

Principles of Biology I - Organismal Biology – BIOL 1107
Spring 2021

Instructor: Dr. Trish Moore, Department of Entomology
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Office Hours: by appointment – please email me to arrange an in person or Zoom meeting.

Time and Format: MWF 10:20 am – 11:10 am SLC 085
Hybrid Asynchronous (see **Course Organization** for further details)

Aims: This course aims to cover three “big ideas” in biology – (1) genetic information flows within individuals from DNA to RNA to protein to direct cellular and developmental processes, (2) genetic information flows within families from parents to offspring in predictable ways, and (3) genetic information flows within and between populations, and changes in that information allows populations to adapt to changing environments. I also aim to provide you with the framework and tools by which scientists try to make sense of the living world. Obviously, we will only be able to cover a tiny proportion of what we know about biology, so you should see this course not only as an introduction to the principles of biology but also as a place where you can develop lifelong analytical and critical thinking skills that will enable you to continue your learning beyond this course. To this end, we will be working to understand the nature of experimental design – how do we know what we know? What evidence supports our understanding? And how can we evaluate the strength of our understanding?

To aid in this goal, I am asking you to prepare for class by watching a video lecture, and sometimes doing assigned reading, covering the material for weekly module. The video lectures and readings are designed to orient you to the subject we will be working on in that module, and introducing you to key terms and concepts. Class time for each weekly module will be divided between a face to face lesson and an online learning activity. Please see the **Course Organization** section for further details.

Intended Learning Outcomes:

A demonstrated understanding of (1) the mechanisms by which genetic information is utilized through transcription and translation; (2) the mechanism by which genetic information is transmitted to daughter cells through DNA replication and mitosis; (3) how the process of meiosis and sexual reproduction leads to predictable outcomes for offspring phenotypes; and (4) how genetic variation is measured in a population and the mechanisms by which the frequency of alleles change over time, resulting in evolutionary change and, ultimately, to speciation.

Learning Resources:

- eLC – Class information and additional reading will be available online on the BIOL 1107 website. You should check the website frequently for updates and other learning activities. The course schedule will be updated regularly and you are responsible for keeping up with any announced updates to the schedule, most of which will be put into the calendar.
- On the eLC site you will find **Checklists** that will help you prepare for each unit and to consolidate your understanding. On these checklists there are deadlines. You will not be assessed on whether or not you complete the checklists, but some students find them quite helpful in structuring their studies.
- There is no formal textbook for this class. The video lectures and additional readings assigned on eLC are your main ‘textbook’ for the course.

- There are some online learning activities required for the course that will be accessed through an online learning platform called **SimBio**. These activities will be assessed and used as a part of your grade for the semester. You will need to (1) create a SimBio account and (2) register for this course. The cost to you is \$30.00 for the complete course package. To register for our course, please follow the instructions provided on eLC.

Course Organization

- To get us started, we will have two **synchronous** Zoom class sessions during the first two scheduled class meeting times. These sessions will be used to orient you to the course structure and management and to make sure we all are clear about how the class will be done, as well as get us started on our first weekly module.
- The course is divided into **3 major units**. Each unit is divided into weekly modules that run from Wednesday to Monday. Each Monday (except where prevented by the Spring 2021 schedule) we will have a quiz over the topic covered in the module.
- Students in the class will be randomly assigned to one of two groups. Each group will have one face to face meeting with Dr. Moore every week, either on Wednesday or Friday, during the regularly scheduled class time [10:20 – 11:10 am] in SLC 085. On the class day your group doesn't meet face to face you will have a fully online learning activity, assigned through eLC. Ideally, you will use the regularly scheduled class time to complete the online learning activity. However, to allow for flexibility in schedules and tech availability, the online learning activity will be available from Wednesday at 8 am to Friday at 5 pm. You can start at any time during that window of availability. Thus, all students will have completed all learning activities for each module by the end of the work day on Friday. Mid-semester we will switch each group's F2F and online learning day. Below is an overview of the course schedule. A detailed schedule is posted on eLC (also see appendix at the end of this syllabus.)

