



Biology/Botany/Zoology 152 – Introductory Biology

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GENERAL COURSE INFORMATION

Course Subject, Number, and Title

Biology/Botany/Zoology 152 – Introductory Biology

Credits 5

Canvas Course URL

<https://canvas.wisc.edu/courses/473057>

Course Designations and Attributes

General education; Honors available.

Course Description

This is the second semester of a two-semester course designed for majors in biological sciences. It is a continuation of Introductory Biology 151. This is a survey course featuring selected topics in: speciation and evolutionary mechanisms that explain key transitions in the history of life on Earth; plant physiology; and ecology at different spatial and temporal scales.

Requisites

Biology/Botany/Zoology 151 or equivalent

Introductory Biology 152 is a Communications-B course.

Comm-B courses are expected to develop advanced skills in:

- critical reading, logical thinking, and the use of evidence;
- the use of appropriate style and disciplinary conventions in writing and at least one other mode of communication relevant to the discipline;
- the productive use of core library resources specific to the discipline.

Meeting Time and Location

Lecture: 12:05-12:55pm MWF – 2340 Mosse Humanities Building

Discussion and lab meeting times and locations depend on section enrollment and are posted on My UW enrollment as well as on the course Canvas site.

Instructional Mode

In-person

Credit Hours are met by the Course

This 5-credit class meets three times weekly for 50 minutes for lecture, once weekly for three hours for lab, and once weekly for 75 minutes for discussion. Over the course of the semester, students are expected to do a total of about 225 hours of learning activities, including class attendance, lab attendance, reading, studying, preparation, problem sets, writing, and other relevant work. Work for Intro Bio 152 outside of the classroom is expected to take approximately nine hours per week.

Regular and Substantive Student-Instructor Interaction

This course meets the regular and substantive student-instructor interaction requirement through feedback on student work, providing information about course content, facilitating discussion of course content, and through predictable and scheduled interactions with the student.

INSTRUCTORS AND TEACHING ASSISTANTS

Instructors - Titles and Names

Dr. Aaron Ragsdale 454 Birge Hall apragdale@wisc.edu	Dr. Kate McCulloh 324A Birge Hall kmcculloh@wisc.edu	Dr. Daijiang Li 211 Birge Hall dli55@wisc.edu
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Instructor Availability

Student help sessions with the faculty will be held weekly. Times and locations will be posted on the course Canvas site.

Teaching Faculty

Jon Breschak 235 Noland Hall (608) 262-1616 jon.breschak@wisc.edu	Dr. Sarah Edlund 231 Noland Hall (608) 265-8523 sedlund@wisc.edu	Dr. Brendan Scherer 233 Noland Hall (608) 265-4331 bpscherer@wisc.edu
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Questions about the course should be directed to our class email address: 152lec1@zoology.wisc.edu

Teaching Assistant Information

A list of all TA names, student help session times, and contact information will be provided on the course Canvas site.

Course Website, Learning Management System, and Instructional Tools

Everything you need for the course will be posted on the course Canvas site (listed above), which is organized into weekly modules. Each weekly module is divided into different pages: one for lecture, lab, discussion, and weekly announcements. Each page contains all the information needed for that week. For example, the weekly lecture page will contain the slides and video recordings from the lectures for that week of class.

LEARNING OUTCOMES

Course Learning Outcomes

Introductory Biology 151/152 is a two-semester introductory sequence for majors in the biological sciences. Emphasis will be placed on learning, understanding, and being able to use key biological concepts and the scientific method.

The study of modern biology is not only a matter of assimilating information. Learning how to use that information for problem-solving, posing hypotheses, and interpreting experimental results is also critical to understanding biology as a science. The lectures examine key concepts. Discussion allows you to investigate these more fully. In the laboratory, you will need to use the scientific method and apply concepts from lecture to carry out the various activities. In addition, labs stress the development of written and oral presentation skills which are required to successfully communicate scientific concepts and your research findings to others.

