

Deployed site: <https://aroles.github.io/biol210/>

## Welcome to the BIOL 210 website, Fall 2024!

All course materials will be provided via this website or links therein.

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### Lecture Instructor

Angie Roles (she/her)

Office: Science Center A134

Email: [aroles@oberlin.edu](mailto:aroles@oberlin.edu)

### Drop-In Student Hours

MWF 10-11am, or email for appointment.

Student Hours are times that I have set aside specifically to meet with students. I will be in my office and available – you can just stop by and give the door a knock! You can drop in by yourself or bring friends; you may have specific questions or just want to say hi – any reason is good enough. If you aren't available during these intervals, I'm happy to find another time that works – just email me with some times you are available.

### Lecture Class Meetings

MWF 9:00-9:50 am in SCTR A155

Enrollment in both 210 lecture and 211 lab are required of all students. All lab sections meet 1:30-4:20 pm in SCTR K119. See the BIOL 211 website for more information.

### Course Description

This course provides biology majors and others with an integrated introduction to key biological principles of genetics, ecology, and evolution, including principles of inheritance, structure and expression of genes, and gene-phenotype relationships, selection, drift, sources of variation, and patterns of diversity, as well as factors and processes governing biotic and abiotic interactions that influence distribution and abundance of organisms. Students must register for both the lecture and laboratory (BIOL 211) concurrently. Prerequisite(s): BIOL 100.

## Course Objectives

Upon completion of this course, students should be able to:

- Understand and apply fundamental evolutionary and ecological concepts. Apply all parts of the scientific method to ecological and evolutionary questions.
- Appreciate the nature of variation and the importance of random events in natural systems, across levels of organization from the molecule to the ecosystem.
- Be aware of the broad diversity of life, past and present, and the major patterns of life through time.
- Practice interpreting graphical presentations and statistical analyses of data representing the relationship between two (or more) variables.
- Recognize the relationship of biology to other sciences, disciplines, and society.
- Build ‘soft’ skills valuable for life-after-college including team work, time management, reflection, revision, self-assessment, and critical thinking.

## Statement on Accessibility and Inclusion

Central to this course is an understanding and appreciation of diversity across the tree of life. In line with that value, we aim to make this course accessible and inclusive of all students. Each individual brings with them a unique set of experiences which inform their perspective when interacting with others and learning new information. All are welcome in this class and expected to put in the work to learn more than you knew coming in. You have the right to ask for assistance, access, or additional resources to meet your learning needs. If you find yourself unable to fully access the course in any way, you are welcome to contact us to discuss your needs. During the first week of classes, we will discuss community norms to guide us in our interactions.

**In case of emergency...** Should circumstances arise that prevent you from fulfilling your responsibilities, such as completing exams on time, you should contact Angie ASAP (email is fine). If you anticipate issues or conflicts arising, please contact Angie in advance so that we may make arrangements.

## Course Structure

This course adopts a flipped classroom style for all lecture meetings and uses contract grading for assessment. Each week, video recordings are provided, to be studied outside of class meeting times (replacing assigned readings; occasionally readings may also be assigned). During the MWF lecture meetings, we will work on case studies or problem sets relating to that week’s material. Some days may be devoted to student-chosen topics. Weekly lab sessions will focus with greater depth on selected lecture topics and associated skills.

## Reference Material and Textbooks

- There are no required textbooks for this course. You are welcome to use your Biology 100 textbook as a reference; the current Biology 100 text is available on reserve in the Science Library. Suggested readings will be available throughout the course via provided PDFs or web links.
- All materials will be shared via the website and using Google Drive. You must be logged into to Google using your Oberlin account to access shared materials on Google Drive. Lab related materials will be shared on the BIOL 211 website.
- The open-source text Biology 2e is recommended for many topics when you may wish more information or a different presentation than given in the content videos.

## Honor Code

You are expected to adhere to and sign the Honor Code:

1. On exams and quizzes, affirming the work is your own, without giving or receiving aid;
2. On problem sets, affirming that the work is your own and, when appropriate, that you have cited references accurately;

3. For group work, all group members contributed to all parts of the assignment in a meaningful way.

Your instructors are required to report any suspected violations of the Honor Code to the Honor Committee. Independent of any deliberations of the Honor Committee, in this course suspected violations of the Honor Code may result in amendment of the grade contract to a D or F if appropriate. More information on the Oberlin Honor Code may be found here: <https://www.oberlin.edu/dean-of-students/student-conduct/academic-integrity>.