January 13 - 18						
Group		Wednesday		Friday		Monday
ALL Students		ZOOM meeting		ZOOM meeting		MLK day of service
January 20 - March 15						
Group		Wednesday		Friday		Monday
DNAwesome		online learning activity		F2F learning activity		Quiz available from 8 am - 5 pm
Biobosses		F2F learning activity		online learning activity		
ALL Students		online learning activity available: Wed 8 am to Fri 5 pm				
March 17 - May 3						
Group		Wednesday		Friday		Monday
DNAwesome		F2F learning activity		online learning activity		Quiz available from 8 am - 5 pm
Biobosses		online learning activity		F2F learning activity		
ALL Students		online learning activity available: Wed 8 am to Fri 5 pm				

Course Organization FAQs

What is the attendance policy for the class?

I strongly encourage students to come to class on their F2F meeting day. The classroom is large enough to accommodate half of the students in the class with safe social distancing. During these sessions you will be working with me and other students on case studies that will reinforce concepts from that week's module. While I will not be taking attendance, students will find that these sessions are important to their learning and success in my class.

What if I am sick and can't make my F2F meeting day?

These activities are designed for in-person instruction and the sessions won't be available on Zoom. However, I recognize that absences are sometimes inevitable. After the F2F sessions, I will be posting a "post-class review worksheet" that will cover the major concepts and activities we went over in the F2F session. And, of course, you are always welcome to contact me about any questions you have about these activities. The 20% drop of F2F learning activity points is to accommodate any potential absences due to illness, emergencies, or other circumstances.

Assessment:

The course is organized into 15 weekly modules. Each module runs from Wednesday to Monday. Wednesdays and Fridays we will cover the material in the module in one F2F session, and one online activity. The material in the module will be assessed by a quiz on the following Monday as outlined in the **Course Organization** section. Each module will consist of assigned readings and video lectures in addition to the F2F and online learning activity.

Each module will be assessed with a combination of coursework, such as grades for the online learning activities, and weekly module quizzes.

F2F learning assignments

For each weekly module you will meet ONCE with your assigned group face to face with Dr. Moore in SLC 085 from 10:20 – 11:10 am on your assigned day (see **Course Organization** section for further details.) During your F2F session for the module you will be working with Dr. Moore and other students in your group on a learning activity. We will be working to develop our understanding and scientific skills, including reading and analyzing data. Some of the activities will be completed individually and some will be completed in groups. Assessment will mainly be based on participation. **Time management tip:** all these activities will be completed during class time, although I reserve the right to allow students to complete some assignments as homework if we run out of time in class.

Your work on these in class assignments will be worth **50 points** for the semester. Because I understand that sometimes things happen that will keep you out of class, you will get all 50 points as long as you earn at least 80% of the possible points on offer during the in-class activities. That way, if you miss a class or maybe just mess up an assignment, it will not adversely affect your grade.

Online learning assignments:

For each weekly module all students will be assigned ONE online learning activity. These will either be administered through eLC (using the quiz function) or through SimBio. The eLC learning activities will be assigned on the Wednesday at the start of each weekly module and be DUE at 5 pm on the Friday at the end of the module. **Time management tip:** I am providing a relatively large window of availability for these assignments in order to provide students with flexibility on when is best for your schedule to complete them. However, keep in mind that these assignments are designed to be completed within 50 minutes.

There will be a 2-hour window from start to completion 'enforced' by eLC. These online activities, even if they are administered by eLC quiz function, are not exams! You are welcome, indeed encouraged, to work collaboratively with other students on these assignments. Your work on these online learning activities will earn **75 points** for the semester. You will not be able to drop any of these assignments.

SimBio activities:

We will have 6 assignments through SimBio to support your learning on several of the modules. Some SimBio assignments actually will cross several modules. The specific parts of different SimBio tutorials for each weekly module will be assigned through the detailed course schedule and also in the checklist for the module. Once you have registered for our SimBio course and downloaded the software, all 6 SimBio activities will be open and available to you. Together, completing these activities will earn **75 points** towards your final grades. Each SimBio activity consists of questions that students complete as they work through the activity, including 'Test Your Understanding' questions. These questions are graded for completion only. At the end of each activity there is a series of graded questions. These questions are graded for accuracy. Your grade for each SimBio activity will be a combination of the completion questions and the graded questions. Because we will be working through different parts of some tutorials across different weekly modules, specific due dates for submitting your answers to all the graded questions for each of the 6 tutorials will be published in the course schedule and on the checklists. Your work on the SimBio activities will be worth **75 points** for the semester.