General Learning Goals and Objectives

- Explain the key mechanisms underlying biological evolution and identify those that drive diverse adaptations and key transitions in the history of life on Earth.
- Relate cellular, tissue, and organ structures and processes to their physiological functions in the plant life cycle to explain how plants acquire and use energy and material resources and respond to environmental stimuli.
- Describe the structure and function of ecological systems at different spatial and temporal scales and how abiotic and biotic factors affect the distribution of species.
- Assess how humans impact biological systems through habitat fragmentation and loss, climate change, overexploitation, invasive species, and pollution.
- Apply vocabulary, concepts, and theories of plant physiology, evolution, and ecology to problems across the biological sciences.
- Identify and investigate scientific problems by interpreting the results of prior research, developing hypotheses, designing and conducting experiments, analyzing data, and planning future experiments.
- Demonstrate skills necessary for biological research, including effective teamwork, data collection methods, and scientific communication.
- Integrate concepts and content from biology and other scientific disciplines to explore current global and societal issues.

GRADING

Grade Distribution

Attendance in lecture, lab, and discussion is mandatory for this 5-credit course. Because Introductory Biology 152 is a Comm-B course and many essential Comm-B requirements are met through the Independent

Project, students must complete all major components of the IP to receive a passing grade in the class. Failure to do so will result in an F, regardless of your final score in the course.

- The lecture portion of the course will comprise 47% of the final grade.
 - 45% will come from three equally weighted exams. There is no cumulative final for the course.
 - 2% will come from in-lecture Top Hat attendance. During each lecture, you must submit a code to Top Hat when prompted. You must be present in the lecture hall in order for your presence to be recorded, and so you need to have location services enabled for the Top Hat app on your device. If this is a problem for you, contact one of the teaching faculty. To accommodate absences from lecture due to illness, emergency, technical issues with the app or your device, or other unforeseen situations, we will drop the lowest 3 days of scores for each module (Evolution, Plant Biology, and Ecology).
- The lab and independent project will comprise 40% of the final grade.
- The discussion will comprise 13% of the final grade.
 - 9% will come from online discussion quizzes. There will be 3 quizzes per module. We will drop the one lowest quiz grade for the entire semester.
 - 4% will come from weekly discussion homework and from activities completed during discussion.
- An additional 1-2 points (not percent!) will be associated with engaging with a SuccessWorks career activity. Details about these points will be provided at a later date.

You can generally expect all assignments to be graded within two weeks of the due date, unless unforeseen circumstances temporarily delay the grading.

Grading Scale

The course is graded on a standard scale as noted below.

- 90-100% = A
- 88-89.99% = AB
- 80-87.99% = B
- 78-79.99% = BC
- 70-77.99% = C
- 60-69.99% = D
- 0-59.99% = F

Canvas calculates your grade in the course using ONLY assignments that you have completed. This means that as more assignments are completed, both the numerator and denominator of your grade calculation continue to grow and become more reflective of your final score. Please take into consideration that assignment groups in this course are weighted differently and that large fluctuations in your grade may occur as new scores are entered into the respective groups.

Please note that our course is NOT graded on a curve. A curve could result in lower grades across the entire course if we did so. Also, please note that we do NOT round scores up.

Credit for Late Work

There is no deduction for late lab and discussion work, if the late submission is excused and arranged in advance; or, in case of illness or emergency, as soon as possible thereafter. Contact your TA as soon as you can to set up an alternative submission or activity completion time.

For unexcused late work (i.e., for unexcused absences or late submissions)

- Lab
 - There will be no credit for late pre-lab assessments.
 - For other lab assignments:
 - 10% deduction per day, up to 50%
 - For assignments that are more than 5 days late, you may still submit them for 50% credit at any point during the semester, until December 10th. After that, there will be no credit for late submission.
- Discussion
 - There will be no credit for late homework or quizzes.
 - For in-class activities and other discussion assignments:
 - 10% deduction per day, up to 50%
 - For assignments that are more than 5 days late, you may still submit them for 50% credit at any point while still in the current lecture module for the Plant Biology and Evolution modules (e.g., you can submit Plant Biology in-class discussion assignments until the Plant Biology exam date), or until December 10th for the Ecology module. After that, there will be no credit for late submission.

