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## Welcome to Biology 101!

**Biology 101 is an introduction to biology at the college level that is intended to serve both majors and non-majors.** It is assumed that students in this class do not have a great deal of practice with biology and that any prior experience is likely to be several years ago. BIOL 101 students are expected to take a very active role in their learning by completing readings and homework before class, coming to class ready to participate directly with peers and through in-class technology, and reviewing routinely for quizzes and exams. In this highly-structured course, we have evidence that every student can achieve if they are motivated to be an active learner!

**Note:** The professor reserves the right to make changes to the syllabus, including project due dates and test dates (excluding the officially scheduled final examination), when unforeseen circumstances occur. These changes will be announced as early as possible so that students can adjust their schedules.

**Due to COVID-19, this course will run remotely during the Fall 2020 semester.** *Each week, students will complete two asynchronous lessons that will require submission of assignments.* Students are responsible for all material covered in the assigned readings and other multi-media sources, videos, and online assignments that are assigned for each lesson. Dr. Ott will hold synchronous office hours / review sessions on Fridays via Zoom (time TBD). While these synchronous sessions are not required, students are strongly encouraged to attend (recordings will be posted to Sakai). Additional office hours / review sessions will be added throughout the semester -- please use the SignUp feature of Sakai to schedule an appointment.

## About the Professor and Office Hours

### Class Meeting Information

**Class time:** Monday, Wednesday, and Fridays 4-4:50 PM

**Review sessions with Dr. Ott:** Fridays (time TBD) -- live, but recorded. Attendance is optional, but strongly encouraged.

**Location:** Classes are asynchronous (recorded) and will be available by 12 noon the day of class. Recommended: complete your class activities for the day by 4:50 PM on Monday and Wednesday.

### [About the professor and office hours](#)

**Professor: Dr. Laura Ott**

**Email:** leott@email.unc.edu (please include BIOL 101 in the subject line of your email so that I may prioritize a response)

**Office Hours:** Fridays (time TBD) as group review sessions, as well as other times throughout the week. Please see "Sakai Sign-Up" for times each week. These will be 15 minute private sessions.

**Group Review Sessions:** I will be holding synchronous online office hours / review sessions via Zoom on Fridays (times TBD) -- these sessions will be recorded. Please post questions that you would like for me to address in these sessions to Piazza (see below) no later than midnight the night before.

**Private Office Hours.** For additional virtual meeting times, please check the "Sign-up" tool on Sakai menu to reserve a slot, where I will add meeting times weekly. These sessions will be 15 minutes in length. I hope that you will meet with me at some point during the semester.

**Nervous about office hours?** Don't feel intimidated if you've never been to a professor's office hours. You can come alone or sign-up with a friend. You can talk about the course, study skills, mental health issues, your background, your career, advice for future courses to take, etc. I'm an advocate for first generation students, transfer students, international students, continuing education students, BIPOC, Latinx, and other underrepresented minority students, LGBTQIA+ students, students from diverse socioeconomic backgrounds, military-connected students, first year students, sophomores, juniors, seniors, students with silent and physical disabilities, students that require oxygen...ANY student!



**Did you know?** Asking for help is a sign of strength and self-care! Please ask for help early and often! Small problems are easier to cope with than escalated issues, please do not wait until the end of the semester to ask for help.

**Reserving a time to meet:** Check "Sign-up" tool on Sakai to reserve a slot. I will post my open hours well in advance, so sign up for what works for your schedule. Come alone, or come with a friend. I may add hours some weeks as my schedule allows.

## Peer Mentors and Supplemental Instruction

**Peer support via Piazza:** I'll have hundreds of students this semester and know I cannot give you all the individual attention you deserve. I'll ask that you become a community of scholars to help answer questions about the course logistics and course content. We will use Piazza to help us do this. I and the instructional team will be checking and responding to Piazza inquiries periodically, but it is expected that you will answer each other's questions. I'll be taking notice of students who are engaging on the site. To access the Piazza site, visit: [piazza.com/unc/fall2020/biol101003](https://piazza.com/unc/fall2020/biol101003) (access code: KonaBIOL101)



### Peer Instructor Support via Zoom:

We have a large team of students who have completed and excelled in Introductory Biology who will be available to support you this semester. You will be matched with one peer instructor who will give you their tips and guidance for the semester. You will probably want to attend their session(s) each week. **However, you are welcome to attend as many peer instruction sessions with as many different peer instructors as you want.**

Peer instructors will only offer virtual sessions through Zoom this semester; no in-person sessions will be held. Except for designated exam review sessions, peer instructors will not record their sessions -- **plan to attend live!**

**You will earn course participation points for attending 9 sessions of peer instruction out of the total offered over the semester** (credit is given for 1 per week, meaning you cannot earn credit by attending all 9 sessions in the final week of class!)

What can you expect from the peer instructors?

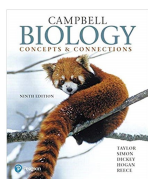
- Use the Sakai calendar to see when sessions will be held each week. There will be at least 6 hours of review and tutoring available for you to pick from each week!
- Peer instructors will host a blend of structured review (with questions for you to practice) and answering questions that you will bring to the session or post to Piazza before.
- The sessions will be conducted live via Zoom, but not recorded.
- Please use Sakai Sign-up to find the active links being used.

**Why should you attend these sessions on a regular basis?** We have data that suggests that students who attend score on average a half a grade better than peers who don't attend. I suggest you fit one into your schedule early in the semester and attend weekly as if it is a course requirement.

**Bio Cell with Biology Specialist:** Feel you need a more basic review and more in-depth help? Attend these weekly sessions sponsored by the Learning Center. (Robin Blanton, rcb@email.unc.edu). Learn more by visiting: <https://learningcenter.unc.edu/services/stem/bio-cell-2/>

## Required Resources

**Textbook and Digital Access:** *Campbell Biology, Concepts and Connections, 9th Edition with Modified Mastering Biology, ebook, and Learning Catalytics* by Taylor, Simon, Dickey, Hogan, and Reece.



The UNC bookstore will email you with details about what to purchase so you have access on the first day (this includes a 14-day grace period without payment). Ultimately you need access to Mastering Biology (online), Learning Catalytics (online) and some form of the book (either ebook or physical, or both). We have worked closely with Pearson and the UNC Boostore to provide you with the most cost-effective options. Note: there are hard-copy books on reserve at the Undergraduate Library.

**COURSE CODE for Spring 2020:** ott07132

Instructions for registering for Mastering Biology (which includes Learning Catalytics) can be found in the attachment below titled "Mastering\_Student\_Registration\_Handout\_ott07132".

**Required reading:** Particular chapters are required (see Guided Reading Questions—GRQs-- for specific details). You should read and answer the GRQs **before** completing Mastering Biology homework assignments.

