

# INTRO BIOLOGY

## What do I need for class?\*

- 1. **A computer with UT Zoom account and reliable internet access\***. Test your tech as soon as you can so you know you're ready.

Provides insight into how to learn the content more effectively -- by taking notes by hand instead of on the computer. Shows that you are interested in helping students learn not only the content but also effective learning strategies.

**"Biology in Focus"**, Biology, \$55 via **Canvas link is on Canvas**.

- 4. **A good way to take notes.** Studies show that people who take hand-written notes retain more from lecture. Get your pens, pencils, or styluses ready!

\* See our Canvas page for more details re each item.

**Prerequisite for this class: BIO \_\_\_ & (grade of C- or above in all).**

Gives students a reason to come to class -- there will be active learning and support of students' specific needs. Also recognizes that students may struggle with learning some concepts, and this is okay.

## What is expected each

**Please join us MWF ready to participate!**

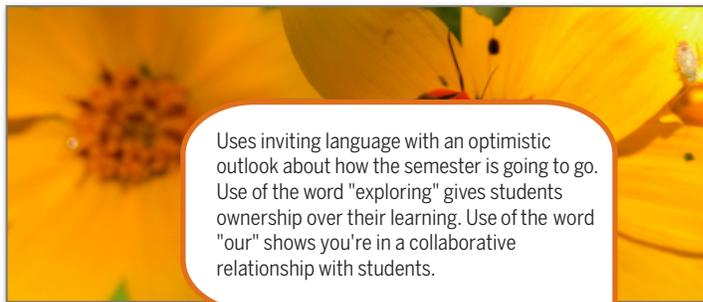
During class you'll have opportunities to learn new material, practice what you've learned in small groups, and get clarity on any ideas that are still fuzzy.

Uses the inclusive "we" and lets students know that this is a collaboration, not a competition.

**Discussion Sections** lead by your... time to solidify your... of the week's material in small groups. We are all on the same team, working together to learn, and all students are encouraged to attend and collaborate with one another. See page 2 for Discussion Section schedule based on your particular unique number.

\* If you need help getting these things, please don't hesitate to contact <https://cns.utexas.edu/students/support/student-emergency-funding>.

Normalizes financial difficulties and provides students a resource for handling them.



Uses inviting language with an optimistic outlook about how the semester is going to go. Use of the word "exploring" gives students ownership over their learning. Use of the word "our" shows you're in a collaborative relationship with students.

## Welcome, all.

I am looking forward to exploring biology with you this semester!

Our semester is arranged into four "Big Ideas of Biology":

- 1) organisms inherit genes, and genomes are modified by evolutionary processes over time.
- 2) Over time, evolutionary processes have resulted in the past and present diversity of life on Earth.
- 3) organisms demonstrate a wide variety of evolutionary adaptations to survival challenges, and
- 4) organisms interact with one another and with their environment, influencing the

of traits.

**Students in this majors' Intro Bio course** you'll be

to engage in and master a broad range of topics. This is

this course serves as a foundation for students who may

wish to continue in the biological sciences (as a minor, a major, or

directly relevant to both future

general education. You are a valued

your understanding of current biology will

our global conversation in a more

offered different study tools, resources,

and opportunities to improve your mastery of the content as well

as improve your overall learning strategies as you progress

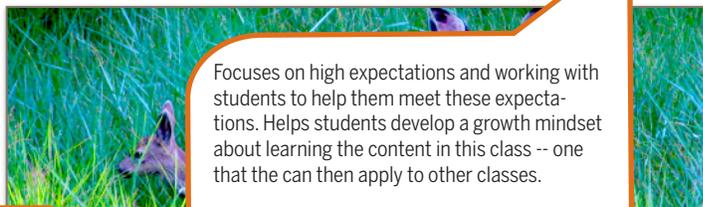
through the challenges inherent in learning new material. Please

know that I structure the course in this way because believe you

can meet the high expectations set for this course and I look

forward to working with you as we *all* grow and develop our

learning muscles *and* our understanding of biological processes.



Focuses on high expectations and working with students to help them meet these expectations. Helps students develop a growth mindset about learning the content in this class -- one that they can then apply to other classes.