Questions Regarding Graded Work

Any questions regarding grading of any exams, quizzes, or assignments must be addressed with the grader within one week following the return of the graded work. The grader reserves the right to address only the graded item in question or the entire exam, quiz, or assignment. Absolutely no reconsideration of graded work will be permitted following the submission of final letter grades in this course unless it concerns a technical issue regarding grade recording.

REQUIRED TEXTBOOK, SOFTWARE, and OTHER COURSE MATERIALS

Textbooks & Other Required Materials

1. **Evolution Module:** All readings will be provided as PDFs via Canvas.
2. ***Plant Biology and Ecology Modules: Biology – How Life Works 4th edition***, by Morris, Hartl, Knoll, Lue, & Michael. You can purchase an access code to an electronic copy of the textbook at the University Book Store (UBS), for a special price exclusive to UW Intro Bio students. It will give you 4 semesters of access. You will also be able to download the pdf for four years after purchase.
 - Here's the specific information:
 - Package Title: ACHIEVE FOR BIOLOGY: HOW LIFE WORKS
 - Author: Morris et al.
 - Package ISBN: 9781319562205
 - Note: This textbook will not be needed until the Plant Biology Module which starts in early October.
3. **Top Hat.** You must have a device that you can bring to lecture (phone, tablet, or laptop) that can access the internet and run Top Hat. If you do not have such a device, please contact us. We will work with you to find a solution.

4. You do not need to purchase a lab manual, but need a blank notebook for lab content. You must be able to remove pages from the notebook to turn in written assignments. You may use a carbonless lab notebook or a typical lined notebook according to your preferences. All other lab materials will be provided in lab or through Canvas.

Lecture Readings, Weekly Announcements, and Course Emails

Lecture reading assignments will be posted on each Canvas lecture page. You should read these assignments **before** attending lecture. You are also responsible for all information that is posted in Announcement on Canvas, though we will assume you have one week to read it. These announcements might include essential information regarding homework, course policies, exam scheduling, and other matters. Other notifications about the course will be via email. All students are responsible for the information contained in these communications and are expected to check them regularly. If you have any difficulty doing so, contact us immediately.

EXAMS

Exam Schedule

Exam 1 – Evolution	Thursday, October 9 th	8:15-9:45pm; location TBD
Exam 2 – Plant Biology	Thursday, November 6 th	8:15-9:45pm; location TBD
Exam 3 – Ecology	Friday, December 12 th	7:25-8:55pm; location TBD

Exam Review Schedule

Exam 1 Review – Evolution	Wednesday, October 8 th	8:15-9:15pm; location TBD
Exam 2 Review – Plant Biology	Wednesday, November 5 th	8:15-9:15pm; location TBD
Exam 3 Review – Ecology	Thursday, December 11 th	12:00-1:00pm; location TBD

Exam locations will be announced in class and posted on Canvas prior to each exam.

Exam Policies

- **Conflicts between our course and other courses' exams:** University policy specifies that exams cannot disrupt classes held during regularly scheduled times. If you have an exam for another course that conflicts with your lab or discussion in Intro Bio 152, you must request an alternate exam time from your professor (<https://registrar.wisc.edu/exampolicy/>). Likewise, we will provide alternate exam times for students with legitimate course conflicts of this nature.
- **Alternate exam times** will be offered prior to each exam for students with documented course conflicts.
- **No Electronic Devices** (including phones or calculators) will be permitted in the exam rooms. Any math required will involve simple calculation performed by hand.
- **Notecards** will be permitted in the last half of exam sessions. Blank cards will be provided approximately one week prior to the exam. All information on the card **MUST** be written by hand (i.e., not from a printer).
- There will be **no late make-up exams** except for extreme cases, such as a death in the family, serious illness, legal, or University-related conflicts. The format of the make-up exam will be at the professor's discretion. Contact the teaching faculty for scheduling. This policy also applies to any other graded instrument of the course.

