

## BIOL 2107H: Honors Principles of Biology I Spring 2021

Science Learning Center (SLC) Room 345 or on Zoom, T/Th 9:35 – 10:50 am

This course aims to support your learning of core ideas in biology, with an emphasis on genetics, evolution, and molecular biology. Obviously, we will only be able to cover a tiny proportion of what we know about these topics, so you should see this course not only as an introduction to biology but also as a place where you can develop lifelong analytical and scientific thinking skills that will enable you to continue your learning beyond this course. *This class is NOT a traditional science course in which you listen quietly to lectures, feverishly write notes, and then memorize your notes for the exams.* That sort of class does a great job preparing you to regurgitate facts on exams, but after college you will rarely be asked to take exams. **A primary objective of this class is to prepare you to think scientifically, which requires going beyond memorizing information.**

### INSTRUCTORS

Professor Tessa Andrews

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We will respond to emails within 24-48 hours Monday through Friday. If you email during the weekend, you can expect a response on Monday.

**Virtual office hours:** Mondays 2:30-3:30 am, Thursdays 12-1 pm, and by appointment. See eLC announcement for Zoom links and the most up-to-date dates and times. This is time we have dedicated to be available for all students. We believe that every student can improve their skills, learn from their mistakes, and be successful in the course. Attending office hours is a great way to deepen your understanding of the material and improve your skills. We recommend that all students attend office hours, regardless of performance. If you cannot attend office hours, we would still like to meet with you, please email us (or talk with us before or after class) to set up a time.

**Disclaimer:** The course syllabus is a general plan for the course. We will announce deviations to the class if necessary.

### LEARNING DURING A PANDEMIC

Spring 2021 will not be the same as other semesters. In creating learning experiences for you in 2107H, we will prioritize your health and the health of our community, providing similar opportunities for all students, and remaining flexible as the situation changes.

To navigate challenges brought on by the pandemic, we have designed extra flexibility in the curriculum this semester:

- a. If you feel sick, in any way, stay home. The symptoms for COVID-19 are wide-ranging. If you feel well enough to participate in class, it will always be possible to join class virtually.
- b. If you are too sick to join class, get the rest you need. If you miss multiple class periods due to illness, contact Dr. Andrews and Dr. Nelms. We have ensured that there is flexibility in the grading, such as lowest scores being dropped. If flexibility is not already designed into the plan for what you will miss, we will work out an alternative plan.
- c. If you feel more comfortable attending class remotely, purely remote attendance is possible. We will survey students at the start of the semester to learn who would like to attend only remotely. We can readjust this as needed; please inform us if your situation changes during the semester.

### **Face Coverings**

Effective July 15, 2020, the University of Georgia—along with all University System of Georgia (USG) institutions—requires all faculty, staff, students and visitors to wear an appropriate face covering while inside campus facilities/buildings where six feet social distancing may not always be possible. Face covering use is in addition to and is not a substitute for social distancing. Anyone not using a face covering when required will be asked to wear one or must leave the area. Reasonable accommodations may be made for those who are unable to wear a face covering for documented health reasons. Students seeking an accommodation related to face coverings should contact Disability Services at <https://drc.uga.edu/>.

### **Attendance**

Attendance is important for this learning in this class. We design class to provide opportunities for you to work individually and in groups to practice working toward the learning objectives. You may have a hard time doing well on exams if you are not in class the majority of the time. We will not take attendance in this class, but you will have an in-class assignment due for each class period.

### **COURSE GOALS**

This course focuses on the following principles of biology,

- Genetic information is stored in nucleic acids
- The process of protein synthesis results from the flow of genetic information
- Organisms transmit genes to their offspring, and genetic variation in a population can be generated by mutation, recombination, endosymbiosis, and horizontal gene transfer.
- All living organisms share common ancestors and their different phenotypes result from the gain and loss of traits along their lineages.
- Phenotypes, based on underlying genotypes and environmental factors, can be subject to selective pressure
- Evolution in a population may be due to events not related to fitness, including genetic drift and gene flow
- Speciation occurs when subpopulations can no longer exchange genetic material, allowing them to diverge over time in their physiological and ecological traits

This course aims to support students in achieving the following goals. Specifically, students will...

1. Be able to explain principles in biology to both biologists and non-biologists
2. Develop, evaluate, and use models (representations of an idea, biological process, or system) to make predictions
3. Analyze and interpret data and figures
4. Critically evaluate the validity of data sources and use available evidence to support or refute a claim
5. Use quantitative reasoning (e.g. probabilities in genetics, allele and genotype frequencies, expressing uncertainty and variation)

Lastly, we aim to support students in their career development and development as scientists. Specifically, students will...

6. Come to see science as something that benefits from a diversity of perspectives.
7. Recognize the wide range of potential career paths in biology.
8. Develop a holistic view of science as a process that generates knowledge. It is both subject to the strengths and weaknesses of human thinking, and a process designed to mitigate biases in human thinking.
9. Develop the ability to collaborate and learn with others.

