class sessions. The Learning Catalytics assignment scores will make up part of your overall course grade. You can use any internet-enabled device (e.g., laptop, tablet, smartphone) to access Learning Catalytics during class. Note that the professor may administer written activities if deemed necessary.

Exams: The class will include three exams. The exams will be held during class time on the dates provided on the class schedule. The third exam will be held during the final exam period but will *not* be comprehensive and will last 2:15. Exams are closed-book and will be made up of questions based on topics, materials, and discussions presented in lecture, through Learning Catalytics activities, in the assigned readings, and in the Mastering Genetics assignments.

Assessments: Your grade in genetics will be determined by your performance on three exams, homework, and in-class learning catalytics activities. The relative values of these assessments are:

Assessment	Value
Learning Catalytics Activities	10%
Mastering Genetics Homework	10%
Exam I	25%
Exam II	25%
Exam III	30%
Total	100%

The most stringent scale used for grading will be 87-100% an A, 77-86.9% a B, 67-76.9% a C, 57 - 66.9% a D, and 56.9% or less an F. This scale is subject to adjustment at the professor's discretion.

Americans with Disabilities Act: Students with disabilities needing academic accommodation should (1) register with and provide documentation to the Office of Disability Services and (2) notify the Professor during the first week of class indicating and describing the need for accommodation. Appropriate accommodations will then be provided as needed.

<http://disabilityservices.gatech.edu>

Academic Integrity: Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations. Please note that all Learning Catalytics activities must be taken in the classroom. Attempts to take the activities outside of the classroom, or facilitating other students taking the activities outside of the classroom, will be considered cheating.

<https://policylibrary.gatech.edu/student-affairs/academic-honor-code>

<http://www.catalog.gatech.edu/rules/18/>

Late Assignments & Re-Scheduled/Missed Exams: Students that miss assignments or exams without a legitimate excuse will receive no credit for that assignment. However, students that miss homework or in-class assignments for approved Institute activities and religious observances will be excused for missed credit. Make up exams will only be given for approved activities. All legitimate excuses *must* be verified with written documentation.

www.catalog.gatech.edu/rules/4/

Student-Faculty Expectations Agreement: At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between

faculty members and the student body. See www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Regrade policy: The *only way* that changes to your grades will be considered is through the official regrade procedure. Regrades can be requested if: (a) there has been an error in adding together your score, (b) you did not receive credit for an answer as given on the key, (c) there is a difference between your score and that of another student who gave the same answer, or (d) you did not receive credit for an answer that differs from that on the key but which is nevertheless correct. In general, regrades will not be considered for issues concerning the amount of partial credit awarded for an answer. To have an assignment regraded, you must submit an explanation of the problem directly to the professor in writing, and hand back your exam and scantron sheet. For issues (a) and (b), it will generally suffice to simply describe the problem. For issue (c) you will need to submit an explanation of the problem, as well as the name of the other student involved. For issue (d) you must give a detailed and explicit account as to why your answer is correct. Deadlines for the submission of regrades will be given when assignments are handed back. *No regrades will be considered after the deadline.* Note that if you request a regrade for a particular question, the professor reserves the right to regrade your entire exam or quiz, which could result in a lowering of your overall score.

Tentative Class Schedule: This schedule is subject to change!

Week	Date	Day	Chapter	Content
1	22-Aug	T	1	Introduction to Genetics
	24-Aug	R	2	Mitosis and Meiosis
2	29-Aug	T	3	Mendelian Genetics
	31-Aug	R	4	Extensions of Mendelian Genetics
3	5-Sep	T	5	Chromosome Mapping in Eukaryotes
	7-Sep	R	6	Genetic Analysis and Mapping in Bacteria
4	12-Sep	T	7	Sex Determination and Sex Chromosomes
	14-Sep	R	8	Chromosome Mutations
5	19-Sep	T		Flex Day
	21-Sep	R		Exam I
6	26-Sep	T	9	Extranuclear inheritance
	28-Sep	R	10	DNA Structure and Analysis
7	3-Oct	T	11	DNA Replication and Recombination
	5-Oct	R	12	DNA Organization in Chromosomes
8	10-Oct	T		Fall break-No class
	12-Oct	R	13	The Genetic Code and Transcription
9	17-Oct	T	14	Translation and Proteins
	19-Oct	R	16	Regulation of Gene Expression in Bacteria
10	24-Oct	T		Flex Day
	26-Oct	R		Exam II
11	31-Oct	T	17	Transcriptional Regulation in Eukaryotes
	2-Nov	R	18	Posttranscriptional regulation in Eukaryotes
12	7-Nov	T	19	Epigenetic Regulation in Eukaryotes
	9-Nov	R	20	Recombinant DNA Technology
13	14-Nov	T	21	Genomic Analysis
	16-Nov	R	22	Applications of Genetic Engineering
14	21-Nov	T	24	Cancer Genetics
	23-Nov	R		Holiday-no class
15	28-Nov	T	25	Quantitative Genetics
	30-Nov	R	26	Population and Evolutionary Genetics
16	5-Dec	T		Flex Day-Final instructional class day
	7-Dec	R		
17	11-Dec	M		Exam III; 8:00 AM - 10:15 AM