ARTIFICIAL INTELLIGENCE (AI) USE

We may use artificial intelligence (AI) tools and applications (such as Copilot, DALL-E, etc.) in some circumstances in this course as they support the course learning objectives. The specifics of when, where and how these tools are permitted will be included with each assignment, along with guidance for attribution. Any use of these tools other than where indicated is a violation of this course's expectations and will be addressed through UW–Madison's [academic misconduct policy](#), specifically UWS 14.03(1)b (b) Uses unauthorized materials or fabricated data in any academic exercise.

HONORS

The Honors option for this course will require students to work in small groups to research a societal challenge with a biological component. Groups will develop short videos that describe their topic and the biological component. It will also include additional contact with experts in their chosen topic. Updates will be posted on Canvas and information will be shared directly with students enrolled in the Honors option as soon as possible.

To register for this course for Honors or to drop the Honors credit, please visit the following site for directions: <https://honors.ls.wisc.edu/add-or-drop-honors/>

PRIVACY OF STUDENT RECORDS & THE USE OF AUDIO RECORDED LECTURES STATEMENT

Lecture materials and recordings for this course are protected intellectual property at UW-Madison. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record the lectures without the instructor's permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or have lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal Page 8 of 10 notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

COURSE EVALUATIONS

Students will be provided with an opportunity to evaluate this course and their learning experience. Student participation is an integral component of this course, and your confidential feedback is important. You are strongly encouraged to participate in the course evaluation.

STUDENTS' RULES, RIGHTS & RESPONSIBILITIES

See the Guide's to [Rules, Rights, and Responsibilities](#)

DIVERSITY & INCLUSION

[Diversity](#) is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its

public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

ACADEMIC INTEGRITY

By virtue of enrollment, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts the integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion. For more information, refer to

<https://conduct.students.wisc.edu/academic-misconduct/student-resources-for-academic-integrity/>.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES STATEMENT

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy ([UW-855](#)) require the university to provide reasonable accommodations to students with disabilities to access and participate in its academic programs and educational services. Faculty and students share responsibility in the accommodation process. Students are expected to inform faculty [me] of their need for instructional accommodations during the beginning of the semester, or as soon as possible after being approved for accommodations. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to provide reasonable instructional and course-related accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. (See: McBurney Disability Resource Center at www.mcburney.wisc.edu)

ACADEMIC CALENDAR, RELIGIOUS OBSERVANCES, & ELECTION OBSERVANCES

Students must notify the Teaching Faculty and their TAs within the first two weeks of class of specific days or dates on which they request relief from course requirements for religious observances or election official responsibilities. Please visit the University website for further information regarding the [Academic Calendar & Religious Observances](#).

ABOUT YOUR INSTRUCTORS

Dr. Aaron Ragsdale – Evolution

I'm from the Pacific Northwest, growing up in Olympia, WA and Portland, OR. My routes to living in Madison and studying evolutionary biology are both a bit circuitous. In high school and college, which I completed at the University of Portland, I was mostly interested in math. In fact, the last formal biology class I took was in the 10th grade, so it surprises me sometimes that I do research and teach classes in a biology department here! It's not that I didn't find biology interesting –I was always interested especially in ecology and evolution– there just wasn't space in my schedule between math and physics classes to fit in biology lectures. I'd get to fix that oversight in Tucson, Arizona, where I started my PhD in applied math. I originally intended to start research in ecosystem and species interactions modeling, but I soon started working with a professor in evolutionary biology studying population genetics and molecular evolution. I found it fascinating that we can reconstruct the histories of populations and species by studying patterns of DNA variation among individuals. I decided to focus on this for my dissertation, and I've been hooked ever since. I had postdoc positions at McGill, in Montreal, Canada, as well as the National Lab for Genetics and Biodiversity in