## COURSE SCHEDULE

This table presents an overview of the course topics, which are divided into four units. For each unit, we will post a detailed day-by-day calendar on eLC.

Unit	Dates	Exams
Unit 1: Selection	Jan 14 - Feb 9	Exam 1: Tues Feb 9
Unit 2: The Gene	Feb 9 - Mar 4	Exam 2: Thurs Mar 4
Unit 3: Mutation & Genetic variation	Mar 4 - Mar 30	Exam 3: Tues Mar 30
Unit 4: Evolution of populations	Mar 30 - April 29	Exam 4: Tues April 27

## CLASS COMPONENTS

**Class meetings.** BIOL 2107H will be taught synchronously, with some or all students on zoom during every regularly-scheduled class meeting. Only 23 students can be in the classroom at a time, so every class will include some students on Zoom. The unit calendars will provide the most up-to-date information about the format of each class period and who can attend in person.

**Group learning.** You will engage in small group learning throughout this course. In these groups, you will discuss core concepts and problems in class. Explaining your thinking and analyzing what other students say will help all students develop deeper understanding of course concepts. You will be assigned to a group during the first weeks of the semester.

**Learning objectives.** In each class period there are content and skills you are responsible for learning. These are called learning objectives. Exams are designed to assess the degree to which you have achieved these objectives. Each class period will specify the objectives for the day. Use these as a guide after class each day and in preparation for exams. Simply reading the learning objectives to determine if you understand them is unlikely to prepare you to pass exams in this class. Instead, check out the advice we provide about studying for BIOL 2107H.

**Required pre-class preparation.** Unit calendars will specify required pre-class preparation. This will involve readings, videos, and podcasts and will all be freely available online.

**Simbio simulations.** We will use 2-5 online simulations through SimBio. You will need to set up an account with SimBio and pay \$6 for each simulation we use. We will provide more information when you need it.

## **ASSIGNMENTS AND GRADING**

1. **Readiness-to-learn.** This semester we are taking an approach to learning that involves you preparing for each class period by some combination of reading, videos, and podcasts. It is essential to your success in this class that you take this preparation seriously. To help motivate you to prepare for class, you will have the opportunity to earn 7.5% of your grade in the class through readiness-to-learn quizzes. The questions in these quizzes focus on fundamental concepts from the readings. They are NOT representative of exam questions, which will focus more on application of material than recall.

The quizzes will cover the material in the required pre-class preparation and must be completed by 8:30 on the day they are due. No make-ups will be allowed. You will have two attempts at each quiz, although you only need to take the quiz a single time. If you complete two attempts at a quiz, your grade will be calculated as the average of the two attempts. Your two lowest readiness-to-learn grades of the semester will be dropped. All readiness-to-learn quizzes will be listed on the unit calendars. They will occur about once per week.

2. **In-class learning assignments.** These will be questions we work on in class that require you to think deeply about the material, apply concepts to novel scenarios, and to practice scientific reasoning skills. Your grade on in-class learning assignments will sometimes be based solely on participation, but some activities will also be graded on the basis of accuracy. In-class assignments will be available online and due at midnight the following day. We anticipate you will generally be able to complete them during class time. There will be no make-up in-class learning assignments, regardless of the reason you miss an assignment. Late assignments will not be accepted. We understand that sometimes things happen that will keep you out of class, so your lowest three in-class learning assignment grades will be dropped.
3. **Evaluations.** You will complete a few evaluations during the semester. Some will assess your knowledge of topics, but will be graded solely on completion. The results of these evaluations help us identify and focus on the areas students find most difficult. Other times you will complete self-evaluations of your learning or give feedback on the course. You will access evaluations through eLC. All evaluations will be listed on the unit calendars
4. **Exams.** There are four exams for this course. Three will be given in-class during the semester. No make-up exams will be given under any circumstances. All the units build on

one another, and so exam questions may ask you to make connections across units. All exams will be open note and will test your ability to apply concepts to novel scenarios. You can drop your lowest exam score, including the final exam. If you are happy with your performance at the end of the semester, you may choose not to attend the cumulative final exam.

Assignments will be weighted as follows:

Assignment	Total points	% of grade
"Readiness-to-learn" pre-class quizzes (lowest 2 dropped)	45	7.5%
In-class learning assignments (lowest 3 dropped)	90	15.0%
Evaluations	15	2.5%
Exams (lowest 1 dropped)	450	75.0%
<b>Total Points</b>	<b>600</b>	<b>100.0%</b>

Your letter grade for the course will be calculated at the end of the semester and will be based on your final percentage. Your final percentage will be determined by adding the total number of points you have earned, dividing it by the total number of points you could have earned (600 points), and multiplying by 100. We will use the following scale for determining letter grades:

