



WISCONSIN
UNIVERSITY OF WISCONSIN-MADISON

Biology/Botany/Zoology 152 – Introductory Biology – Lectures 3 to 11
5 credits

<https://canvas.wisc.edu/courses/89171>

Course Designations and Attributes

Biological Sci. Counts toward the Natural Sci req
Counts as Liberal Arts and Science credit in L&S
Communication Part B

Level: Elementary

Section-Level Honors available.

Meeting Time and Location

Lecture 3: 2:30-3:45 MW – 528 Noland

Lecture 4: 4:00-5:15 MW – 528 Noland

Lecture 5: 6:00-7:15p MW – Rm 528 Noland

Lecture 6: 9:30-10:45a TR – Rm 528 Noland

Lecture 7: 11:00-12:15 TR – Rm 528 Noland

Lecture 8: 1:00-2:15p TR – Rm 528 Noland

Lecture 9: 2:30-3:45p TR – Rm 528 Noland

Lecture 10: 4:00-5:15 p TR – Rm 528 Noland

Lecture 11: 1:00-2:15p MW – Rm 528 Noland

Instructional Mode

All face-to-face

Credit Hours

This is a 5-credit class that meets two times weekly for 75-minutes, and students participate in a lab section (3 hours per week). Over the course of the spring semester, students are expected to do a total of about 250 hours learning activities which includes class attendance, lab attendance, reading, studying, preparation, problem sets, essay exams, lab reports and other learning activities.

INSTRUCTORS AND TEACHING ASSISTANTS

Instructors

Prof. Eric Kruger

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Prof. Doug Rouse

395 Russell Laboratories

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Instructor and Coordinator Office Hours: by appointment (email at least 24 hours beforehand)

Course Coordinator

Julie Collins jecollins4@wisc.edu 236 Noland Hall (608-265-5861)

Teaching Assistant Information

A list of all TA names, office hours and contact information will be provided on the course Canvas site.

Course Description

Second semester of a two semester course designed for majors in biological sciences. Continuation of 151. Topics include: selected topics in plant physiology, a survey of the five major kingdoms of organisms, speciation and evolutionary theory, and ecology at multiple levels of the biological hierarchy.

Requisites

BOTANY/BIOLOGY/ZOOLOGY 151

Introductory Biology 152 is a Communications B course. *Therefore, it is expected that students will have successfully completed or be exempted from their first communications course (Comm A) before enrolling in this course.*

COURSE SUMMARY AND PHILOSOPHY

The cases and associated activities are designed to expose you to the foundational concepts of Ecology, Evolution and Plant Sciences. By the end of the semester, you should be proficient in these three biological content areas. In addition, you will develop strong reasoning skills, communication skills, and research ability.

The laboratory activities support your case work. In lab, you will gain practice designing, conducting, and communicating real biological experiments. We expect you to struggle; working through confusion and complexity is at the heart of scientific research. You will need to use the scientific method and apply a number of the concepts from your case work to carry out the various activities. In addition, labs stress the development of written and oral presentation skills. These are required to successfully communicate scientific concepts and your research findings to others.

Course Overview

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 factual 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 cases examine key concepts in the context of real world scenarios. In the laboratory, you will need to use the scientific method and apply a

number of the concepts from lecture to carry out the various activities. In addition, labs stress the development of written and oral presentation skills. These are required to successfully communicate scientific concepts and your research findings to others.

