

# BIOS 2600 Genetics - Syllabus

BIOS2600 A - 3 credits

TR 8:00 - 9:15 AM; No physical class location

## Instructor Information

Instructor	Email	Office Hours & Location
Dr. Patrick McGrath	<a href="mailto:patrick.mcgrath@biology.gatech.edu">patrick.mcgrath@biology.gatech.edu</a>	By appointment
Dr. Frank Rosenzweig	<a href="mailto:frank.rosenzweig@biology.gatech.edu">frank.rosenzweig@biology.gatech.edu</a>	By appointment
Teaching Assistants	Email	Office Hours & Location
Yael Toporek	<a href="mailto:yael.toporek@gatech.edu">yael.toporek@gatech.edu</a>	Tuesday, 11am - 12pm
Jungeun Lee	<a href="mailto:jlee3716@gatech.edu">jlee3716@gatech.edu</a>	Thursday, 7am - 8am
Lauren Parker	<a href="mailto:lparker71@gatech.edu">lparker71@gatech.edu</a>	Monday, 1pm - 2pm

## General Information

### Course Goals and Learning Outcomes

By the end of this class, students will be able to: (1) understand fundamental and applied concepts in genetics, (2) apply biological principles to solving genetics problems, (3) interpret and analyze genetics experiments, (4) explain methods and techniques use in genetic analyses, and (5) explain how biological information is stored and transmitted.

### Prerequisites

Undergraduate Semester level BIOS 1107 Minimum Grade of D and (Undergraduate Semester level BIOS 1107L Minimum Grade of D or Undergraduate Semester level BIOS 1207L Minimum Grade of D) or Undergraduate Semester level BIOL 1510 Minimum Grade of D or Undergraduate Semester level BIOL 1511 Minimum Grade of D.

### Course Structure

This class is taught as a synchronous course. All lectures will be recorded and available for viewing outside of class time.

## Requirements and Guidelines specific to Spring 2021

### Expectations and Guidelines

Each of us has a responsibility to ourselves and our fellow Yellow Jackets to be mindful of our shared commitment.

- Papers, projects, tests, homework, and other assignments will only be accepted in electronic form.

Additional information is available in the [Student Guidebook](#).

### **Instructor Illness or Exposure to Covid-19**

During the spring 2021 semester, some faculty members may be required to quarantine due to exposure or isolate due to a Covid-19 diagnosis. Some disruption to classes or services is inevitable, but Georgia Tech is making every effort to ensure continuity of operations. As is the case in any semester, faculty may cancel a class if they have an illness or emergency situation.

### **Student Illness or Exposure to Covid-19**

During the semester, you may be required to quarantine or self-isolate to avoid the risk of infection to others. Quarantine is the separation of those who have been exposed to someone with Covid-19 but who are not ill; isolation is the separation of those who have tested positive for Covid-19 or been diagnosed with Covid-19 by symptoms.

If you have not tested positive but are ill or have been exposed to someone who is ill, please follow the [Covid-19 Exposure Decision Tree](#) for reporting your illness.

During the quarantine or isolation period you may feel completely well, ill but able to work as usual, or too ill to work until you recover.

Unless you are too ill to work, you should be able to complete your remote work while in quarantine or isolation.

If you are ill and unable to do course work this will be treated similarly to any student illness. The Dean of Students will have been contacted when you report your positive test or are told that it is necessary to quarantine and will notify your instructor that you may be unable to attend class events or finish your work as the result of a health issue. Your instructor will not be told the reason.

### **CARE Center, Counseling Center, Stamps Health Services, and the Student Center**

These uncertain times can be difficult, and many students may need help in dealing with stress and mental health. The [CARE Center](#) and the [Counseling Center](#), and [Stamps Health Services](#) will offer both in-person and virtual appointments. Face-to-face appointments will require wearing a face covering and social distancing, with exceptions for medical examinations. Student Center services and operations are available on the [Student Center](#) website. For more information on these and other student services, contact the Vice President and Dean of Students or the [Division of Student Life](#).

### **Accommodations for Students at Higher Risk for Severe Illness with Covid-19**

It is expected that a significant number of students will have risk factors or have family/friends that are high risk for Covid-19. In person attendance will be optional for students.

If additional accommodations are needed, students may request an accommodation through the Office of Disability Services (ODS). Registering with ODS is a 3-step process that includes completing an application, uploading documentation related to the accommodation request, and scheduling an appointment for an “intake meeting” (either in person or via phone or video conference) with a disability coordinator.