Quizzes:

There will be 13 weekly quizzes across the 15 weekly modules. These are administered on the Monday following the weekly module, except where this isn't possible due to the Spring 2021 schedule. The specific dates for the quizzes are published in the detailed course schedule. The quizzes will be administered on eLC through the quiz function. These quizzes are the formal assessment of individual student learning and as such, should be treated like you would treat an exam. While the quizzes are open note and open book, you should NOT consult others for help on questions and should work independently. The quizzes are worth 27 points each. You will be able to drop your two lowest quiz scores for a total of **300 points** from quizzes (11 x 27 = 297 points, with 3 bonus points thrown in to round the numbers out). **Note:** if at the end of the semester you are unhappy with your grade, there also will be an **optional** comprehensive final exam that you can use to replace the next two lowest quiz scores.

Total assessment:

Assignment	Total points	% of grade
F2F learning activities	50	10%
eLC Online learning activities	75	15%
SimBio activities	75	15%
Quizzes (best 11 out of 13)	300	60%
Total Points	500	100%

Calculation of grades will be based on the percentage of points earned on the quizzes, homework and exam. I will use the following scale for determining letter grades: 100-93% A; 92-90% A-; 89-87% B+; 86-83% B; 82-80% B-; 79-77% C+; 76-73% C; 72-70% C-; 69-60% D; <60% F. However, I reserve the right to alter this scale, in your favor.

A few final things:

- **Class Etiquette** – please be on time for class and only use your electronic devices for class activities. Research has shown that the distraction of electronic devices puts your own grade at risk, but actually has a higher impact on the grades of your neighbors in the lecture theater. Please respect your fellow students by waiting to check Facebook, Twitter, or shop for new sunglasses until after class.
- **Respect for your fellow students** – We will be doing group work and I will be asking students to answer questions and share their ideas during class. I expect that you will be respectful of your fellow students. Think about how you get good at video games - you try things, fail, and then start again. Learning in a science class isn't different. By spending our time in class pushing the envelope of what you understand will expand your knowledge and your skills. But this approach demands that we all respect each other's attempts at learning.
- **Communication** - To comply with the Family Educational Rights and Privacy Act (FERPA), all communication that refers to individual students must be through a secure medium (UGAMail or eLC) or in person. Instructors are not allowed to respond to messages that refer to individual students or student progress in the course through non-UGA accounts, phone calls, or other types of electronic media.

ALL emails about this course MUST come through the eLC website. I will not answer emails that arrive in any other email account.

- **Missed Assignments** - If you miss an assignment due to illness, authorized representation of the University, or extraordinary personal circumstances, you must notify me as soon as possible. For excused absences from an exam, make-up quizzes generally will not be given; rather the score on a missed exam will be one of your dropped scores. Unexcused absences will receive a score of zero. More generally, requests for extensions on any assignment due to illness, authorized representation of the University, or extraordinary personal circumstances must be requested in advance of the deadline or as soon as possible. Unexcused late submissions of assignments are not acceptable and will result in a score of zero (0) being entered for that assignment.
- **Appeals Process** - If you feel that there has been a mistake in your grade on an exam or another assignment you need to submit a **written** regrade request within **one week** of the work being returned to you. I will only consider regrade requests that are justified via a scientific argument.
- **Academic Honesty** – as is expected of all UGA students, I expect you to know and accept the standards contained in “A Culture of Honesty” (http://www.uga.edu/honesty/ahpd/culture_honesty.htm).

Student Honor Code: *“I will be academically honest in all of my academic work and will not tolerate academic dishonesty of other.”*

Among other things, this commitment and statement means that you agree not to cheat, lie, or plagiarize. I encourage you to work with your classmates on the **coursework assignments** in the course, and you are welcome to utilize any learning resources you find while working through the assignments. The **quizzes** are open-note and open-book, but you should not consult with others on these. You will also not share these questions with students who are logging into the quizzes after you. This includes, for example, uploading questions onto Chegg.com. If you have questions about an assignment and academic integrity please ask me. Students who violate this policy will be reported to the Office of the Vice President for disciplinary action, and are subject to severe disciplinary penalties including the possible failure of the course and/or dismissal from the University.