Course Learning Outcomes

- Develop a broad knowledge base sufficient to understand, connect, & synthesize the Vision & Change core concepts: Evolution; Structure and Function; Information Flow, Exchange, and Storage; Pathways and Transformations of Energy and Matter; Systems.
 - Students will be exposed to topics that cover the breadth of the field of biology, the scope of biology (atoms to ecosystems), and about the many ways to be a biologist.
- Make connections to other scientific disciplines. Students will:
 - use other scientific disciplines (e.g., chemistry, physics, and math) to understand biology, and make conceptual and content linkages with those disciplines.
 - understand the importance of collaboration between biology & other scientific disciplines.
- Make connections to society at large. Students will understand:
 - the scientific underpinnings of current issues
 - why biological knowledge is essential to global citizenship
- Develop practical skills necessary for a professional biologist. Students will advance their:
 - teamwork skills
 - laboratory skills
 - quantitative analysis skills
- Develop communication proficiency. Students will be able to:
 - write logically and with clarity and style about important questions in biology
 - articulate persuasively, both orally and in writing, focused, sophisticated, and credible arguments
 - understand and explain results effectively
 - approach evidence with probity and intellectual independence
 - find and use source material appropriately with proper citation
 - read and understand primary scientific literature
 - understand the difference between primary and secondary scientific literature
- Become proficient in problem-solving through engaging in the process of science. Students will become proficient in:
 - developing testable hypotheses and aligning methods with a hypothesis
 - using biological knowledge/concepts to solve novel problems
 - identifying/asking questions & determining how to answer them
 - integrating disparate information
- Gain interest in the field of biology. Students will gain an appreciation for all topics in biology, not just their own intended major or career path.

GRADING

Components of your Intro Bio 152 Final Course Grade

Case Section (case solutions and exams)	66%
Laboratory & Independent Project	34% (see Lab Schedule for more details)

Exams: We will give 2 take-home essay exams, each with emphasis on roughly 1/2 of the course, although the second exam will necessarily be somewhat cumulative in nature. Tentatively, the first exam will be handed out the last week in March, and the second exam will be handed out in early May, during the final week of class. In each case you will have a week to complete the exam.

Cases: In groups of four or five students, we will tackle a set of six cases, each of which addresses one or more aspects of evolution, ecology, and/or plant biology. A written solution, submitted as a WORD document (.doc or .docx) to Learn@UW, will be required from every individual for each case. In addition, every individual will be required to participate in a group presentation of the solution to one case.

Case Breakdown:

	% of case section grade:
1st case: Fig Tree Dilemma	10%
2nd case: Insect Flight	11%
3rd case: Ant Ecology	12%
4th case: Photosynthesis	12%
5th case: Mammalian Ecology	12%
6th case: Flu Virus Evolution	13%
Take-home exam 1	15%
Take-home exam 2	15%
= 100%	

Concept Synthesis Maps: As part of your case work, you will complete a series of concept maps linking particular details from each case study with broader content and terminology from the relevant topic areas (Ecology, Evolution, Plant Physiology).

Computing Resources: This course will entail a considerable amount of online research and writing during class, so we ask that everyone bring their laptops to every class.

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

Additional information on course policies regarding late assignments, etc. will be available on the Canvas web site.

A **grade calculator** will be provided on the course Canvas site. This includes all assignments, their weights and how each affects the final grade in the course.

REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS

Textbooks & Other Required Materials

- **OpenStax Biology** (available here: <https://openstax.org/details/books/biology>)
- **Available Friday Jan 20** -- One lab manual: Spring 2018 New combined versions of *Practicing Biology* (for Intro Bio 152) and *Experiencing Biology*, sold only at University Book Store, State Street.

Look for the full lab schedule on the course Canvas site after Jan 23.

Canvas & Weekly Emails – Mandatory Reading each week

A weekly newsletter is sent to the classlist each week and is also posted to Canvas. Other notifications about the course are also sent via email periodically. 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. **These bulletins are required reading and contain essential information regarding homework, course policies, scheduling, and other matters.**

Students Requiring Alternate Instructional Accommodations including UW Athletes, McBurney, etc.

If you should need instructional accommodations for any course activities, please see your coordinator to make any necessary arrangements. **Students are expected to inform the coordinator of their need for instructional accommodations by the end of the third week of the semester**, or as soon as possible after a scheduling problem or disability has been incurred or recognized.

Honors

- There are two options to receive Honors credit for this course. The first is to pursue the Mentored Research. The alternative is to complete a project for Saturday Science, a youth outreach program on campus.
- See your newsletter for details about these options.
- To add or drop the Honors credit: Log in to My UW, click on enrollment, click on web enrollment, select the current semester, click on update classes, select your Intro Bio 152 course, click on honors, click submit, read the information that pops up, click OK, it should say “successful”.