If you have been approved by ODS for an accommodation, I will work closely with you to understand your needs and make a good faith effort to investigate whether or not requested accommodations are possible for this course. If the accommodation request results in a fundamental alteration of the stated learning outcome of this course, ODS, academic advisors, and the school offering the course will work with you to find a suitable alternative that as far as possible preserves your progress toward graduation.

### Exam Proctoring

Exams will not be digitally proctored. Students are expected to abide by the Honor Code.

### Course Requirements & Grading

Your grade will be determined by a combination of regularly scheduled quizzes, in-class activities, online homework assignments, and in-class exams. The relative value of these assessments are:

Assignment	Date	Weight
Activities/HWs	Throughout the semester	25%
Exam I	Feb 16th	25%
Exam II	Mar 25th	25%
Exam III	May 3rd	25%

### Extra Credit Opportunities

N/A

### Description of Graded Components

Activities/HW: Most chapters will feature activities designed to increase your comprehension of important topics in genetics.

Exams: The class will include three exams. The first two exams will be held during class time on the dates provided on the class schedule. The last exam will not be comprehensive and will, instead, cover material from the last third of the semester. Exams are closed-book and will be made up of multiple-choice and short-answer questions based on topics, materials, and discussions presented in lecture, quizzes, activities, and in the assigned readings.

### Grading Scale

The most stringent scale used for grading will be following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

This scale is subject to adjustment at the professor's discretion. All problems regarding grades on assignments must be handled through the regrade system.

See <http://registrar.gatech.edu/info/grading-system> for more information about the grading system at Georgia Tech.

### Course Materials

## Course Text

WS Klug, MR Cummings, CA Spencer, MA Palladino, and DJ Killian. *Concepts of Genetics*. 12th edition. Pearson. 2019.

The textbook is an excellent resource for learning and understanding genetics. To maximize your understanding of course material and do well on the class assignments, you will need to complete each reading assignment *before* the relevant class. The textbook contains problems at the end of each chapter that you should attempt to solve. These textbook problems will not be handed in or graded. However, your success in answering these problems will be a good indication of how you will do on the exam. In addition, some questions for the exams will be taken directly from the textbook

## Additional Materials/Resources

All additional class material can be accessed through the web or uploaded to the Canvas website.

## Course Website and Other Classroom Management Tools

All class material will be uploaded to the Canvas website.

## Course Expectations & Guidelines

### 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. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

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 quizzes must be taken in the classroom. Attempts to take the quizzes outside of the classroom, or facilitating other students taking the quizzes outside of the classroom, will be considered cheating.

### Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail the instructors as soon as possible in order to set up a time to discuss your learning needs.

### Attendance and/or Participation

Class time will be used for lectures, quizzes, group 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. The institute's excused absence policy will be enforced in this course (<http://www.catalog.gatech.edu/rules/4/>). *No exceptions!*

### Collaboration & Group Work

This class will require large amounts of group work. You will be informed when it is allowable to work as a group and when it is not.

### Extensions, Late Assignments, & Re-Scheduled/Missed Exams

There will be no credit given for any assignments turned in after the deadline. Students that miss any assignments/exams for approved Institute activities and religious observances will be excused for any missed credit. See <http://www.catalog.gatech.edu/rules/4/> for more information.

## 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 <http://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.

## Student Use of Mobile Devices in the Classroom

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. In addition, do not use your electronic devices (laptops, tablets, smartphones, etc.) for non-class use.

## Additional Course Policies

Regrade policy: The *only* way that changes to your grades will be considered is through the procedure below. Do not approach the professor or TAs and ask for credit for an already-graded question without a written description of the problem.

Regrades can be requested if:

- (1) there has been an error in adding together your score.
- (2) you did not receive credit for an answer as given on the key.
- (3) there is a difference between your score and that of another student who gave the same answer.
- (4) 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 credit awarded for an answer. For example, questions such as 'Why did I receive only two points for this answer instead of three?' will not be addressed unless you find evidence of issue (3).

To have an assignment regraded, you must submit a *hard-copy, typewritten* explanation of the problem along with your original exam or quiz directly to the professor (email appeals will not be considered). For issues (1) and (2), it will generally suffice to simply describe the problem. For issue (3) you will need to submit an explanation of the problem, as well as both copies of the material. For issue (4) you must give a detailed and explicit account as to why your answer is correct. In general, this may require direct quotes from the text or precise mathematical treatments as to how your solution or model yields the correct ratios, genotypes, results, etc.