## Resources Offering Support

Angie is available for individual consultation during student hours or by appointment. If you are looking to improve your performance or are struggling in ways new to you but not sure how to proceed, I am happy to discuss and provide suggestions.

- Students who have been approved by the Office for Disability and Access (Peters Hall 127) for accommodations should speak with the instructors to ensure that your needs are being met in this course. Please reach out in advance so that we may make appropriate arrangements before they are needed.
- Peer Tutors are available - for free - through the Academic Advising Resource Center (AARC), <https://www.oberlin.edu/aarc/peer-tutoring> or email [peertutoring@oberlin.edu](mailto:peertutoring@oberlin.edu). You are encouraged to arrange for a tutor as soon as you like.
- The Executive Functioning Program offers peer tutors, freely available through the ODA office. If you struggle with planning and organization skills, you might contact this program!
- This class is supported by a QUAIL who provides in-class support and also offers an outside help session every other week. Additional support is available via the CLEAR Quantitative Skills Drop-in Tutoring Center (Science Center K100). They can assist students with math skills, statistics, computer software like Excel, or programming languages. No appointment is necessary.
- Health & Wellbeing: The offices of Student Health Services and Counseling and Psychological Services are located in Dascomb Hall, Suite B. Services are free and drop-in hours are available.

## Assessment via Contract Grading

In this course, we use a form of contract grading, a method of assessment in which you complete a contract laying out the work you must complete to a satisfactory level in order to earn a specific letter grade.

Read the following contract requirements carefully before filling out the Grade Contract form to complete your contract. **Contracts are due by Fri Sep 8.**

If you have questions about the contract process, email or visit Angie to discuss.

## General Overview and Expectations

In this course, you will determine your final grade based on the amount of work that you complete to a satisfactory level (as determined by the instructor). All passing grades will be expected to complete a baseline amount of work while higher grades will require additional work to be completed to satisfactory (thus, a higher level of mastery). Letter or number grades will not be assigned for any assignments. Instead, when work is returned to you it will be marked either “Satisfactory” or “Revise”. Any work marked Satisfactory needs no more attention from you. Work marked Revise requires that you address the comments provided by the instructor and attempt to correct errors in the assignment, turning in a revised version of the assignment within one week. If that revision is sufficient, it will be returned as Satisfactory; if not, additional revisions may be needed or perhaps a meeting with the instructor. More than 2 revisions requires a one-on-one meeting with the instructor. At the end of the semester, you and I will determine your grade depending on how many of each assignment you completed to Satisfactory.

In addition to the above, you will be responsible for determining due dates for some assignments for this course (including exams). Generally, you must turn in quizzes or problem sets within 2 weeks of the due date though exceptions can be arranged individually with the instructor. Late assignments may carry consequences for you or impact your final grade.

I am choosing to use contract grading in order to provide you ownership over your grade and to enable you to focus more on what you are actually trying to learn. As a further benefit, contract grading helps you to develop and practice valuable life skills such as time management and the ability to assess the quality of your own work. Grades do not follow you into jobs after college (unless you do more schooling!), so it's important to learn to assess yourself.

Here is a breakdown of the work expected to be Satisfactory in order to achieve a grade of B. Applying +/- to the grades will be decided by you and I at the end of the term and can be used to adjust for discrepancies from the guidelines below (such as work turned in but not revised as requested). Grades of D and F are reserved for cases in which there is a systematic failure to meet contractual obligations.

To complete the work required for a B, expectations are that you will spend at least 11 hours per week on this course.

### Table of expectations

Earning an A will require all of the work for a B plus completion of 1 additional project, exploring a course topic or topics in greater depth. **Project goals and plan must be set by Oct 6 and completed by Dec 1.**

Earning a C will occur when work required for a B is not completed to Satisfactory or in a timely fashion (repeatedly late).