 [Mastering\\_Student\\_Registration\\_Handout\\_ott07132.pdf](#)

## How to attend class every day

While class is scheduled for MWF, we will have two lessons per week that will be posted on Monday and Wednesdays (with pre-assignments due Sunday and Tuesday evenings). Each lesson will remain open for 48 hours.

1. **Before class -- complete Guided Reading Questions (GRQs)** that you finished before class and can use as a reference. Find these posted on Sakai. You may only submit your GRQs as a PDF or Word document to GradeScope. Assignments submitted as Pages (Apple product) will not receive credit). These will be due on Sunday and Tuesday evenings at 11:55 PM and submitted via GradeScope
2. **Before Class and after the GRQs** -- Complete the Mastering Biology homework assignment. This should be done after reading the text and completing the GRQs. These will be due on Sunday and Tuesday evenings at 11:55 PM.
3. Log in to Sakai and click on the "Lesson" tab for the day.
4. While engaging with the class material:
  1. Have a computer or tablet
  2. Remained logged into Sakai
  3. Log in to Learning Catalytics and open the day's session
  4. Make sure you have a blank Class Outline which you will find linked in the Lesson for the day. I recommend that you print the document and take notes by hand, but a tablet you can write/draw on works too. Note: Educational research shows that students in a highly structured course like this learn more by handwriting notes.
  5. Have extra blank paper for drawings, notes, activities, etc. A tablet also works.



Note: I encourage you to not rely on cellular service and instead have your device connected to Wifi. If you are using UNC-Wifi, check out this resource for connecting your device: <http://help.unc.edu/help/connecting-to-the-uncnetwork-getting-started/>

## Course Components Making Up Final Grade

As your instructor, I value and appreciate your constructive feedback on my teaching and design of this course. While I hope you will complete the official course evaluations at the end of the semester, I also appreciate your feedback earlier so that I can make changes, if appropriate. I have therefore created an **anonymous survey** for you to share your experiences this semester in BIOL 101. If there is something that you are enjoying about my teaching or this course, please share! Alternatively, if there is something you think I could do better, please share and provide an alternative approach or solution. While I may not be able to make all suggested changes, I promise to read and reflect on all feedback that you provide and implement reasonable changes. You can access this survey at: <https://bit.ly/2P3OZgX>. This survey will remain open all semester and I welcome you to submit as many responses as you wish.

**Homework via Mastering Biology (9% of your grade):** Homeworks will be due generally every Sunday and Tuesday night by 11:55 PM (see detailed schedule). Some assignments will take you as little as 20 minutes and others will take over an hour with the animations and short tutorials interspersed in the homework. It is your responsibility to start it in a timely fashion, so that you finish it by 11:55 PM. **\*\*I recommend submitting your work at least 20-30 minutes before the due time to account for internet or loading issues\*\*** **Late homeworks will receive zero credit**, even though you can still do them for practice. See my Goal #1 below and realize that I am trying to help you to succeed by giving you these regular assessments. Assignments post about one week before they are due. Note: These questions are often lower level and not equivalent to exam questions. They are meant to help you learn/practice.

**Quizzes via Mastering Biology (9% of your grade):** You will be required to do online timed quizzes in Mastering Biology (Quizzes). These are meant to give you practice for answering questions in a timed situation, more predictive of how you might do on an exam than a typical HW. Missed quizzes = 0%. Unlike other assignments, quizzes post only about 3 days before they are due. I recommend marking your personal calendar with these due dates today!

### Notes:

- Once a quiz is started you must complete it and you cannot go backwards to edit previous questions.
- Students registered with ARS who receive extended time will receive accommodations on quizzes too.
- Access Mastering at: [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com) (Instructions for registering are delivered via email from the UNC Bookstore. Course code is in this email and the "overview" on Sakai, too)

**Participation (7% of your grade):** Most of this grade will come from Learning Catalytics (4%), but attendance at 8 peer instruction sessions during the semester, completion of practice exams, surveys, GRQs submitted to GradeScope and small group work (3%). To participate, we'll use Learning Catalytics (accessed through Mastering Biology) through your smart device. Note: these questions are to be done during the video lessons and students should only complete the questions they are instructed to (e.g., don't work ahead and/or save questions to the end). These are graded for effort BUT they are often practice exam questions and a good way for you to gauge your understanding of the material.

**How is LC graded?** The self-paced LC questions will be open for 48 hours (12 noon Monday to 12 noon Wednesday and 12 noon Wednesday to 12 noon Friday). Questions will be participation-based (not graded for correctness). A few points will be dropped for all students to accommodate occasional absence, tech problems, athletic travel, lateness, etc. Please do not email me to tell me you were absent; we will have so many opportunities for participation that missing one day in the semester will not affect your grade (I will end up dropping a few points for every student to make accommodations for this for ALL students). If you have multiple, excused absences or an extended illness please make sure I know (see information about excused absences below under Individual Exams).

**How are GRQs graded?** GRQs are graded for completion. They should be completed before doing Mastering assignments and must be uploaded via GradeScope by 11:55PM on the day before class (Sunday and Tuesday). \*\*I recommend submitting GRQs 20-30minutes before the deadline to allow for loading and internet issues\*\*. You must submit the GRQs as either a PDF or a Word document. If you take a picture of a figure submit as a JPEG. Assignments submitted as Pages (an Apple product) will not receive credit. I also recommend carefully labeling your files with the matching GRQ number. If you accidentally submit the wrong GRQ file to the wrong assignment you will not receive credit for the assignment. Missed an GRQ upload? No worries. You will be able to drop one missed GRQ from your grade.

**Individual Exams (75% of final grade):** There will be three mid-semester exams given during the regular semester, and a cumulative final exam. The format will be multiple choice and short answer and exams will be administered via GradeScope, which students will access via Sakai and their onyen. Only the final exam is cumulative, although some objectives around scientific thinking skills will be tested on each exam. Each semester exam will cover the material specified on the course schedule. For all exams, you will need your PID number as identification on your exam sheet. Exams will be open from 3 PM - 5 PM EST the day of the exam, but students will have 75 minutes to complete the exam once you open it.

\*\*Students who use ARS: Once I have been sent your necessary accommodation info your exam time will be extended accordingly.

**Make-Up Exams.** You may only be excused from an exam (and eligible for a make-up) if the Dean of Students excuses your absence. Information about excused absences can be found here:

<https://odos.unc.edu/student-support/class-absences>. If you find that you are going to miss an exam for a University sanctioned excused absence please let me know immediately and be prepared to show documentation! Make up exams for students who qualify will be entirely different from the exams given in class and must be completed within an academic week of the original exam date.