RULES, RIGHTS & RESPONSIBILITIES

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

ACADEMIC INTEGRITY

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

McBurney Disability Resource Center syllabus 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 (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." <http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>
For more information on the many services available on campus see the McBurney Resource Center at 263-2741 or www.mcburney.wisc.edu.

DIVERSITY & INCLUSION

Institutional statement on diversity: "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." <https://diversity.wisc.edu/>

All cases are due by 11:59pm the night before the presentation day for your section.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
21-Jan	22	23	24 Case 1 Intro	25 Case 1 Intro	26	27
28	29 Case 1 Meetings	30 Case 1 Meetings	31	FEB	2	3
4	5 Case 1 Presentations Case 2 Intro	6 Case 1 Presentations Case 2 Intro	7	8		10
11	12 Case 2 Meetings	13 Case 2 Meetings	14	15	16	17
18	19 Case 2 Presentations Case 3 Intro	20 Case 2 Presentations Case 3 Intro	21	22		24
25	26 Case 3 Meetings	27 Case 3 Meetings	28	MAR		3
4	5 Case 3 Presentations Midterms distributed	6 Case 3 Presentations Midterms distributed	7 no case meetings	8 no case meetings		10
11 Midterms due	12 Case 4 Intro Midterms due	13 Case 4 Intro	14	15	16	17
18	19 Case 4 Meetings	20 Case 4 Meetings	21	22	23	24 SPRING BREAK STARTS

25	26	27	28	29	30	31
APRIL SPRING BREAK ENDS	2	3	4 Case 4 Presentations Case 5 intro	5 Case 4 Presentations Case 5 intro		7
8	9	10	11 Case 5 Meetings	12 Case 5 Meetings	13	14
15	16	17	18 Case 5 Presentations Case 6 Intro	19 Case 5 Presentations Case 6 Intro		21
22	23	24	25 Case 6 Meetings	26 Case 6 Meetings		28
29	30	MAY	2 Case 6 Presentations Finals distributed	3 Case 6 Presentations Finals distributed		5
6	7	8 Finals due	9 Finals due	10		12

Introductory Biology 152, Lab syllabus – Spring, 2018
Rooms 215/223/226/267 Noland Hall

The syllabus is always subject to change. Make sure to check it periodically on Canvas.

Week	Lab Topic	Assignment(s)	Points
January 22 – 26	NO LABS	Labs begin Monday, January 29. Be sure to buy your two lab manuals before then from UBS. They come bundled together in one package.	
January 29 – February 2	Choosing an Independent Research Project	<u>Before lab</u> Read <i>Experiencing Biology</i> , Chapter 1. Complete pre lab assignments.	IP progress points
		<u>During lab</u> Refine research questions and learn search strategies	
February 5 – 9	Analyzing Scientific Literature	<u>Before lab</u> Read <i>Experiencing Biology</i> , Chapter 2. Complete pre-lab. Complete Exercise 1, Parts 1 and 2.	5 IP points
		<u>During lab</u> Two consensus worksheets due at end of lab Quiz NEXT WEEK on IP material & first two labs	10 IP Points
February 12 – 16	Phylogenetic Analysis – Week 1	<u>Before lab</u> Read <i>Practicing Biology</i> , module 1 (“Phylogenetic Analysis”) Complete pre-lab tree-thinking questions and submit to dropbox on L@UW before lab.	Failure to submit a pre-lab will result in loss of 2 points for this unit.
		<u>During lab</u> Begin lab write-up questions. Complete IP Quiz	10 IP Points
	Independent Project (IP) Survey	Survey opens Wed. 2/14. Submit IP information to survey by 11:45pm Fri 2/16. You <u>must</u> include mentors' or partner(s)' names as well as a tentative topic area.	IP Progress points
February 19 – 23	Phylogenetic Analysis – Week 2	<u>During lab</u> Complete tree development and parsimony analysis and submit to dropbox by the end of lab. <u>End of lab</u> Tree-thinking quiz.	25 graded points 15 graded points
	IP – Proposal	IP proposals due Friday, Feb. 23, noon . Upload electronic copy to Canvas.	IP Progress points
February 26 – March 2	Gravitropism and the Hypocotyl – Week 1	<u>Before lab</u> Read <i>Practicing Biology</i> , module 2 (Gravitropism and the Hypocotyl). Complete pre-lab. <u>During lab</u> Complete Gravitropism proposal.	Failure to submit a pre-lab will result in loss of 2 points for this unit. Inadequate proposal will result in loss of 10 points for this unit
March 5 – 9	Gravitropism and the Hypocotyl – Week 2	<u>Before lab</u> Read <i>Experiencing Biology</i> , Appendix B. Complete Excel-based statistics pre-lab.	5 Lab points