### Assignment Descriptions and Guidelines

**(1) Class attendance and participation** Class attendance is expected. Absences arranged in advance, with Angie's agreement, and for which work is made up do not count against the allowed number of missed class periods.

**(2) Quizzes (weekly) – You choose due date.** A set of content videos is assigned for each week (videos less than 20m each), providing the content that you are learning in a traditional lecture format. Live class meetings will focus on particular aspects of the content and explore them in greater depth via case studies. Weekly quizzes (about 10-20 multiple choice or true/false questions) practice the understanding you are learning in the videos and lecture meetings. You will receive your score on these quizzes immediately upon completion. For any questions for which you did not achieve full credit, you will receive explanations explaining why you got the question wrong and how you know the correct answer(s) is correct. You are encouraged to ask Angie when you are not sure why an answer is considered correct or incorrect!

**(3) Problem Sets (weekly) – You choose due date.** In order to practice your understanding of the content video material and in-class materials, you will complete a weekly problem set focused on that week's material. Optional supplemental readings will also be provided in most cases. You may use any source of information that you desire to complete these problem sets, including working with other students in the course (such as your assigned group). Once completed, you will check your answers against the key provided by Angie. For any incorrect responses, you will endeavor to correct them and provide a written explanation of what you think led you astray. You will submit your responses and your corrections as a single document. If you had correct responses for all the questions, you will still be sure to reply to the reflection question on the submission form in order to achieve a Satisfactory assignment. Revisions are not requested for problem sets: all assignments that fit the above criteria are accepted as Satisfactory (you must respond to the reflection question on the submission form).

**(4) Short-answer Exams – You choose due dates.** In order to bring together your learning in live lecture meetings, during lab periods, and from the content videos, there will be 4 short-answer exams. These

exams will be open-note, open-book, and untimed but designed to require 50 minutes to complete (if studied for). This means you may use any materials supplied by Angie to complete the exam but you should not discuss the exam with anyone other than Angie. There will be no time limit on completion of the exam and all exams will be available as of the first day of class. You are responsible for scheduling when you will take each exam. For responses that are not Satisfactory, Angie will give you feedback and you will revise your response(s) until achieving Satisfactory. I suggest you choose due dates no earlier than the following to ensure all material is covered in class before you work on the exam:

- **Exam 1 after Sep 29**
- **Exam 2 after Oct 27**
- **Exam 3 after Nov 22**
- **Exam 4 must be after Dec 12 and before 4pm Dec 17**

**(5) Self-reflections (mid-semester and final) - You choose due dates.** One important skill you will practice in this class is self-assessment, the idea that you develop your own standards for your work rather than merely hoping that your work meets someone else's standards. To that end, it's important that you engage in a process of self-reflection. It is only by examining how things have gone and comparing that to how you might like them to have gone, that you can plan for making adjustments in the future. **For this course, you will undertake one self-reflection in the middle of the semester (by Oct 13) and a second at the end of the term (by Dec 17).** For each, you will complete and submit the provided form before attending a short meeting scheduled with Angie to discuss your responses.

## Expected Weekly Schedule

Week

Dates

Topics

0

Aug 30

Course Introduction

1

Sep 04-06

Biodiversity, Phylogenies, Cells

2

Sep 09-13

Eukarya, Genomes, Eukaryotic genomes

3

Sep 16-20

Mitosis, Meiosis, Life cycles

4

Sep 23-27

Genes, Transcription, RNA processing

5

Sep 30-Oct 04

Translation, Sex determination, Inheritance & segregation

6

Oct 07-11

Dominance, Independent assortment, Linkage

7

Oct 14-18

Hardy Weinberg, Detecting evolution, Genetic variation

8

Oct 21-25

*Fall Break*

9

Oct 28-Nov 01

Mutation, Gene flow, Genetic drift

10

Nov 04-08

Nonrandom mating, Selection, Heritability

11

Nov 11-15

Speciation, Population ecology, Life history

12

Nov 18-22

Behavior, Learning, Genetics of behavior

13

Nov 25-27

Interspecific interactions, Competition

14

Dec 02-06

Community structure, Ecological succession, Energy flow

15

Dec 09-11

Biodiversity patterns, Nutrient cycling

Dec 12-15

Reading Period

Dec 16-20

Finals Period