## How Is Your Grade Determined?

### If you take all three semester examinations:

The lowest exam grade is dropped and the total for the semester =  $(0.25 \times \text{exam}) + (0.25 \times \text{exam}) + (0.25 \times \text{final exam}) + (0.09 \text{ homework average}) + (0.07 \text{ participation score}) + (0.09 \text{ quiz score})$

### If you take any two semester exams:

Both the exams you took will count and the total for the semester =  $(0.25 \times \text{exam}) + (0.25 \times \text{exam}) + (0.25 \times \text{final exam}) + (0.09 \text{ homework average}) + (0.07 \text{ participation score}) + (0.09 \text{ quiz score})$

### Converting your final average to a letter grade:

A = 93-100	C+ = 77 – 79.9
A- = 90-92.9	C = 73-76.9
B+ = 87- 89.9	C- = 70-72.9
B = 83-86.9	D = 60-69.9
B- = 80- 82.9	F = 59.9 or less (or a score of 45% or less on the final exam)

Note: there will be no changes to HOW your final average is calculated at the end of the semester...so please don't ask.

### Common Student Concerns:

*Many students have been told that Biol 101 is a "weed out" course. Of course this is not true, but why does it have this reputation?*

In fact the average grade in this class is in the C+/B- range; this is not bad-- it is average. Yet, students also earn D's and F's in this class. This is absolutely shocking to first year students who have, in the past, received A's in their high school classes for memorizing course material.

*You may also be wondering...is there a pre-determined number of students that receive a C, D, or F?*

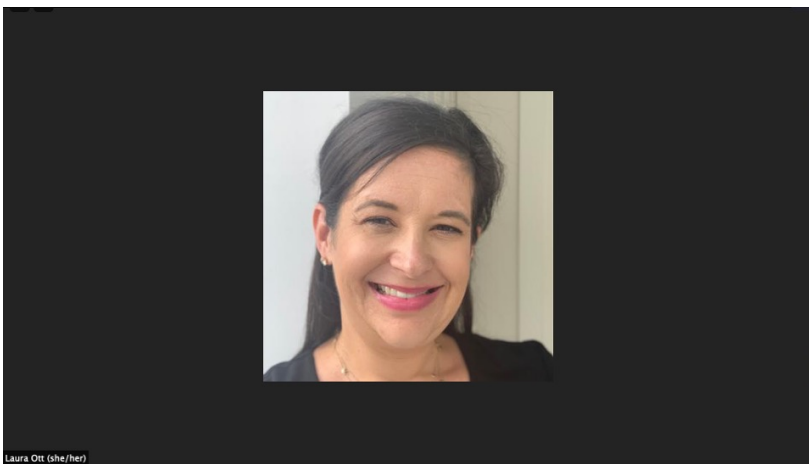
Absolutely not. In theory, if the whole class earns A's, then the whole class is given A's. So why don't all students do as well as they think they will when they walk into class on the first day? My experience tells me that:

1. Some students do not have the active learning and studying skills that they should already have at the college level (It often takes these students an exam or two for them to recognize this.) We can fix this together.
2. Some students do not actually put in the effort that is necessary (even though they may think they are putting in a big effort). You can fix this if you are honest with yourself.

## A Few Other Notes

**Digital Etiquette:** This course will be entirely online and will require you to access recorded videos and other online resources (Learning Catalytics). You will likely have ample distractions and research suggests that the human brain is not as excellent at multitasking as we think it is. Please be respectful of your own learning and focus and hold yourself accountable. Please try to engage with course material in an environment devoid of distractions, which may include (but is not limited to) family and friends, other virtual media (e.g., Social media or TV), etc.. When you are "in class", make sure that your use of digital is limited to course content only. You will learn more if you concentrate on the course while you engage in the course material in an environment free of distractions.

Additionally, because you will have the opportunity to participate in Synchronous sessions with either me on Fridays (times TBD) or the peer instructors, please be mindful of your environment when you log onto a Zoom session. Again, try to select a location that is devoid of distractions. Further, please keep yourself on mute when not talking to ensure audio quality for all on the call. Students should be using their UNC Zoom account to log into these sessions and please update your profile to include: your full name, your preferred pronouns, and a picture of yourself. This will help me and others on the instructional team learn your name and get to know you better. See an example picture below and visit this link for more details on setting up your UNC Zoom account: <https://software.sites.unc.edu/zoom/>



**Should you take notes by hand or type?** Research suggests taking notes by hand (paper or tablet) is the way to go in a highly structured course like this! You will have class outlines that you should write and draw on. Much of biology is about drawing, so typing just won't be useful. No matter how messy your handwriting or notes are -- TAKE NOTES BY HAND! Powerpoints will only be posted when the videos become available and will be useful for review purposes.

**Sakai Site (you will need your onyen to log on):** This site will have postings from my lectures such as outlines, power point slides, and supplemental material I mention in lecture. I will also post announcements/send emails regarding student concerns on this site. **It is your responsibility to check it and your UNC email account daily for any course announcements.**

## Groups

**Students learn more when they work in small groups of peers to discuss issues and solve problems\*.** We will have two kinds of groups in BIOL 101.

### TEAM

You will be part of a TEAM (approximately 15 individuals) assigned to a peer instructor. We hope that you will be able to attend peer instruction with this group of 15 on a weekly basis. Get to know one another and your peer instructor. Your Team assignment will happen before August 14

and you'll be notified via Sakai. You are welcome to attend any peer instruction session during a week, but we hope that you spend time with your team to support your learning and theirs.

## SMALL GROUP

Later in August, after you've gotten to know your teammates, I will assign you to a SMALL GROUP within your team. This will be a group of approx. 5 individuals. The idea is that your small group will be your study buddies, your sounding board, your seat mates.

The goal for both the TEAMS and SMALL GROUPS is to encourage community building within this large course. We know from the education literature that community within a classroom is major contributor to students' success. It's easy to do this when we are in class, as you can easily turn to your neighbor and have a conversation. In an online class, you may feel isolated, which we want to avoid as best we can. By having a TEAM and SMALL GROUP to turn to, you have a support system to not only help you not feel lonely, but support your learning (and for you to support theirs).

*\*In some instances, working face to face with other people is very difficult for some learners. Please send me an email if you have enormous anxiety about group work so we can discuss accommodations and strategies.*

Collaborating with others is an important skill in all professions, and we are available to help you to solve interpersonal problems that may arise within your group. If you are experiencing conflict with your group members, you may decide to invoke the "Terminator Clause." When you work in a group, it is possible that some team members will contribute more than will others. Over time, this can be a critical problem if one person demonstrates a lack of commitment to the team (e.g., failing to contribute to group assignments). In such an instance, we reserve the right to "terminate" that member.

**Terminating involves a two-step process:** First, the team (in consultation with Dr. Ott) gives the wayward member a warning that includes the wayward teammate negotiating with the entire team about how they are going to be a better teammate. Second, if the member continues to behave inappropriately, they will be terminated from the group. Assignments from the point of termination to the end of the semester will be completed as an individual. Bad team members typically show their tendencies early, so let a problematic group member know their behavior is not acceptable early.

