
Biology 182L: Evolution of Life



Course Syllabus Fall, 2019

Course Overview:

You will be introduced to the study of life on Earth from a functional and evolutionary perspective. Through lecture and discussion, we will examine evolutionary principles, biodiversity, form-and-function, physiological adaptations, and ecology. Laboratory experiences give you the opportunity to explore biological concepts through observation, experimental design, and data analysis.

Meeting Times:

Lecture:

MWF 10:00-10:50 am (Section 01)
MWF 11:00-11:50 am (Section 02)
Lecture sections meet in **LSC Auditorium**

NOTE: To receive full credit, you must attend the lecture section for which you are registered

Labs:

M, 1:15-3:55 pm (Section 21)
T, 9:25 am -12:05 pm (Section 22)
T, 1:30-4:10 pm (Section 20)
W, 1:15-3:55 pm (Section 24)
W, 6:30-9:10 pm (Section 26)
R, 9:25 am -12:05 pm (Section 25)
R, 1:30-4:10 pm (Section 23)
**ALL LAB SECTIONS MEET IN LSC 321, and
labs start the week of Sept. 9th**

Course materials

Required Texts:

- Urry, L.A., et al. 2017. *"Campbell Biology,"* 11th ed., Pearson/Benjamin Cummings Publishers, ISBN-13: 978-0-134-09341-3
[NOTE: BIOL 183 requires this textbook and "Mastering Biology." The bookstore has the textbook bundled with "Mastering Biology" and without. If you know you'll be taking BIOL 183 in the future, you should consider purchasing the text bundled with "Mastering Biology."]
- O'Donnell MA and Fournier CT. 2019. *Exploring Biology: Evolution of Life. (lab manual;* purchase from lab instructors the first week; Sept. 4 -6, \$10 cash or check)

Online materials:

- The lecture and lab Moodle sites, with readings, assignments, schedules, videos, and more!
Check early and often.

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Who are the BIOL 182 staff, and who do you see about questions you have?

Biology 182L is a **team-taught course** with 4 lecture instructors, 2 laboratory instructors, and 3 Supplemental Instruction Leaders:

- **If you have general administrative questions about lecture, contact the Coordinator for your section.** Prof. Dunlap is the Coordinator for the 10 am class (BIOL-182-01), and Prof. Blackburn is the Coordinator for the 11 am class (BIOL-182-02).
- **If you have questions regarding lecture and exam content, speak to the lecturer who presented the material.** Profs. Blackburn, Bush, Dunlap, and O'Donnell are the lecture instructors.
- **If you have questions about laboratory content, speak with your lab instructor.** Profs. Fournier (sections 20, 21, 23, and 26) and O'Donnell (sections 22, 24, 25) are the laboratory instructors.
- **If you have approval for academic accommodations** (see more information below), please **notify Prof. Dunlap** during the first two weeks of the semester.

The Biology 182 Staff is here to help you through this course. **Take advantage of the help that is available -- make an appointment to see us, and/or e-mail us with your questions.**

<u>Teaching staff:</u>	<u>Office</u> <u>No. (LSC)</u>	<u>phone</u>	<u>email</u>
Daniel Blackburn	247	297-2231	daniel.blackburn@trincoll.edu
Susan Bush	336	-2527	susan.bush@trincoll.edu
Kent Dunlap	245	-2232	kent.dunlap@trincoll.edu
Claire Fournier	331	-4077	claire.fournier@trincoll.edu
Michael O'Donnell	323	-2228	michael.odonnell@trincoll.edu

Supplemental Instruction Leaders:

Maggie Cassidy (margaret.cassidy@trincoll.edu)

Kristina Kurker (kristina.kurker@trincoll.edu)

Sarah Wilson (sarah.wilson@trincoll.edu)

- The SI Leaders will hold a series of peer-assisted study sessions throughout the semester. These sessions are not “review sessions” in which the SI Leader goes over past lectures. Rather, they are sessions designed to give you a chance to work together to discuss course concepts, develop strategies for studying course material, work problems, and review notes. Data from several years of SI in this course show that students who attend SI sessions regularly (i.e., on a weekly basis) receive significantly higher grades than students who don't attend SI or attend infrequently!