F	D	C-	C	C+	B-	B	B+	A-	A
<60%	60-69%	70-73%	74-76%	77-79%	80-83%	84-86%	87-89%	90-92%	93-100%

**Grading grievances:** If you feel that there has been a mistake in your grade on an exam or another assignment, please email Dr. Andrews or Dr. Nelms immediately. We will not consider grading appeals beyond one week after we post a grade. Franklin has a list of all appeal options for students. See: [http://www.franklin.uga.edu/students/student\\_appeal\\_guidelines.php](http://www.franklin.uga.edu/students/student_appeal_guidelines.php) You may feel that you are just a point or two away from earning a higher grade, but we cannot, with fairness, add points to your score without affecting the grades of everyone else in the class. Changing your grade simply because you need a higher score is in violation of the Culture of Honesty guidelines of the University. You have many opportunities to earn points by completing course activities throughout the semester. Take advantage of those opportunities. If you have general questions about withdrawals versus dropped classes, final exam conflicts, missed classes for illness, or the Hope scholarship you can visit the Student Affairs Website and view the FAQ page: <http://studentaffairs.uga.edu/students.htm>.

## SUCCESS IN THE COURSE

### What you can expect from us:

- We will be well prepared, organized, and fair.
- We will be responsive to your questions and comments.
- We will be accessible as a guide and facilitator of your learning.

### What we expect from you:

- You are here because you want to be here and will come to class on time and participate.

- You will collaborate with your peers on learning activities.
- You will study outside of class.
- You will arrive in class ready to learn, having completed the pre-class preparation including:
  - Readings, videos, and other materials that will be provided on eLC
  - SimBio learning modules
  - Readiness-to-learn quizzes

**To maximize your success in this course, we encourage all students to:**

- Attend class every day. We design class to provide opportunities for you to work individually and in groups to practice working toward learning objectives. You will have a hard time doing well on exams if you are not in class the majority of the time.
- Review the “Study advice” section on the course eLC page
- Focus on the learning objectives. The exams will assess your accomplishment of the learning objectives. Use the learning objectives as a guide for what to focus on when you are completing assignments and studying for exams.
- Focus on application & problem-solving, going beyond memorization. You can look up facts when you are working on assignments. Some facts (e.g., equations) will be provided for you.
- If you do not earn the grade you desire on the first exam, we highly recommend the following:
  - Attend office hours.
  - Carefully read and enact the study advice posted in eLC.
  - Schedule a one-on-one meeting with one of the instructors to talk about your study strategies.

**CRITICAL INFORMATION**

**Academic Honesty and the Honor Code:** Academic Honesty means performing all academic work without plagiarism, cheating, lying, tampering, stealing, giving or receiving unauthorized assistance from any other person, or using any source of information that is not common knowledge without properly acknowledging the source. The academic honesty policy of the University is supplemented (not replaced) by an Honor Code which was adopted by the Student Government Association and approved by the University Council May 1, 1997, and provides: I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others. All students agree to abide by this code by signing the UGA Admissions Application. For more information on Academic Honesty and the Honor Code, please refer to: <http://honesty.uga.edu/>. More specifically, this commitment and statement means that you agree not to:

- Provide another student access to your answers on an assignment, quiz, or exam, unless the assignment explicitly allows for group work.
- Use resources beyond those explicitly allowed for any assignment, quiz, or exam.
- Use online resources, such as Chegg, Slader, Course Hero, Grademiners, etc., when working on an exam or quiz.
- Cheat, lie, or plagiarize in any other way. If you have questions about an assignment and academic integrity, please ask.

Any person found using unauthorized assistance will be reported immediately to the Office of the Vice President for Instruction. The minimum penalty for using unauthorized assistance is a

failing grade, and penalties can be as severe as expulsion from the University. Do not risk your academic future – it is simply not worth it!

**Disability accommodations:** Reasonable accommodations are available for students who have a disability. The Disability Resource Center in the Division of Student Affairs (114 Clark Howell Hall; 706-542-8719 voice; 706-542-7719 fax; 706-542-8778 tty) coordinates accommodations and services for students with disabilities. Please notify the instructor of any accommodations needed for the course during the first week of the course.

**Technology difficulties:** It is your responsibility to make sure you have access to eLC and SimBio. You will have adequate time to complete all of the assignments. If you wait until the last minute (less than 3 hours before it is due, or after 9 am - 5 pm business hours), we may not be able to help you. If you have any problems or questions about accessing eLC, you can contact the EITS Helpdesk: (706) 542-3106, or online at <https://eits.uga.edu/support/request>. You can find answers to questions about eLC at: <https://d2lhelp.view.usg.edu/>

**Mental Health and Wellness.** Your mental health and wellness are a top priority. Please be aware of these resources:

- If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit <https://sco.uga.edu>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
- UGA has several resources for a student seeking mental health services (<https://www.uhs.uga.edu/bewelluga/bewelluga>) or crisis support (<https://www.uhs.uga.edu/info/emergencies>).
- If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (<https://www.uhs.uga.edu/bewelluga/bewelluga>) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
- Additional resources can be accessed through the UGA App.