## Course Goals

**1. This course should prepare you to succeed in future science courses. You should learn how to be an active learner and you should learn how to actively study.** Educational research has shown that students in this course who do reading/ homeworks before class, actively participate in class, and review notes regularly can and will succeed. Feeling underprepared because of your background? The course is designed to equalize your readiness before class—while you may take several hours reading and preparing, another student may need less time. Yet when you get to class, your effort will pay off as we practice these concepts together and you gain confidence in your ability! How do you know you are learning? When you make mistakes, you identify what you don't know. **Making mistakes is KEY to learning.** It makes more sense to make mistakes on homeworks and in-class activities when the stakes are very low, rather than on an exam, right?

And what if you don't plan to take any more science classes? Active learning and studying are skills needed for any discipline. You can achieve these goals through practice. Most students enter college very skilled at remembering and understanding (Regurgitating memorized information.) True learning will take place when you are challenged to apply, analyze, evaluate, and synthesize. I will challenge you to do this. You might find this difficult and uncomfortable, but you will be learning!

**2. This course should provide you with the concepts and skills that make up the scientific field of biology.** For those of you continuing in biology, this is just the tip of the iceberg. For others, this might be your one and only biology course! Our goal will be to touch upon many topics, finding common themes in the chapters we cover. Thoroughly learning the principles is about making connections between material learned at the beginning, middle, and end of the semester! Practice is key to building a foundation of knowledge (and that is why you do Guided Reading notes, Mastering Biology, in-class activities, quizzes, SI, etc.).



Specifically, by the end of the semester you should be able to:

- Identify examples and name FIVE core themes of biology
- Evaluate a scientific study and determine if its design is sound so as to evaluate science around vaccines, pseudoscience, etc.
- Make conclusions from data and draw graphs and models from data/information given to you.



- Describe the new properties that emerge at each level of hierarchy of life (from small organic molecules through ecosystems and some ways these systems are kept in balance).
- Explain what "food" is and compare and contrast animals and plants in how they obtain and transform the matter and energy.
- Describe the flow of information in various signaling pathways and in the flow from DNA to proteins.
- Explain how life on earth evolved and how adaptations relate to survival, reproduction, and intra- and inter-specific interactions.
- Detail examples of adaptations in the animal body in which "structure fits function" at the cellular and whole body level



**3. This course should excite you about biology.** Throughout the semester I hope you will ask yourself and me, why is this relevant to me? Some lessons will be more obvious as they relate to health and medicine. I hope that the biology that we learn this semester will cause you to ask more questions. You might even leave with more questions than answers! There may be times where I don't know the answer, as biology is a rapidly evolving field and we as biologists are learning more and more every day. I'll continually encourage you to read about biological issues and advances in the popular media.

Share what you learn with me by posting in the Piazza "Biology in the News" folder. Regardless of your future plans, my goal is for you become excited about biology and empower yourself to learn more -- this will not only help you become a better informed individual, but will make me a happy professor!

### How will you THRIVE this semester?



**I believe students thrive when they:**

- Take full advantage of the breadth and depth of our curriculum
- Set academic and personal goals
- Take responsibility for their education, choices, & decisions

### How *successful* students have done well in this course: They...

1. always read the textbook for each corresponding homework while answering Guided Reading Questions (GRQs). They pay attention to what they are reading and reflect on what they are unsure about. They do NOT spend time making their own extensive outlines, they use the GRQs only.
2. complete their Mastering Biology homework assignments with plenty of time to make mistakes and think through the questions. They are not too focused on the grade they get on homeworks because they value the homeworks and videos as a learning tool (remember, making mistakes is how we learn).
3. complete each class session on-time! They stay engaged by hand-writing notes and attempt each Learning Catalytics question as it comes up without looking at notes.
4. attend peer instruction sessions and interact with other students; they encourage their classmates to participate and learn
5. are brave and vulnerable. What do I mean? They are willing to make mistakes, take chances drawing a model wrong, are willing to attempt questions by themselves before checking in with a peer, are willing to talk to a classmate they don't know.
6. review after each class for about 15-20 minutes to reflect on what was learned and what they still have questions about.
7. study before each Mastering Biology quiz and practice exam, so as to prepare for them like a real exam.
8. review (on their own) every question from Mastering HW, GRQs, Quizzes, Learning Catalytics, class, etc. to see if they could TEACH it to someone else. Successful students don't just simply get the right answer and move on, they are able to explain how someone arrives at this answer.
9. regularly attend Dr. Ott's weekly review sessions so that they can work practice problems and clarify questions they have.
10. meet with your small group / team regularly (weekly). Use these individuals as a study group to help support your learning and for you to support theirs.
11. have a system for planning and keeping track of all deadlines.
12. are able to state what resources are available and where to find them.

**Know Your Resources:** Assignments/schedule are on the following pages. All hours and Zoom links for office hours, S.I., mentoring, tutoring etc. will be posted on the front page of Sakai. Changes will be sent out via announcements. All materials you need (GRQs, outlines, powerpoints, old exams) are found through the Lessons tab on Sakai (and available in the Sakai resources folder).

**I Want to Help You:** Reach me through office hours or by email. I am a really nice person...nobody to be scared of!! Reach out to me after the first exam if you did not do well. What suggestions can I have for you if you wait until you did poorly on all three exams?

**How to prepare for an exam?** Use the learning objectives to guide your studying -- the learning objectives will be the criteria in which I will assess your learning. When I write an exam question, I specifically link it to a learning objective -- use these as a resource. In addition, use GRQs, class outlines, Learning Catalytics questions, Power Point slides. Be able to explain, draw, compare etc. (See following page with ideas

about how you demonstrate you know something.) **READING** is NOT studying. Studying involves blank paper, explanations, drawings, etc. Don't forget the importance of sleep before an exam!

**Uphold the honor code.** Academic integrity is at the heart of Carolina and we all are responsible for upholding the ideals of honor and integrity. The student-led Honor System is responsible for adjudicating any suspected violations of the Honor Code and all suspected instances of academic dishonesty will be reported to the honor system.



**Diversity is Valued.** The Department of Biology values the perspectives of individuals from all backgrounds reflecting the diversity of our students. We broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. We strive to make this classroom and this department an inclusive space for all students.

## Approach to Class Meetings

### Before each lesson:

- Download **Guided Reading Questions (GRQs)**. Printing is optional, but recommended.
- Complete readings and questions listed in the GRQ file.
- Upload your completed GRQ file to **GradeScope** (Submit by 11:55 PM on the day before class -- Sunday and Tuesday). Submit your file as either a WORD document, PDF, or JPEG; do not submit an Apple Pages file. Please access GradeScope via Sakai.
- Complete assignments in [MasteringBiology](#) (due by 11:55 PM on the day before class -- Sunday and Tuesday).
- Check **Piazza** to stay up-to-date on current discussions about the class
- Check **Sakai** announcements and your **UNC email** frequently (at least once per day) to stay up-to-date on class communication.