What if I need academic accommodations?

Trinity College is committed to creating an inclusive and accessible learning environment consistent with the Americans with Disabilities Act. **If you have approval for academic accommodations**, please **notify Prof. Dunlap** during the first two weeks of the semester or a minimum of ten days prior to needing your accommodations. Be sure to meet with Prof. Dunlap to discuss implementation of your accommodations. If you do not notify your professors in time, you may be denied accommodations for that test.

If you do not have approved accommodations, but have a disability requiring academic accommodations or have questions about applying, please contact Lori Clapis, Coordinator of Accessibility Resources, at (860) 297-4025 or at Lori.Clapis@trincoll.edu.

Additional information is posted on the Accommodations Services website:

<https://www.trincoll.edu/StudentLife/StudentAccessibilityResources>

How will your learning be assessed?

Your **course grade** will be determined by a variety of assessments, including exams, quizzes, lab assignments, and class participation (as described below). For final course grades, we generally follow the traditional scale of: 90-100% = A- to A+, 80-89% = B- to B+, 70-79% = C- to C+, 60-69% = some sort of D, and below 60% = F. However, these cutoffs are not set in stone; a decision whether or not to adjust (i.e., lower, to your benefit) those grade cutoffs will be made at the end of the semester when all grade components have been combined. We don't predetermine the numbers of As, Bs or Cs, nor do we base grade allotment on a statistical normal curve. (Nor are you in competition with one another!) If everyone in the course gets enough points for an "A," then everyone gets an "A" and we're all very happy!

1) Exams (54% of course grade)

- **Four examinations** (100 points each) are scheduled during regular lecture periods (see class schedule). *Note: To receive credit, you must take your lecture period exam during your scheduled lecture section.*
- The **final exam** will be given **Monday, December 16, 6:45-8:45 PM**. This exam (worth 140 points) will be divided into the following sections: Sections 1-4 (worth 35 points each) covers material from exams #1-4, respectively. The final exam gives you an opportunity to improve one of your lecture exam scores with "**second-chance points**" – the section of the final (among sections 1-4) that shows the greatest improvement compared to the corresponding lecture exam (as a percentage score) will replace your original exam grade. *Note, however, that all four lecture-period exams must be taken, otherwise, a grade of zero will be given, which cannot be replaced.*
- *If your lecture exam average is 90.0% or higher, you may choose to not take the final exam.*

2) Quizzes (7%)

It's very important to keep studying course materials regularly. To help you with this and to allow you to gauge your own progress, eight quizzes (refer to class schedule) will be given during the first 5 minutes of the lecture period. These 10-point quizzes – which you will take by using your classroom "clickers" – will consist of 5 multiple-choice questions covering material from the several preceding classes. There will be no makeup quizzes, and no allowance for tardiness. Missed quizzes receive a grade of zero. However, we will drop your one lowest quiz grade when determining class grades at the end of the semester. *Note that, as with lecture exams, you must take a quiz during your section's regularly assigned time to receive credit.*

3) Labs (32%)

This is where you get to do science. We recognize the importance of lab and the time you will put into your lab work, so the laboratory part of the course is worth almost one-third of the total course grade. Laboratory points will come from pre-lab assignments, lab worksheets, reports, presentations, and participation. Laboratory evaluation methods, schedules, and grading policies will be discussed in more detail at your first lab session. **Labs begin the first full week of classes, starting Monday, September 9.**

4) Class Participation (7%)

The key to learning a topic such as biology is to be actively engaged and participating. We want you to be active, rather than passive, learners, so you must strive to stay engaged. In class, you'll use response card keypads or "clickers" to discuss and answer questions that gauge your understanding of the material and promote problem solving. Much educational research has shown that classroom use of "clickers" and group discussions of questions better engage students

in the material and result in higher levels of understanding (leading to better grades). We hope that you will see advantages from our use of clickers.