central Mexico. In both places, I worked on projects related to human genetics and evolution. I've been very interested in human evolutionary history, especially trying to understand where and how our ancestors lived, and how ancestral hominin groups were connected and led *Homo sapiens* as we know ourselves today. In 2021 I started my faculty position and research group here at UW-Madison, and we focus on human evolutionary history and the processes of natural selection and genome biology that shape genetic diversity. I'm looking forward to exploring evolutionary processes with you all, and all the "tree-thinking" we'll be doing this semester!

Dr. Kate McCulloh – Plant Biology

I mostly grew up in Manhattan, Kansas. After high school I was convinced that I didn't want to ever go to college, which horrified my parents. My mom filled out my college application and after a semester of traveling with a friend, I decided to give it a try. As it turns out, I loved it and haven't left since. After about a year of indecision about a major, I settled on biology and one of the professors in the second semester introduction sequence changed my life. He was a wonderful teacher that had extremely high expectations of his students and used humor to draw students in. I ended up working in his lab on CAM plants (we'll learn about those this semester), and decided to get a graduate degree in the same general area I had been working on with him (called eco-physiology). I finished my B.S. in Ecology and Systematics at the University of Kansas and then started a PhD program at Duke University. About a month after starting at Duke, the professor I was working with announced that he would be moving to the University of Utah the following spring, and I decided to follow him and continue to work with his group. For my PhD and in the years that have followed I have studied long-distance water transport in plants (we'll also learn about this!). I am particularly interested in the mechanisms of how plants tolerate or resist drought stress. As an eco-physiologist, I study the physiology of the whole plant (as opposed to the cellular level) and ask questions from an ecological perspective. I mostly work on woody species (trees, shrubs and woody vines), and I work on individuals that range in size from tiny little seedlings to 60+ m tall trees. My work has taken me to some beautiful old growth forests in the Pacific Northwest and Panama, as well as Ecuador, Poland, New Mexico, Utah, and Pennsylvania.

I'm really looking forward to an exciting time this semester. I know plants aren't viewed to be as thrilling as other aspects of biology, but I think if you give them a chance, you might be surprised at how cool they really are! They've found very different solutions to many of the same problems that animals deal with—acquiring energy, growth, reproduction, and evading predators. Plus, they turn air and sunlight into sugar—that's amazing!

Dr. Daijiang Li – Ecology

I am originally from China, where I grew up in a small village surrounded by mountains and rivers. As a child, I spent countless hours exploring the outdoors by climbing trees, catching frogs and birds, and swimming in the nearby river while looking after ducks (partly because I did not have many toys during my childhood). These experiences instilled in me a deep appreciation for nature and a sense of adventure that has stayed with me throughout my life. Despite limited resources, my family cared deeply about my education and did their best to send me to college. At first, I didn't know what I wanted to study, but noticing the sharp contrast between my rural hometown and the urban environment around my university drew me to Ecology, which became my major. I completed my B.S. and M.S. in Ecology and have been working in the field ever since. Attracted by the strong tradition of the Wisconsin School of Ecology at UW-Madison, I decided to pursue a Ph.D. here to further deepen my understanding and research skills in this vital field. During graduate school, I studied how plant communities in Wisconsin have changed over the past several decades. Since then, my

research has expanded to examine the impacts of environmental changes such as urbanization on plant phenology (the timing of key life history events such as flowering) and species interactions, often using data from community science programs such as iNaturalist. This semester, I am excited to teach the Ecology portion of the introductory biology course. My goal is not just to share scientific knowledge, but to help students develop the same sense of wonder I first discovered in the outdoors.