Uses the inclusive "we" and "our" to show it's a collaboration among students and teacher.

# How do I communicate with Dr. Support or a TA?

See "Drop-in Chat Hours" on Canvas for times & locations.

Encourages students to ask questions, which supports student autonomy, and connects this with the collaboration that this class encourages.

Information about biology

Please post it on Canvas (so your colleagues, TAs and I can weigh in, and everyone benefits from the answers. If you have a question, other students are wondering the same thing. Everyone wins when you ask a question.

Ed Discussion. Use the LH Nav bar on Canvas)

...can weigh in, and everyone benefits from the answers. If you have a question, other students are wondering the same thing. Everyone wins when you ask a question.

- **If you have a question about a personal matter**, visit Dr. Support or your TA during their Drop-in Chat or set up a personal Zoom meeting. You may email Dr. Support or your TA via the Canvas In-box. We will try to answer promptly, but will not be available after business hours.

Sets clear boundaries from the start to let students know when they can expect a response.

## When to go to drop-in chat?

**Today!** You don't have to have a question - just come by and say "Hi". I know from experience that students who chat with TAs or with myself build a deeper understanding of the material, get to know us and their peers, and often perform better on exams.\*

**Please come by!**

\* Don't wait until the last two weeks to make changes. **Ask for help as soon as you see an exam score you want to improve.**

## This syllabus is subject to change:

**Make sure you check the Canvas Announcements about any changes.** Encourages help-seeking, which is part of developing a growth mindset (Dweck, 2006). Also shows that they're allowed to learn from their mistakes and improve their learning and grades -- lets students know you're more interested in their mastering the content rather than performing well compared to others.

# Lectures are MWF in JGB 2.324

Students in 9 am Lecture have these discussion section times:

unique	Day & Time	Room & TA	unique	discuss day/time	Room & TA
47760	Tu 8:30 am	GDC 2.210 Carol	47775	M 2 pm	GAR 0.120 Julian
47765	Tu 9:30 am	SZB 5.624 W.B.C.	47780	Tu 2 pm	SZB 5.624 Peizhen
47770	Tu 1:00 pm	JES A207A Jon	47785	M 3 pm	WAG 112 Kristen

Students in 10 am Lecture have these discussion section times:

unique	Day & Time	Room & TA	unique	discuss day/time	Room & TA
47915	Tu 8:30 am	GDC 2.410 Tyler	47930	Tu 12:30 pm	JES A209A Daniel
47920	Tu 9:30 am	JES A216A Daniel	47935	Tu 2 pm	JES A209A W.B.H.
47925	Tu 11:00 am	JES A215A Carol	47940		

Shows the teacher has empathy for students and recognizes them as whole people who have lives outside of this class.

## Your Support/Teaching Team (see Canvas)

**GTAs:** W.B. Help & W.B. Care

**UGTAs:** Carol Dweck, Jon Kabat, Peizhen, Tyler Renshaw, Daniel Eisenberg, and Nathan Holt

Provides students with specific strategies for learning the content and doesn't assume students already know how to learn the particular content in this class. Lets students know you are really interested in helping them become more effective learners, not just for this class but for life.

# How can I organize my learning?

Shows you want to get to know students personally and not just academically. Lets students know you are a human being who likes to connect with other human beings beyond just what's being learned in the class. Shows students you care about them.

This class is organized into modules 1-15. Each module has "learning outcomes" - certain tasks you should be able to demonstrate once you've mastered that module's content. You'll get a **study guide** that lists the learning outcomes with study prompts and extra practice questions about the key topics. Use the study guides as you read the textbook and attend class, and test yourself by writing to the study guide prompts as you go. Expect for some topics to take several passes to master. Don't fret, that's normal. Persevere until you can explain each topic without referring to the textbook. Some time before each Monday's class, check that week's module and begin the textbook reading before you go to lecture. Each Friday we'll have a lecture on the week's material, and every 4 weeks (approximately) we'll have a **midterm exam**. Expect for subsequent midterm.

Provides research-based strategies for learning content (e.g., quizzing yourself), and normalizes struggle. Helps students develop a growth mindset about learning and gives them strategies they can use across their classes.