So how will our using “clickers” work?

- ☞ **Starting Monday, September 9**, in most classes, instructors will ask you “clicker questions.” Often, you’ll be asked to discuss the answers with other students before answering the question. *Each correct answer is worth 1 “clicker point,” and each incorrect answer is worth 0.75 “clicker points.” Zero points are awarded if no answer is entered. At the end of the semester, those students who have accumulated $\geq 85\%$ of the total clicker points will get the maximum participation points (70) added to their overall score. Those below the 85% threshold will receive a proportional amount of the 70 points.* There is no making up any missed participation points; we’ve already built in allowances for clicker malfunctions, unexpected absences, etc. *Note that to receive credit for clicker answers you must attend your regularly scheduled section.* (If you go to the wrong section and try to answer, your clicker responses will not be recorded by the system.)
- ☞ **In order to get participation credit, you must register your clicker before class on Monday, Sept. 9, and bring your clicker to every class.** To register, go to the lecture Moodle site (BIOL-182-LECTURE-01-02-F19), and look for the Turning Technologies block on the main course page. Click on ‘Register ResponseCard’ as shown below, enter the device ID (a 6-digit alphanumeric code) from the back of the clicker in the next window, and then click ‘Register.’ NOTE: If you registered a clicker through Moodle last semester, that old clicker ID may be listed, and you need to change it. If you need to change your clicker ID, click ‘Edit’ on the main registration page to enter the new number.



Turning Technologies Device Registration

To receive credit for your participation in-class, register your TurningTechnologies device.

ResponseCard

Handheld clicker device

ResponseWare

Web enabled response system

My Registered Devices

Device ID	Device Type
Register ResponseCard	ResponseCard
Register ResponseWare	ResponseWare

If you are using a ResponseCard handheld clicker device

If you are using your own personal device (laptop, mobile phone, etc.) with ResponseWare

If you are using a ResponseCard handheld clicker device

Register a Device

For help please contact customer support toll-free within the US: 1.866.746.3015 or email support@turningtechnologies.com

Enter the 6 or 8 character hexadecimal Device ID located on the back of the ResponseCard
The only possibilities are 0-9, A-F. The letter 'O' is not a possible character because it is after F.

Device ID

Device ID (6 or 8 characters 0-9, A-F)

- ☞ *Using someone else’s clicker (sending answers for friend) or asking someone to use your clicker for you in class is academically dishonest, and is considered a violation of the Student Integrity Contract.* At the very least, anyone involved in dishonest use of clickers will receive zero participation points. You should know, however, that any case of academic dishonesty might be reported to the Academic Honor Council. Don’t do it. It’s just not worth it.
- ☞ **If you lose your clicker, or it stops working (needs new batteries), contact Prof. O’Donnell immediately. It is your responsibility to take care of your clicker and bring it to class.**
- ☞ Since participation points will come from your responses to clicker questions (as explained above), and we use clickers to record answers on quizzes, *you must bring your clicker to every class period* (the only exception is when exams are given). **You will receive a clicker during class the first week, and you will start accumulating participation/clicker points in class Monday, Sept. 9.**
- ☞ These clickers will be “on loan” to students for the semester. **You must return your clicker at the end of the semester. If you do not return your clicker by the specified date, your student account will be charged \$40.00).**

Attendance and Community Behavior for Success in this course

Absences

Trinity's attendance policy (refer to Student Handbook) is that, "except in the case of incapacitating illness or injury, students are expected to attend class regularly." Since we want you to succeed, we have the same attendance policy in this class. ***In order to do your best, you need to arrive on time and prepared for each class and laboratory.***

Quizzes

Missed quizzes cannot be made up. If you miss a quiz, a grade of zero will be assigned (perhaps that quiz will be the one you drop). Be sure to arrive on time; if you arrive late and miss some questions, those questions will not be repeated.