- **Accommodations for Disabilities** – If you plan to request accommodations for a disability, please register with the Disability Resource Center (DRC). The DRC can be reached by visiting Clark Howell Hall, by calling 706-542-8719 (voice) or 706-542-8778 (TTY), or by visiting <http://drc.uga.edu>
- **Mental Health and Wellness 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.

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary

Topical Outline for BIOL 1107 2021

UNIT 1: Information Flow in individuals	
	Genetic information is stored in DNA
	DNA is transcribed into RNA
	mRNA is translated into protein
	Changes in the stored information - mutations
	Replication of the genetic information
UNIT 2: Information Flow in families	
	Mitosis
	Meiosis
	Transmission of genetic information during sexual reproduction
	Patterns of inheritance
UNIT 3: Information Flow in populations	
	Genetic variation within populations
	Hardy Weinberg relates allele and genotype frequencies
	Natural selection
	Genetic drift
	Speciation and phylogenies

NEW Spring 2020 dates		Module	QUIZ	GOUP	
				BIObosses	DNAwesome
Wednesday	13-Jan	All students ZOOM meeting		online	online
Friday	15-Jan	All students ZOOM meeting		online	online
Monday	18-Jan	MLK Day of Service			
Wednesday	20-Jan	Genetic information is stored in DNA		F2F	online
Friday	22-Jan			online	F2F
Monday	25-Jan		quiz 1	online	online
Wednesday	27-Jan	The information stored in DNA is transcribed into RNA - transcription		F2F	online
Friday	29-Jan			online	F2F
Monday	1-Feb		quiz 2	online	online
Wednesday	3-Feb	The information stored in DNA is transcribed into RNA -RNA processing		F2F	online
Friday	5-Feb			online	F2F
Monday	8-Feb		quiz 3	online	online
Wednesday	10-Feb	The information in the mRNA template is translated into a protein		F2F	online
Friday	12-Feb			online	F2F
Monday	15-Feb		quiz 4	online	online
Wednesday	17-Feb				
Friday	19-Feb	Genetic information is remarkably stable, but changes do occur		online	F2F
Monday	22-Feb			F2F	online
Wednesday	24-Feb	When cells reproduce, they need to replicate their genetic information		F2F	online
Friday	26-Feb			online	F2F
Monday	1-Mar		quiz 5	online	online
Wednesday	3-Mar	During cell division, each daughter cell needs to receive the full genetic information		F2F	online
Friday	5-Mar			online	F2F
Monday	8-Mar		quiz 6	online	online
Wednesday	10-Mar	Meiosis		F2F	online
Friday	12-Mar				
Monday	15-Mar	Meiosis		online	F2F
Wednesday	17-Mar	The behavior of chromosomes during meiosis lead to predictable transmission of traits		online	F2F
Friday	19-Mar			F2F	online
Monday	22-Mar		quiz 7	online	online
Wednesday	24-Mar	Patterns of inheritance are often represented by pedigree; sex chromosomes and genetic linkage can alter expected patterns of inheritance		online	F2F
Friday	26-Mar			F2F	online
Monday	29-Mar		quiz 8	online	online
Wednesday	31-Mar	Genetic variation within populations can be measured		online	F2F
Friday	2-Apr			F2F	online
Monday	5-Apr		quiz 9	online	online
Wednesday	7-Apr	Hardy-Weinberg relates allele and genotype frequencies if certain assumptions are met		online	F2F
Friday	9-Apr			F2F	online
Monday	12-Apr		quiz 10	online	online
Wednesday	14-Apr	Violations of HW can result in evolution I: equal viability and fertility		online	F2F
Friday	16-Apr			F2F	online
Monday	19-Apr		quiz 11	online	online
Wednesday	21-Apr	Violations of HW can result in evolution II: equal mating success, small population size		online	F2F
Friday	23-Apr			F2F	online
Monday	26-Apr		quiz 12	online	online
Wednesday	28-Apr	When populations become reproductively isolated, speciation can result; evolutionary relationships are represented by phylogenetic trees		online	F2F
Friday	30-Apr			F2F	online
Monday	3-May		quiz 13	online	online