## Course Goals for Bio \_\_\_\_ (January 2022)

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### By the end of this course, you should be able to:

1. Explain how genetic information is transmitted from one generation to another through the processes of mitosis, meiosis and fertilization. Compare and contrast asexual vs sexual reproduction, and tell how meiosis generates genetic variation among gametes.
2. Explain the processes of evolution, especially the mechanism of natural selection, and be able to apply quantitative reasoning skills to predict and explain changes in allele frequency using Hardy-Weinberg equations.
3. Describe how speciation can occur, and tell how the diversity of life can be organized using phylogenetic trees, as well as other taxonomic, or systematic classifications.
4. Give examples of the unity and diversity of life in growth patterns, reproduction, and life cycles. Relate patterns in the tree of life to major evolutionary events over time.
5. Identify general physical and chemical principles constraining organismal form and function.
6. Give examples of factors affecting rates of diffusion and osmosis, and give examples of structures to maximize them. Relate cellular and membrane transport mechanisms to whole-organism physiological functions, both within an organism and between organism and environment.
7. Give examples of the variety of adaptations by which plants and animals acquire energy and meet environmental challenges. Relate these to the cellular processes of diffusion and osmosis, and give examples of structures (tissues/organs) that facilitate these processes.
8. Analyze ways in which complex organisms maintain dynamic steady states (homeostasis) in varying internal and external environments. Tell how cell signaling and communication are involved, in terms of sensory inputs from the external environment, and coordinating a cellular or organismal response.
9. Explain how patterns and processes at each level of ecological organization are intrinsically linked in a web of cause and effect, shaping ecological systems (over time) that sustain life. Tell how humans have become major agents in ecology and evolution.
10. Identify how to interpret graphical data and equations that describe biological phenomena.
11. State a testable hypothesis concerning plant or animal physiology, and design a controlled experiment to test that hypothesis.
12. Recognize that frequent reading, explaining to others, monitoring your learning, and application of your understanding all enhance your learning of concepts.

Week/Date	Class	Spring 2022 Tentative Topics (may change slightly, with notice)	General Chapters
<b>BIG IDEA #1: Organisms inherit genes, and genomes are modified by evolutionary processes over time</b>			
<b>Week 1</b>		<b>Module 1</b> (review meiosis) & <b>Module 2</b> (Mendelian Genetics). <b>PRO TIP:</b> Consult each week's study guide(s) prior to lectures and read about topics <i>before</i> they're covered in lecture. Reading the end-of-chapter review is quick and is better than nothing.	<b>Biology in Focus Ch 10 &amp; 11*</b>
* Whole chapters noted here but often only certain sections are used, so check Study Guide for detailed readings.			
W Jan 19	1	<b>1st day of class! Zoom only.</b> Intro to class, Meiosis review ( <b>Module 1</b> ). <b>No discussion sections this week, they start next week.</b>	
F Jan 21	2	<b>Module 2. (Mendelian Genetics).</b> <b>Zoom only.</b> Squarecap Practice. Group Learning Check #1, Lecture	
<b>-&gt; Sun Jan 23</b>		<b>Special Homework Sunday!</b> Turn in <b>Growth Mindset Activity &amp; Syllabus Quiz.</b> Special Mastering Biology homework due (optional. Intro to MB & Meiosis Review).	
<b>Week 2</b>		<b>Module 2:</b> Punnet Squares, probability, & Mendelian genetics. See " <b>Canvas Modules</b> " for study guide and other resources for each topic. <b>Discussion sections start this week. See schedule to find yours.</b>	Teaches students about growth mindset explicitly by having students complete a growth mindset assignment.
M Jan 24	3	<b>Zoom only.</b> Lecture. 1st official Squarecap day	
W Jan 26	4	<b>Zoom only.</b> Lecture, Squarecap. <b>Due 8pm: MB HW1; Beanland</b>	
F Jan 28	5	<b>Zoom only.</b> Lecture + <b>Group Learning Check (GLC) #1</b>	
<b>Week 3</b>		<b>Module 3</b> (Evolution and Population Genetics)	<b>Ch 19 &amp; 21</b>
<b>M Jan 31</b>	6	<b>First in-person day! Monday Solo Learning Check (SLC) #1.</b> Lecture + Squarecap.	
W Feb 2	7	Happy Groundhog Day! Lecture, Squarecap. <b>Due 8pm: MB HW2; RedLynx</b>	
F Feb 4	8	Lecture + <b>GLC #2</b>	
<b>Week 4</b>		<b>Module 4</b> (Species Concepts, Reproductive Isolation & Processes of Speciation)	<b>Ch 19 &amp; 22</b>
M Feb 7	9	<b>SLC #2;</b> Lecture + Squarecap.	
W Feb 9	10	Lecture, Squarecap. <b>Due 8pm: MB HW3; Big Idea I concept map #1 (genetics).</b> CH Exam?	
F Feb 11	11	Lecture + <b>GLC #3</b>	
<b>BIG IDEA #2: Over time, evolutionary processes have resulted in the past and present diversity of life on Earth.</b>			
<b>Week 5</b>		<b>Module 5</b> (Phylogenetics and Tree Thinking)	<b>Ch 1.2 &amp; 20</b>
<b>M Feb 14</b>	<b>12</b>	<b>Happy Valentine's! No lecture today - optional review</b> (more details to come). <b>Midterm #1 ONLINE. 6-8pm this evening.</b> Genetics, Evolution, Speciation (Modules 1-4).	
W Feb 16	13	Lecture, Squarecap. <b>Due 8pm: MB HW4; Study Plan or Information Literacy</b>	
F Feb 18	14	<b>Lecture + GLC #4</b>	