Exams

You will receive a grade of zero for any missed exams; the only exceptions are: (1) a medical emergency (severe illness; not a common cold), (2) a family emergency (severe illness or death in the family), and (3) religious holidays. We reserve the right to request documentation of any excuse. If you have an unforeseen medical or family emergency, contact the Coordinator of your class section (Prof. Dunlap or Blackburn) as soon as possible about the exam you missed. If you will miss an exam due to observance of a major religious holiday, you must discuss this with Prof. Dunlap or Blackburn within the first two weeks of the semester. Requests to be excused from an exam due to reasons that are based on false claims may be considered violations on the policy on Intellectual Honesty (see below).

Laboratory

The lab activities in this course are structured around collaborative inquiry learning. You must attend laboratory during your scheduled section. Please refer to lab policies on your laboratory syllabus (which you'll get in lab and is posted to your Moodle lab site).

Intellectual Honesty

Carefully read the section on intellectual honesty in the Student Handbook. Be sure you understand what intellectual dishonesty is, including the meaning of plagiarism. Also, read the Student Integrity Contract. ***Violations of the Student Integrity Contract involving academic dishonesty may be reported to the Academic Honor Council.***

Creating an environment for learning: Community responsibility and digital devices

In today's day and age, we often do several things at once. We play games or text friends while watching Netflix; we do work while listening to music; we check social media while walking to class. In this class, however, to be successful you need to devote undivided attention to learning biology, and your actions can disrupt the learning experience of many other people. Please arrive to lecture on time; that is, be in your seat and ready to go at the start of class. If you know you are going to be unavoidably late, then quietly enter and take a seat in the back, so as not to disturb your fellow students. You are expected to stay for the entire class period. If you know you have to leave for an appointment that absolutely had to be scheduled at that time, please have the courtesy to tell the lecturer ahead of time, and take a seat in the back of the auditorium for that class. There is absolutely no leaving the classroom during exams. Please take care of any "necessities of life" ahead of time. **To best create an environment where we all can learn, please turn off your cell phone (in class or lab).** (Laptops or tablets may be used for note-taking only. If we see you're using one for other purposes we will ask you to put it away.) In other words, we ask that all students conduct themselves as responsible adults, showing proper respect for others, throughout this course (and throughout your lives!).

How will you succeed?

Studying to learn must go on continuously and not just be confined to the week prior to an exam.

Each week, you need to be going over not only the new material, but material that has already been covered. Below is a “study routine and test preparation checklist for BIOL 182.” ***Refer to this often throughout the semester:***

Answer “Yes” only if you *usually* did the things described (as opposed to occasionally or never). The more “Yes” responses you recorded, the better your preparation for the test. If you recorded two or more “No” responses, think seriously about making some changes in how you prepare for the next test and the final exam. Be honest in your assessments of your studying.

1. *Before class:* Did you skim the assigned reading before each class to become familiar with the topic and identify major concepts? Yes ____ No ____
2. *During class:* Did you take good lecture notes while actively thinking about the material in class? Did you ask questions in class to clarify things that were not clear to you? Are you fully engaged in discussions? Yes ____ No ____
3. *After class:* Did you review and rewrite your lecture notes (so they make sense to you) within 24 hours of class? Did you use the posted guides, slides, and your text readings to fill in any gaps or clarify misunderstandings in your lecture notes? Yes ____ No ____
4. *After class:* As you read the text for greater understanding, did you take notes that summarize information in your own words? After class and after reviewing notes, did you get help from the lecturer to clarify any information you didn’t understand? Yes ____ No ____
5. *Testing yourself:* Did you complete all the actions or answer all the questions listed in the posted study guides? Did you check your understanding of concepts using the Concept Check questions in your textbook? Did you answer all the questions from the end-of-chapter reviews without looking at your notes? Do this after you have studied, so you can answer questions without looking at your notes. If you could not answer without looking, study again until you can. Yes ____ No ____
6. *Testing yourself:* Did you draw diagrams and pictures as needed (without looking at your notes) to help you see and understand concepts and processes? Yes ____ No ____
7. Did you attend and actively participate in SI sessions regularly? Yes ____ No ____
8. After studying alone, did you meet with anyone in class to quiz each other or discuss answers to study questions? Yes ____ No ____
9. Did you get a reasonable night’s sleep before the test? (If no, the rest of your answers above may not matter.) Yes ____ No ____
10. Did you review your returned exam carefully, consulting with professors to clarify problem areas? Yes ____ No ____