### During the lesson:

- Be prepared to access your completed GRQs document.
- Download a blank **Class Outline**. We recommend you use this to take notes. Printing the document is recommended so that you can draw diagrams when asked. Prepared to take messy notes -- you can re-write your notes after class. Your notes should be messy because you will make mistakes and that's ok!
- Watch the **Lesson Videos** in order. They are available in the Resources Folder.
- Log in to [Learning Catalytics](#) and open up the day's session. Be prepared to answer all the questions posed to you without looking at your notes.
- Keep a running list of questions you have about the current topic (these are a study guide)

### After Class

- Review **lecture slides** (available when lesson videos are posted) and your mastery of each learning objective
- Review **course schedule** for approaching due dates
- Review, post, and/or respond to questions in Piazza
- Attend a review session with:
  - **Peer Instructors** (via Sakai Sign Up)
  - **Learning Center**
    - [BioCell](#)
    - [Peer Tutoring](#)
    - [Academic Coaching](#)
- Meet with your TEAM or SMALL GROUP and discuss topics that you are not clear about
- Schedule **Office Hours** with Dr. Ott when needed (via Sakai's Sign-up tool)
- Attend live sessions with your instructor (Fridays, Time TBD) or watch recording of the session.
- Clean up your lecture notes and identify areas of uncertainty → these are questions you can ask!

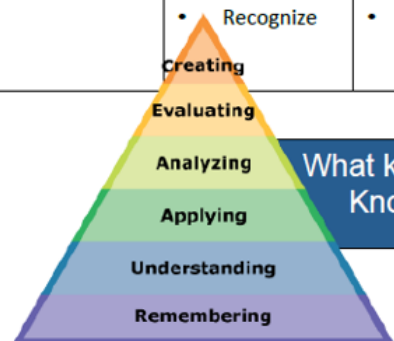
## Be Active in your Studying

### Words to implement when you study.

When studying, try drawing, contrasting, arranging, etc.



Type (Level)	Knowledge (1)	Comprehension (1)	Application (2)	Analysis (3)	Synthesis (3)	Evaluation (3)
<b>Bloom's Definition</b>	Remember previously learned information.	Demonstrate an understanding of the facts.	Apply knowledge to actual situations.	Break down objects or ideas into simpler parts and find evidence to support generalizations.	Compile component ideas into a new whole or propose alternative solutions.	Make and defend judgments based on internal evidence or external criteria.
<b>Verbs</b>	<ul style="list-style-type: none"> <li>Arrange</li> <li>Define</li> <li>Describe</li> <li>Duplicate</li> <li>Identify</li> <li>Label</li> <li>List</li> <li>Match</li> <li>Memorize</li> <li>Name</li> <li>Order</li> <li>Outline</li> <li>Recognize</li> </ul>	<ul style="list-style-type: none"> <li>Classify</li> <li>Convert</li> <li>Defend</li> <li>Describe</li> <li>Discuss</li> <li>Distinguish</li> <li>Estimate</li> <li>Explain</li> <li>Summarize</li> <li>Generalized</li> <li>Give example(s)</li> <li>Identify</li> <li>Indicate</li> </ul>	<ul style="list-style-type: none"> <li>Apply</li> <li>Sketch</li> <li>Choose</li> <li>Compute</li> <li>Demonstrate</li> <li>Discover</li> <li>Dramatize</li> <li>Employ</li> <li>Illustrate</li> <li>Interpret</li> <li>Write</li> <li>Modify</li> <li>Predict</li> </ul>	<ul style="list-style-type: none"> <li>Analyze</li> <li>Appraise</li> <li>Breakdown</li> <li>Calculate</li> <li>Categorize</li> <li>Compare</li> <li>Contrast</li> <li>Criticize</li> <li>Diagram</li> <li>Differentiate</li> <li>Relate</li> <li>Distinguish</li> <li>Examine</li> </ul>	<ul style="list-style-type: none"> <li>Write</li> <li>Rewrite</li> <li>Categorize</li> <li>Reorganize</li> <li>Combine</li> <li>Comply</li> <li>Compose</li> <li>Construct</li> <li>Create</li> <li>Design</li> <li>Develop</li> <li>Formulate</li> <li>Explain</li> </ul>	<ul style="list-style-type: none"> <li>Predict</li> <li>Argue</li> <li>Assess</li> <li>Justify</li> <li>Interpret</li> <li>Compare</li> <li>Conclude</li> <li>Contrast</li> <li>Defend</li> <li>Describe</li> <li>Judge</li> <li>Estimate</li> <li>Evaluate</li> </ul>



What kinds of questions do you have trouble with on quizzes/exams?  
Knowledge or application? Practice what you have trouble with.

## Course Schedule

## Course Schedule & Topics for Discussion

For each lesson, you have a "Guided Reading Assignment (GRQ)" found on Sakai with the same title that you should do **before** doing Mastering Homework. (GRQs will give you the specific pages to read from the text, etc). The GRQs are due in GradeScope by 11:55 PM the night before each class.

The idea is that Mastering will reinforce what you have independently learned from the reading. If you simply hunt and peck through the text to find the answers without doing the reading, you are missing a large chunk of information I expect you to be familiar with. You are ultimately responsible for information in GRQs as if these have the lecture content. Not doing these = missing at least a third or one-half of the course content.

Due dates are subject to change (such as if technology fails us) but exam dates will not change unless the University is closed. **Late homework assignments = 0%.** I recommend turning in Mastering AND GRQs 20-30 minutes before the posted deadline to account for possible uploading and WiFi issues.

## UNIT 1: BIOCHEMISTRY & CELL BIOLOGY

Learning Objectives:

- What makes science, science?
- How are the macromolecules of life (matter) put together, utilized, and broken down in a cell?
- How is energy transformed in the process?