Date	Class	Tentative Topics (may change slightly, with notice).	General chapters
<b>Week 6</b>		<b>Module 6</b> (Evolution of Eukaryotes and Multicellularity)	<b>Ch 25 &amp; 26</b>
M Feb 21	15	<b>SLC #3;</b> Lecture + Squarecap.	
W Feb 23	16	Lecture, Squarecap. <b>Due 8pm: MB HW5; Information literacy or Ice Fish Evolution</b>	
F Feb 25	17	<b>Lecture + GLC #5</b>	
<b>Week 7</b>		<b>Module 7</b> (Evolutionary adaptations in Plants and Animals)	<b>Ch 26 &amp; 27</b>
M Feb 28	18	<b>SLC #4;</b> Lecture + Squarecap.	
W Mar 2	19	Lecture, Squarecap. <b>Due 8pm: MB HW6; Synthesis with concept map #2 (evolution)</b>	
		<b>Lecture + GLC #6</b>	
		<b>Module 8</b> (Diversity in Life Cycles and Modes of Reproduction)	<b>Ch 30 &amp; 36</b>
		Lecture + Squarecap. <b>No SLC today</b>	
W Mar 9	22	Lecture + Squarecap. <b>Due 8pm: MB HW7 CH Exam?</b>	
<b>Th Mar 10</b>	<b>23</b>	<b>Midterm #2 ONLINE. Thursday evening 6-8pm:</b> Phylogenetics and evolution of biodiversity (modules 5-8)	
F Mar 11	23	<b>No Lecture today.</b>	
<b>BIG IDEA #3: Organisms demonstrate a wide variety of evolutionary adaptations to survival challenges</b>			
<b>SPRING BREAK</b> is a great time to appreciate biodiversity. Go outside and find some nature!			
		<b>Module 9</b> (Same challenges, different solutions: Exploring basic ideas of homeostasis and how animals regulate their internal environments)	<b>Ch 32</b>
M Mar 21	24	Lecture + Squarecap.	
W Mar 23	25	Lecture, Squarecap. <b>Due 8pm: MB HW8</b>	
F Mar 25	26	<b>Lecture + GLC #7</b>	
<b>Week 11</b>		<b>Module 10</b> (Same challenges, different solutions: energy & nutrient acquisition, long-distance transport, and exchange)	<b>Ch 29, 33, &amp; 34</b>
M Mar 28	27	<b>SLC #5;</b> Lecture + Squarecap.	
W Mar 30	28	Lecture, Squarecap. <b>Due 8pm: MB HW9</b>	
F Apr 1	29	<b>Lecture + GLC #8</b>	
<b>Week 12</b>		<b>Module 11</b> (Same challenges, different solutions: response to stimuli from the external environment)	<b>Ch 31, 38, &amp; 35</b>
<b>M Apr 4</b>	30	<b>SLC #6;</b> Lecture + Squarecap. <b>Today is also the last day for Q drop/W, pass/fail</b>	
W Apr 6	31	Lecture, Squarecap. <b>Due 8pm: MB HW10; Synthesis with concept map #3 (physiology)</b>	
F Apr 8	32	<b>Lecture + GLC #9</b>	