Biology 182-01 and -02 Class Schedule – Fall 2019

Below is the tentative schedule for BIOL 182 lecture.

Please note that your Lab Schedule will be available and discussed in lab!

Date	Class #	Topic (with text readings)	Instructor	Reminders
W, 9/4	1	Introduction to the course (Ch. 1)	Blackburn and Dunlap	<i>Always skim the textbook readings before class, then read again for better understanding after class</i>
F, 9/6	2	Evolution & Natural Selection (Ch. 22; pp. 14-16) Be sure to register your clicker before the next class!!	Blackburn	
M, 9/9	3	Animal evolution (Ch. 32 and pp. 684-687; read over Ch. 33 & 34, but not for details)	Blackburn	<ul style="list-style-type: none"> • Be sure to register your clicker BEFORE class #3 (Sept. 9) • Study for Quiz #1 • Review classes 1-5 materials this weekend
W, 9/11	4	Animal form & function: Eating & digesting (pp. 871-873, 896; Concepts 40.1, and 41.1-41.4) Q1	Blackburn	
F, 9/13	5	Respiration by animals (p. 919, Concepts 42.1, 42.5 – 42.6)	Blackburn	
M, 9/16	6	Circulation in animals (Concepts 42.1 - 42.4, and 42.7)	Blackburn	
W, 9/18	7	Homeostasis: temperature regulation (Concepts 40.2 - 40.4)	Blackburn	
F, 9/20	8	Water and solute balance (Ch. 44 Intro – 44.4, Concept 7.3 [pp. 132-134] Q2	Blackburn	<ul style="list-style-type: none"> • Review classes 1-8 this weekend for exam #1
M, 9/23	9	Animal reproduction (p. 1017, Concepts 46.1-46.3, 46.5)	Blackburn	
W, 9/25	10	Exam #1 (covering classes 1-9)	Blackburn	<ul style="list-style-type: none"> • Do well on Exam 1! • Review class 11 materials this weekend
F, 9/27	11	Endocrine and nervous systems (pp. 997-1006)	Dunlap	
M, 9/30	12	Hormones and homeostasis (pp. 1007-1008)	Dunlap	
W, 10/2	13	Hormones, reproduction and stress (pp. 1010-1013, 1028-1031, 1087-1088)	Dunlap	<ul style="list-style-type: none"> • Study classes 11-13 for Quiz #3 • Review classes 11-14 this weekend
F, 10/4	14	From neurons to circuits, I (Concepts 48.1-48.3) Q3	Dunlap	
M, 10/7	15	From neurons to circuits, II (Concept 48.4)	Dunlap	<ul style="list-style-type: none"> • Review classes 11-15 • Review classes 11-16 for Quiz 4 • Review classes 11-17 this weekend
W, 10/9	16	Sensation (pp. 1105-1112, 1115-1121)	Dunlap	
F, 10/11	17	Muscle contraction and regulation (pp. 1123-1128) Q4	Dunlap	
M, 10/14		No class today – Trinity Days		<ul style="list-style-type: none"> • Take advantage of Trinity Days to study for Exam 2 and see Dr. Dunlap with any questions • Do well on Exam 2! • Review class 19 this weekend
W, 10/16	18	Exam 2 (covering classes 11-17)	Dunlap	
F, 10/18	19	Introduction to Plants! (Ch 29 Intro – 29.1; 29.3 through Leaves and also The Significance...; Ch30 p. 634-635 and also Evol Adv of Seeds.) Explore Figs 29.6, 29.7, 29.8, 29.12; Figs 30.7, 30.12, 30.17	Bush	