Date	Lesson Assignment	Lesson Objectives
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	<p><b>Due 11:55 PM on the night before class</b>, unless otherwise noted**</p> <p><b>Do GRQs first</b> (readings listed in GRQ) and then do Mastering. (<i>All GRQs turned in via Gradescope</i>). If there is a quiz, complete the quiz BEFORE the GRQs.</p>	
<b>Mon. Aug. 10</b>	<p><b><u>Lesson 0</u></b></p> <ul style="list-style-type: none"> <li>Register for Mastering with your UNC email account</li> <li>Print/read syllabus and schedule</li> <li>Familiarize yourself with the Lessons tabs in Sakai</li> </ul>	<ul style="list-style-type: none"> <li>Reflect on ideas about what makes a class inclusive for all learners.</li> <li>Reflect on the kinds of concepts you will learn in class by completing the pre-test.</li> <li>Describe the expectations for being prepared for our future classes</li> </ul>
<b>Wed. Aug. 12</b>	<p><b><u>Lesson 1</u></b></p> <p>GRQs first and then Mastering assignments both by the names:</p> <ol style="list-style-type: none"> <li>Introduction to Mastering</li> <li>Exploring Life and the Process of Science</li> </ol> <p>Be sure to download and fill out the class outlines while watching class videos.</p>	<ul style="list-style-type: none"> <li>Distinguish science from unjustified claims and explain how science is iterative.</li> <li>Describe elements of research design and how they impact scientific findings/conclusions (e.g. identify strengths and weaknesses in research related to bias, sample size, randomization, experimental control)</li> <li>Interpret data and choose best way to communicate data in graphs.</li> <li>Formulate a testable hypothesis and design a controlled experiment and explain the necessity of replicates.</li> </ul>
<b>Fri. August 14</b>	<p>LIVE Review Session with Dr. Ott (Time TBD)</p> <p>*Submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon. Aug. 17</b>	<p><b><u>Lesson 2</u></b></p> <p>GRQs first then and Mastering assignment:</p> <ul style="list-style-type: none"> <li>Macromolecules: Structure and Function</li> </ul> <p>Learning Catalytics Session ID: 86568772</p>	<ul style="list-style-type: none"> <li>Name and explain the five major themes of biology.</li> <li>Classify polysaccharides based on their structure/function in plants and animals and describe how monomers join to form them.</li> <li>Define lipids and explain their functions and properties in polar or non-polar solvents.</li> <li>Draw protein structure and depict the consequence of mutations on normal structure and function.</li> <li>Explain the molecular forces that hold protein structure together and how they can be disrupted.</li> <li>Identify how the human body uses macromolecules from food.</li> </ul>
<b>Wed. Aug. 19</b>	<p><b>Research Consent Participation Form</b> (on Gradescope)</p> <p><b><u>Lesson 3</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>A Tour of the Cell</li> </ul> <p>Learning Catalytics Session ID 22021260</p> <p><b>[DUE AUGUST 28TH AT 11:55 PM]</b></p>	<ul style="list-style-type: none"> <li>Predict structures of the prokaryotic cell that would be antibiotic targets.</li> <li>Describe how a protein is synthesized and exported from a cell how disease can be caused when this process goes awry.</li> <li>Explain how insulin-producing cells are like dysfunctional factories when a person is diabetic (type 1 or type 2).</li> </ul>
<b>Fri. Aug.</b>	<p>LIVE Review Session with Dr. Ott (Time TBD)</p>	

<b>21</b>	TBD) *Submit questions on Piazza by Th at 11:55 PM	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon. Aug. 24</b>	Classes cancelled	
<b>Wed. Aug. 26</b>	<p><b>Quiz 1</b> (on Mastering; timed; only one try per question on quizzes, do quiz before lesson 4)</p> <ul style="list-style-type: none"> <li><i><b>Note:</b> Quizzes only post about 3 days before they are due.</i></li> </ul> <p><b>Lesson 4</b> GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>Structure and Function of Membranes</li> </ul> <p><b>[DUE AUGUST 28TH AT 11:55 PM]</b></p>	<ul style="list-style-type: none"> <li>Interpret experiments about protein production and make conclusions about why protein production is impaired in cystic fibrosis.</li> <li>Categorize molecules that cross membranes freely and those that do not and the consequence of synthetic molecules crossing cell membranes freely.</li> <li>Discriminate between passive transport, active transport, and bulk transport of molecules across a membrane.</li> </ul>
<b>Fri. Aug. 28</b>	LIVE Review Session with Dr. Ott Time TBD *submit questions on Piazza by Th at 11:55pm	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon. Aug. 31</b>	<p><b>Reflections on Learning Survey</b> (on Gradescope)</p> <p><b>Lesson 5</b> GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>Cell Signaling Via Hormones</li> </ul>	<ul style="list-style-type: none"> <li>Predict how water will move via osmosis and explain why this is critical to your cells.</li> <li>Describe how the two types of chemical signaling mechanisms affecting target cells differently.</li> <li>Apply the two mechanisms of chemical signaling to insulin signaling and sex hormone signaling.</li> </ul>
<b>Wed. Sep. 2</b>	<p><b>Lesson 6</b> GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>Energy and Enzymes and Cellular Respiration</li> </ul>	<ul style="list-style-type: none"> <li>Explain the importance of enzymes in metabolism and how they are inhibited.</li> <li>Explain how ATP does work.</li> <li>List the inputs and outputs of aerobic cellular respiration and describe the big picture for why cells use this process.</li> <li>Explain how coenzymes are reduced during respiration and how this contributes to ATP formation.</li> <li>Describe big picture of cellular respiration and how it relates to breathing.</li> </ul>
<b>Fri. Sep. 4</b>	LIVE Review Session with Dr. Ott Time TBD *submit questions on Piazza by Th at 11:55pm	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon. Sep. 7</b>	No class – Labor Day Holiday	
<b>Wed. Sep. 9</b>	<p><b>Exam 1 Check-In Activity</b> (on Gradescope)</p> <p><b>Lesson 7</b> Mastering and GRQs:</p>	<ul style="list-style-type: none"> <li>Diagram the major stages of aerobic respiration, noting the location in the cell and the inputs and outputs of each stage.</li> </ul>

	<ul style="list-style-type: none"> <li>Cellular Respiration</li> </ul>	<ul style="list-style-type: none"> <li>Explain how a H<sup>+</sup> gradient and oxygen are both necessary for oxidative phosphorylation.</li> <li>Describe anaerobic respiration pathways and differentiate them from aerobic pathways.</li> </ul>
<b>Fri. Sep. 11</b>	<p>LIVE Review Session with Dr. Ott Time TBD</p> <p>*submit questions on Piazza by Th at 11:55pm</p>	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon. Sep. 14</b>	<p><b>Quiz 2</b> (on Mastering; timed; only one try per question on quizzes; do quiz 2 before lesson 8)</p> <p><b><u>Lesson 8</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>Photosynthesis</li> </ul> <p><b><u>Practice Exam 1 on Gradescope</u></b></p> <ul style="list-style-type: none"> <li><b>**Due Tuesday Sept. 15 at 11:55pm</b></li> <li>Cumulative Unit 1 exam prep with questions very similar to those on exam.</li> </ul>	<ul style="list-style-type: none"> <li>Describe where the mass of a tree comes from and explain how the “mass” is made.</li> <li>Explain how trees are carbon sinks.</li> <li>Describe the two parts of photosynthesis and the inputs and outputs of both parts.</li> <li>Explain what kind of sunlight is used by the plant and why sunlight is necessary.</li> <li>Explain photophosphorylation in the light reactions of photosynthesis, and describe how photophosphorylation is similar and different from the oxidative phosphorylation in aerobic respiration.</li> </ul>
<b>Wed. Sep. 16</b>	<p><b><u>EXAM 1</u></b></p> <ul style="list-style-type: none"> <li>Covers all material in Unit 1</li> </ul>	<ul style="list-style-type: none"> <li>Study powerpoints, GRQs, quizzes, class notes and all your LC questions!</li> <li>Also, check out the dynamic study modules and “Study Area” on Mastering for more Qs.</li> </ul>

## UNIT 2: GENETICS & MOLECULAR BIOLOGY

Learning Objectives:

- How do cells store, transmit and use genetic information to make proteins?
- What are the consequences for organisms when these processes go awry?