Deadlines for the submission of regrades will be one week after the grade is returned to the students. *No regrades will be considered after the deadline.* Note that if you request a regrade for a particular question, your entire exam or quiz may be regraded, which could result in a lowering of your overall score.

## Campus Resources for Students

In your time at Georgia Tech, you may find yourself in need of support. Below you will find some resources to support you both as a student and as a person.

### Academic support

- Center for Academic Success <http://success.gatech.edu>
  - 1-to-1 tutoring <http://success.gatech.edu/1-1-tutoring>
  - Peer-Led Undergraduate Study (PLUS) <http://success.gatech.edu/tutoring/plus>
  - Academic coaching <http://success.gatech.edu/coaching>
- Residence Life's Learning Assistance Program <https://housing.gatech.edu/learning-assistance-program>

- Drop-in tutoring for many 1000 level courses
- OMED: Educational Services (<http://omed.gatech.edu/programs/academic-support>)
  - Group study sessions and tutoring programs
- Communication Center (<http://www.communicationcenter.gatech.edu>)
  - Individualized help with writing and multimedia projects
- Academic advisors for your major <http://advising.gatech.edu/>

## Personal Support

### Georgia Tech Resources

- The Office of the Dean of Students: <http://studentlife.gatech.edu/content/services>; 404-894-6367; Smithgall Student Services Building 2<sup>nd</sup> floor
  - Also: [https://gatech-advocate.symlicity.com/care\\_report/index.php/pid383662?](https://gatech-advocate.symlicity.com/care_report/index.php/pid383662?)
- Counseling Center: <http://counseling.gatech.edu>; 404-894-2575; Smithgall Student Services Building 2<sup>nd</sup> floor
  - Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources.
  - *Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2204.*
- Students' Temporary Assistance and Resources: <http://studentlife.gatech.edu/content/need-help>
  - Can assist with interview clothing, food, and housing needs.
- Stamps Health Services: <https://health.gatech.edu>; 404-894-1420
  - Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition
- Women's Resource Center: <http://www.womenscenter.gatech.edu>; 404-385-0230
- LGBTQIA Resource Center: <http://lgbtqia.gatech.edu/>; 404-385-2679
- Veteran's Resource Center: <http://veterans.gatech.edu/>; 404-385-2067
- Georgia Tech Police: 404-894-2500

**Course Schedule** - *subject to change! (OM = Outside Materials)*

Week	Date	Topic	Chapter	Instructor
1	12-Jan	No class		
	14-Jan	Introduction to Genetics	1	PM
2	19-Jan	Mitosis and Meiosis	2	PM
	21-Jan	Mendelian Genetics	3	PM
3	26-Jan	Extensions of Mendelian Genetics	4	PM
	28-Jan	Extensions of Mendelian Genetics	4	PM
4	2-Feb	Chromosome Mapping in Eukaryotes	5	PM
	4-Feb	Chromosome Mapping in Eukaryotes	5	PM
5	9-Feb	Genetic Analysis and Mapping in Bacteria/Phages	6	PM
	11-Feb	Genetic Analysis and Mapping in Bacteria/Phages	6	PM
6	16-Feb	<b>EXAM I</b> canceled on account of weather		<b>PM</b>
	18-Feb	<b>EXAM I rescheduled</b>		PM
7	23-Feb	Sex Determination and Sex Chromosomes	7	FR
	25-Feb	Chromosomal Mutations	8	FR
8	2-Mar	Molecular Structure and Organization of DNA	10	FR
	4-Mar	Molecular Structure and Organization of DNA	10	FR
9	9-Mar	DNA Replication and Recombination	11	FR
	11-Mar	DNA Replication and Recombination	11	FR
10	16-Mar	No Class - Mid semester break		
	18-Mar	DNA Organization in Chromosomes	12	FR
11	23-Mar	Recombinant DNA Technology: Selected topics	20, 22	FR
	25-Mar	The Genetic Code and Transcription	13	FR
12	30-Mar	<b>EXAM II</b> covers February 18 through March 23		FR
13	1-Apr	The Genetic Code and Transcription	13	FR
	6-Apr	Transcription	13	FR
14	8-Apr	Translation and Proteins	14	FR
	13-Apr	Mutation, Repair and Transposition	15	FR
15	15-Apr	Finish DNA Repair; Intro to Genomics	15, 21	FR
	20-Apr	Genomic Analysis	21	FR
16	22-Apr	Population and Evolutionary Genetics	26	FR
	27-Apr	Population and Evolutionary Genetics	26	FR
17	29-Apr	No class - reading period		FR
	3-May	<b>FINAL EXAM [8:00-10:50 AM]</b>		FR