Biology 182-01 and -02 Class Schedule – Fall 2019 (continued)

Date	Class #	Topic (with text readings)	Instructor	Reminders
M, 10/21	20	Angiosperms, Fruits, & Flowers (Ch30.3-30.4; Ch 38.1, 38.3)	Bush	<ul style="list-style-type: none"> Review classes 19-20 Monday night Review classes 19-21 materials for Quiz #5 Review class 22 materials this weekend
W, 10/23	21	Plant Structures and Tissues (Ch35.1-35.3)	Bush	
F, 10/25	22	Plant form & function: water balance (Ch36.1 – 36.2 esp. Bulk Flow, 36.3, 36.5; review Ch 3 intro to 3.1, 3.2 through Fig 3.4; Scitable article on Moodle) Q5	Bush	
M, 10/28	23	Plant responses to their physical environment: adaptations for low water habitats (Ch36.4; pg. 861 – Drought; review Ch 10.4)	Bush	<ul style="list-style-type: none"> Review classes 22-23 materials Monday night Review classes 19-24 materials Review classes 19-25 materials this weekend
W, 10/30	24	Plant responses to their physical environments: adaptations for the aquatic world (pg. 862 – Aquatic)	Bush	
F, 11/1	25	Population genetics: basics (Ch14 Intro – 14.1, Ch23 Intro – 23.1)	Bush	
M, 11/4	26	Population genetics: application of the Hardy-Weinberg law (Ch 23.2), newborn screening (p. 288-290)	Bush	<ul style="list-style-type: none"> Review classes 19-26 materials for upcoming exam Review classes 22-27 materials for Quiz #6 Review classes 19-28 materials this weekend for Monday's exam!
W, 11/6	27	Speciation and natural selection (Ch23.3 – 23.4; Scitable article on Moodle) Q6	Bush	
F, 11/8	28	Human evolution (Concepts 34.6 & 34.7)	Blackburn	
M, 11/11	29	Exam 3 (covering classes 19-28)	Bush / Blackburn	<ul style="list-style-type: none"> Do well on Exam #3! Review class 30 materials Wed. night Review classes 30-31 materials this weekend
W, 11/13	30	Ecology: Organisms in their environment (pp. 1161-1163, 1167-1170, 1233)	O'Donnell	
F, 11/15	31	Population ecology: properties and growth (Concepts 53.1 - 53.3)	O'Donnell	
M, 11/18	32	Population ecology: growth and regulation (Concepts 53.4 - 53.6)	O'Donnell	<ul style="list-style-type: none"> Review classes 30-32 materials for Quiz #7 Review classes 30-34 materials this weekend
W, 11/20	33	Community ecology: interactions and structure (Concepts 54.1, 54.2) Q7	O'Donnell	
F, 11/22	34	Community ecology: disturbance, succession (Concepts 54.3, 54.4)	O'Donnell	
M, 11/25	35	Ecosystems (Concepts 55.1–55.3)	O'Donnell	<ul style="list-style-type: none"> Take your Biology book with you to study for Quiz #8 (and for interesting Thanksgiving discussions!)
11/26-12/1	Thanksgiving Break			
M, 12/2	36	Ecosystems (Concepts 55.4 and 56.4) Q8	O'Donnell	<ul style="list-style-type: none"> Review classes 30-37 materials every night in preparation for Exam 4!
W, 12/4	37	Current Issues in Ecology	O'Donnell	
F, 12/6	38	Exam 4 (covering classes 30-37)	O'Donnell	
M, 12/9	39	Review/course wrap-up	Dunlap/Blackburn/Bush	
FINAL EXAM – Monday, Dec. 16, 6:45-8:45 PM (rooms TBA)				