Week	Lab Topic	Assignment(s)	Points
March 12 – 16	Gravitropism and the Hypocotyl – Week 3	Before lab Read <i>Experiencing Biology</i> , Appendix A, and <i>Experiencing Biology</i> , Chapter 4. During lab Work on Gravitropism presentation.	
March 19 – 23	Competition Ecology – Week 1	Before lab Read <i>Practicing Biology</i> , module 3 (Competition Ecology) Complete pre-lab.	10 Lab points
		During lab Present gravitropism PowerPoints Draft proposal for Competition Ecology research project	55 Lab points
	IP – First draft	IP First Drafts due Friday, March. 23, noon. Upload electronic copy to Canvas.	IP Progress points
March 26 – 30		SPRING BREAK	
April 2 – 6	Competition Ecology – Week 2	Before lab Review TA comments on preliminary proposals. During lab Finalize research plan and do plantings.	
April 9 – 13	Competition Ecology – Week 3	During lab Complete cheatgrass case study. Take preliminary measurements of your plants.	10 Lab points
April 16 – 20	Competition Ecology – Week 4	During lab Extract data from plants and begin data analysis	
	Independent Project – Final draft peer review	Before lab Complete final draft of IP paper.	IP Progress points
		During lab Complete peer review.	IP Progress points
	IP – Final draft mentor review	Mentored students only – give your mentor a clean and current copy of your final draft by Tuesday, April 17	IP Progress points
April 23 – 27	Competition Ecology – Week 5	During lab Extract final data from plants and complete data analysis for final write-up.	50 Lab points
	IP – Final paper	Before lab Read <i>Experiencing Biology</i> , Chapter 5.	
		IP Final Papers due Friday, Apr. 27, noon. Upload electronic copy to dropbox on Learn@UW.	100 IP points (hard copy) and IP Progress points (digital copy)
April 30 – May 4	IP – Presentation	Complete poster or digital presentation before lab. Present during lab.	25 IP points
Thursday, May 3	Mentored IP Poster Session Varsity Hall Union South	All mentored students must attend. Setup at 4pm. Poster session from 5 to 7pm.	IP Progress points

Your lab grade represents 34% of your final course grade, equally divided between lab modules and the Independent Project. Individual lab modules are weighted in accordance to the amount of work that each module entails.

<u>Lab Module</u>	<u>Points</u>	<u>% of Final Course Grade</u>
Evolution	40	4.0
Gravitropism	60	6.0
Competition Ecology	70	7.0
Total	170 points	17%

<u>IP Component</u>	<u>Points</u>	<u>% of Final Course Grade</u>
Progress points	20	2.0
Chapter 2 pre-labs and worksheets	15	1.5
Chapter 3 quiz	10	1.0
Poster / PowerPoint presentation	25	2.5
Final paper	100	10.0
Total	170 points	17.%

Notes:

Pre-lab assignments are always due at the beginning of lab. Assignments and/or point values may be changed at the instructor's discretion. Prior notice will be given for any such changes.

Plagiarism is an issue that is taken very seriously on this campus and within this course. We will check the authenticity of your written work and the proper citation of information used from published sources. Information on avoiding plagiarism can be found in *Experiencing Biology (the first half of your lab manual)*. Read this carefully to avoid problems with this issue. Penalties for plagiarism can be very severe and will be imposed directly upon your final grade for Intro Bio 152. If you are unclear on any matters covered here, please contact your TA or your coordinator.