Schedules midterm BEFORE spring break so students don't have to study over the break. Shows students you care about them and want them to have a real break to focus on their well-being.

Encourages students to prioritize their health and practice self-care.

Gives students the Friday off before spring break -- shows you care about them and prioritize their well-being over your class.

Provides students with a reminder in case they need it. Shows you care about them and want to help them be successful.

Date	Class	Tentative Topics (may change slightly, with notice).	General chapters
<b>BIG IDEA #4: Organisms interact with one another &amp; with environment, influencing evolution of traits.</b>			
<b>Week 13</b>		<b>Module 12</b> (Animal behavior, population ecology)	<b>Ch 39 &amp; 40</b>
<b>M Apr 11</b>	<b>33</b>	<b>No lecture today.</b> (optional review (more details to come). <b>Midterm #3 ONLINE 6-8pm:</b> Physiology of plant and animal systems (modules 9-11)	
W Apr 13	34	Lecture, Squarecap. <b>Due 8pm: MB HW11</b> CH Exam?	
F Apr 15	35	<b>Lecture + GLC #10 re. Animal behavior</b> (+ "Conversation" practice with group)	
<b>Week 14</b>		<b>Module 13</b> (Species interactions/Community ecology)	<b>Ch 41</b>
<b>M Apr 18</b>	36	<b>SLC #7;</b> Lecture + Squarecap.	
W Apr 20	37	Lecture, Squarecap. <b>Due 8pm: MB HW12; Community decision</b>	
F Apr 22	38	<b>Lecture + GLC #11</b>	
<b>Week 15</b>		<b>Module 14</b> (Systems ecology and energy flow)	<b>Ch 42</b>
M Apr 25	39	<b>SLC #8;</b> Lecture + Squarecap.	
W Apr 26	40	Lecture, Squarecap. <b>Due 8pm: MB HW13; Trophic Cascades</b>	
F Apr 29	41	<b>Lecture + GLC #12</b>	
Sun Apr 30		Special Homework Sunday! <b>"Conversation" reflection due 8pm tonight.</b>	
<b>Week 16</b>		<b>Module 15</b> (Humans within our ecosystems)	<b>Ch 43</b>
<b>M May 2</b>	42	<b>SLC #9;</b> Lecture + Squarecap.	
W May 4	43	Lecture, Squarecap. <b>Due 8pm: MB HW14; Podcast work</b>	
F May 6	44	<b>Lecture + GLC #13</b>	
<b>7pm-10pm</b> <b>Monday May 16</b>		<b>Final Exam.</b> Ecology (modules 12-15) plus major themes from all previous modules. Mark this date & time on your calendar now and don't schedule anything else that day. If you have a conflict with this date/time, let your TA know <b>before April 18th.</b> If you have a valid conflict you can take the make-up exam on Tues, May 17, at 2pm-5pm	

Shows that you are flexible and willing to work with them based on their schedule and needs. Provides students with some autonomy over their learning and lives.

See your personal exam schedule here [https://utdirect.utexas.edu/registrar/exam\\_schedule.WBX](https://utdirect.utexas.edu/registrar/exam_schedule.WBX)

If you're taking chemistry, make sure you check your chemistry final exam time. **Put all your final exams on your calendar now so you (or your parents) don't accidentally schedule something else for those days.**

Lets students know you want them to be successful and that you're aware they have other things going on. Helps them practice good time management by using a calendar to schedule their commitments.