Date	Lesson Assignment	Lesson Objectives
	<p><b>Due 11:55 PM on the night before class</b> unless otherwise noted**</p> <p><b>Do GRQs first</b> (readings listed in GRQ) and then do Mastering. (<i>All GRQs turned in via Gradescope</i>). If there is a quiz, complete the quiz BEFORE the GRQs.</p>	
<b>Fri. Sep. 18</b>	<p>LIVE Review Session with Dr. Ott (time TBD)</p> <p>*Submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon. Sep. 21</b>	<p><b><u>Lesson 9</u></b></p> <p>GRQs and Mastering:</p>	<ul style="list-style-type: none"> <li>Contrast asexual and sexual reproduction in outcome and types of organisms/cells that use each</li> </ul>

	<ul style="list-style-type: none"> <li>• Mitosis, Development, and cancer</li> </ul> <p>Don't forget to print your new outlines</p>	<ul style="list-style-type: none"> <li>• Recognize/draw the stages of mitosis, contrasting animal and plant cells and explain the consequences of specific stages of mitosis failing.</li> <li>• Describe how cell division plays a role in development.</li> <li>• Explain how cells know when it is time to divide/not divide.</li> <li>• Explain how cancer cells disobey the rules that normal cells follow in the cell cycle and in cell growth.</li> <li>• Explain the significance of a mutated BRCA-1 gene in terms of risks and consequences and the “utility” of a gene test for actionable genes.</li> </ul>
<b>Wed. Sep. 23</b>	<p><b><u>Lesson 10</u></b> GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>• Meiosis</li> </ul>	<ul style="list-style-type: none"> <li>• Define haploid, diploid, and homologous chromosomes and be able to calculate the diploid and haploid number when given an illustration of a cell.</li> <li>• Draw how variation arises during meiosis from independent orientation at metaphase I.</li> </ul>
<b>Fri. Sept. 25</b>	<p>LIVE review session with Dr. Ott (time TBD) *Submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>• Objectives set by student participants</li> <li>• Session will be recorded</li> </ul>
<b>Mon. Sept. 28</b>	<p><b>Quiz 3</b> (on Mastering; timed; only one try per question on quizzes, do quiz 3 before lesson 11) <b><u>Lesson 11 and 12</u></b> GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>• Patterns in Inheritance I</li> <li>• Patterns of Inheritance II</li> </ul>	<ul style="list-style-type: none"> <li>• Construct Punnett squares.</li> <li>• Determine mode of inheritance of a pedigree (autosomal dominant or recessive or X-linked recessive).</li> <li>• Calculate probabilities when given pedigrees.</li> <li>• Design genetic crosses that determine if a trait is dominant or to determine an individual's genotype.</li> <li>• Recognize and/or solve problems that are non-Mendelian variations of inheritance (incomplete dominance, co-dominance, multiple alleles, pleiotrophy, and polygenic traits)</li> </ul>
<b>Wed. Sept. 30</b>	<p><b>Exam 1: Reflection, Self-assessment, and Exam Item Analysis</b> (on Gradescope) <b><u>Lesson 13</u></b> GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>• Flow of Genetic Information I</li> </ul>	<ul style="list-style-type: none"> <li>• Draw a basic model of DNA, being able to point out where DNA variation is part of the structure.</li> <li>• Distinguish what makes somatic cells in the body similar and what makes them different.</li> <li>• Trace a specific DNA sequence all the way to a protein.</li> <li>• Calculate the variations in code that lead to the same protein.</li> <li>• Calculate variation in proteins of same size.</li> </ul>
<b>Fri. Oct. 2</b>	<p>LIVE Review Session with Dr. Ott (time TBD) *submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>• Objectives set by student participants</li> <li>• Session will be recorded</li> </ul>
<b>Mon. Oct. 5</b>	<p><b>Quiz 4</b> (on Mastering; timed; only one try per question on quizzes, do quiz 4 before lesson 14) <b><u>Lesson 14</u></b> GRQs and Mastering:</p>	<ul style="list-style-type: none"> <li>• Transcribe and translate two different alleles of a gene.</li> <li>• Define an allele.</li> <li>• Describe different types of mutations.</li> <li>• Use genetic and molecular data to determine an individual's phenotype.</li> </ul>

	<ul style="list-style-type: none"> <li>Flow of Genetic Information II</li> </ul> <p><b><u>Practice Exam 2 on Gradescope</u></b></p> <ul style="list-style-type: none"> <li><b>**Due Tues. Oct. 6</b> at 11:55pm</li> <li>Cumulative Unit 2 exam prep with questions very similar to those on exam.</li> </ul>	
<b>Wed. Oct. 7</b>	<p><b><u>Exam 2</u></b></p> <ul style="list-style-type: none"> <li>Covers all material in Unit 2</li> </ul>	<ul style="list-style-type: none"> <li>Study powerpoints, GRQs, class notes and all your LC questions</li> <li>Also, check out the dynamic study modules on Mastering and the “Study Area” in Mastering for more Qs.</li> </ul>
<b>Fri. Oct. 9</b>	<p>LIVE Review session with Dr. Ott (Time TBD)</p> <p>*submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>

### UNIT 3: ANATOMY & PHYSIOLOGY

Learning Objectives:

- How do the emergent properties of immunity, reproduction, and digestion arise from interacting components of these systems?

Date	Lesson Assignment	Lesson Objectives
	<p><b>Due 11:55 PM on the night before class</b> unless otherwise noted**</p> <p><b>Do GRQs first</b> (readings listed in GRQ) and then do Mastering. (<i>All GRQs turned in via Gradescope</i>). If there is a quiz, complete the quiz BEFORE the GRQs.</p>	
<b>Mon Oct. 12</b>	<p><b><u>Lesson 15</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>Immunity</li> </ul>	<ul style="list-style-type: none"> <li>Describe the basic components of the immune system.</li> <li>Compare and contrast humoral and cell-mediated immunity.</li> <li>Explain how vaccine's work with the adaptive immune system</li> </ul>
<b>Wed Oct. 14</b>	<p><b><u>Lesson 16</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>Reproduction part I</li> </ul>	<ul style="list-style-type: none"> <li>Describe the structure and function of male and female anatomy.</li> <li>Discuss prevention and consequences of various STDs.</li> <li></li> </ul>
<b>Fri. Oct. 16</b>	<p>LIVE Review Session with Dr. Ott (Time TBD)</p> <p>*Submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon Oct. 19</b>	<p><b><u>Lesson 17</u></b></p>	<ul style="list-style-type: none"> <li>Illustrate how the hormones and anatomy of the reproductive age female change over a month-- with and without pregnancy.</li> </ul>



GRQs and Mastering

- Reproduction part II

- Explain how the pill prevents pregnancy.

## UNIT 4: BIODIVERSITY

Learning Objectives:

- Why and how is biodiversity maintained through ecological interactions?
- How does biodiversity arise through evolution?
- How do we identify and measure evolutionary processes?
- What mechanisms drive evolution?

Date	Lesson Assignment	Lesson Objectives
	<p><b>Due 11:55 PM on the evening before class</b> unless otherwise noted**</p> <p><b>Do GRQs first</b> (readings listed in GRQ) and then do Mastering. (<i>All GRQs turned in via Gradescope as PDF, JPEG or Word document</i>). If there is a quiz, complete the quiz BEFORE the GRQs.</p>	
Wed Oct 21	<p><b>Quiz 5</b> (on Mastering; timed; only one try per question on quizzes, do quiz 5 before lesson 18)</p> <p><b><u>Lesson 18</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>• Phenology and Species</li> </ul>	<ul style="list-style-type: none"> <li>• Determine if two organisms are from the same species; be able to explain the benefits and draw-backs of different definitions of a species</li> <li>• Explain the uses for the biological species concept of species and its limitations.</li> <li>• Explain the factors that determine the timing of life cycle events for a species</li> </ul>
Fri. Oct. 23	<p>LIVE Review Session with Dr. Ott (Time TBD).</p> <p>*Submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>• Objectives set by student participants</li> <li>• Session will be recorded</li> </ul>
Mon Oct. 26	<p><b><u>Lesson 19</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>• Populations</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how scientists estimate population size</li> <li>• Use the exponential growth model to calculate population growth.</li> <li>• Compare and contrast logistic and exponential models of growth.</li> <li>• Explain the difference between density dependent and independent population change</li> </ul>
Wed. Oct. 28	<p><b><u>Lesson 20</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>• Community Interactions</li> </ul>	<ul style="list-style-type: none"> <li>• Distinguish levels of hierarchy in ecology and which levels include abiotic interactions with organisms.</li> <li>• Explain the consequence of two species have the identical niche.</li> <li>• Describe and give examples of five types of community interactions.</li> </ul>
Fri. Oct. 30	<p>LIVE Review session with Dr. Ott (Time TBD)</p> <p>*Submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>• Objectives set by student participants</li> <li>• Session will be recorded</li> </ul>

<b>Mon Nov. 2</b>	<p><b>Quiz 6</b> (on Mastering; timed; only one try per question on quizzes; do quiz 6 before lesson 21)</p> <p><b><u>Lesson 21</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>The microbiome</li> </ul>	<ul style="list-style-type: none"> <li>Compare/contrast germ free and conventionally raised mice.</li> <li>Explain why the community of microbes that live in our intestines can be considered a second “digestive system” for the human host.</li> <li>Provide evidence that a change in diet affects the microbial community within the mammalian gut.</li> <li>Provide evidence that the composition of gut microbes can cause obesity and reflect on the impact of this idea in human health and physiology.</li> </ul>
<b>Wed. Nov. 4</b>	<p><b><u>Lesson 22</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>How Populations Evolve I</li> </ul>	<ul style="list-style-type: none"> <li>Distinguish components of the theory of natural selection that are true vs. common misconceptions.</li> <li>Distinguish creationist and naturalistic views and what polls about evolution tell us about Americans and countries worldwide.</li> <li>Explain what science is and why the study of evolution is a science.</li> <li>Explain Darwin’s ideas about natural selection and how his ideas were better understood once combined with Mendel’s work.</li> <li>Define how microevolution is measured.</li> </ul>
<b>Fri. Nov. 6.</b>	<p>LIVE Review Session with Dr. Ott (time TBD)</p> <p>*submit questions on Piazza by Th at 11:55 PM</p> <p><b><u>Practice Exam 3 on Gradescope</u></b></p> <ul style="list-style-type: none"> <li>**Due <b>Sun. Nov. 8</b> at 11:55 pm</li> <li>Cumulative exam prep with example questions similar to those on exam.</li> </ul>	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Mon. Nov. 9</b>	<p><b><u>Exam 3</u></b></p> <ul style="list-style-type: none"> <li>Covers all of Unit 3 and Part of Unit 4 (up to microbiome)</li> </ul>	<ul style="list-style-type: none"> <li>Study powerpoints, GRQs, class notes and all your LC questions</li> <li>Also, check out the dynamic study modules on Mastering and the “Study Area” in Mastering for more Qs.</li> </ul>
<b>Wed. Nov. 11</b>	<p><b><u>Lesson 23</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>How Populations Evolve II</li> </ul>	<ul style="list-style-type: none"> <li>Explain the conditions that must be met for non-evolution.</li> <li>Perform Hardy Weinberg calculations and determine if a population is in HW equilibrium or not.</li> <li>Explain how genetic drift, mutation, gene flow and natural selection affect allele frequency in a population.</li> <li>Recognize what form of microevolutionary force is a driving force in examples of evolution.</li> </ul>
<b>Fri. Nov. 13.</b>	<p>LIVE Review session with Dr. Ott (time TBD)</p> <p>*Submit questions on Piazza by Th at 11:55 PM</p>	<ul style="list-style-type: none"> <li>Objectives set by student participants</li> <li>Session will be recorded</li> </ul>
<b>Wed. Nov. 16</b>	<p><b>Quiz 7</b> (on Mastering; timed; only one try per question on quizzes, due before lesson 24)</p>	<ul style="list-style-type: none"> <li>Define the conditions that lead to speciation.</li> <li>Distinguish various reproductive barriers that keep species separate.</li> </ul>

	<p><b><u>Lesson 24</u></b></p> <p>GRQs and Mastering:</p> <ul style="list-style-type: none"> <li>• Origin of Species</li> </ul> <p><b><u>Practice Final Exam on Gradescope</u></b></p> <ul style="list-style-type: none"> <li>• **Due <b>Wed. Nov 18</b> at 11:55pm</li> <li>• Cumulative exam prep with example questions very similar to those on exam.</li> </ul>	<ul style="list-style-type: none"> <li>• Construct a phylogenetic tree when given morphological data and a list of organisms.</li> </ul>
<p><b>Wednesday, Nov. 18th. 4-7 PM, EST</b></p>	<p><b><u>Final Exam</u></b></p> <ul style="list-style-type: none"> <li>• Cumulative (~70 Multiple Choice questions and 1 page of short answer)</li> </ul>	<ul style="list-style-type: none"> <li>• Review objectives from each class</li> <li>• Review powerpoints</li> <li>• Review lecture videos</li> <li>• Review quizzes and exams and Mastering</li> <li>• Be active in your studying by quizzing yourself</li> <li>• Retake Practice Exams 1, 2, &amp; 3 as well as the Practice Final Exam</li> </ul>