



## ***Biology/Botany/Zoology 152 – Introductory Biology –Lectures 1 and 2***

*5 credits*

<https://canvas.wisc.edu/courses/89167> and <https://canvas.wisc.edu/courses/89168>

### **Course Designations and Attributes**

Level - Elementary

Breadth - Biological Sciences, counts toward the Natural Sciences requirement

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Gen-Ed - Communications B

Section-level honors available

### **Instructional Mode**

*All face-to-face.*

### **Credit Hours**

This is a 5-credit class that meets three times weekly for 50-minutes, plus students participate in a lab section (3 hours per week) for this class and a 75-minute discussion section per week.

Over the course of the fall/spring semester, students are expected to do a total of about 250 hours of learning activities which includes class attendance, lab attendance, reading, studying, preparation, problem sets, lab reports and other learning activities.

*Lecture 1: 1:20 MWF – 3650 Humanities*

*Lecture 2: 12:05 MWF – 3650 Humanities*

## **INSTRUCTORS AND TEACHING ASSISTANTS**

### **Instructors**

*Prof. David Baum*

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*Prof. Simon Gilroy*

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*(608) 262-1395*

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*In-person and online office hours will be announced in lecture and posted on the course Canvas site.*

*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 lectures, discussions 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 continue to develop strong reasoning skills, communication skills, and research ability.

The laboratory activities support your work in lecture and discussion. In lab, you will gain practice designing, conducting, and communicating real biological experiments. We expect you may struggle with some of this; 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 lecture and discussion 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 lectures examine key concepts. Discussions allow you to more fully investigate these. 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 to 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**

This is a 5 credit course. Attendance in lecture, lab and discussion is mandatory. In calculating your final grade for the course, students in 152 whose grades average less than 50% in either the lecture or the lab portion of the course will be given a grade of F for the course as a whole.

- The lecture portion of the course will comprise 60% of the final grade. Each lecturer will assign 20% of the final grade in the course. TopHat participation and lecture quizzes or other activities may make up a part of this 20%. Specific information will be provided by each lecturer.

- The lab will comprise 34% of the final grade. Your lab TA will explain how the labs will be graded.
- Discussions are mandatory and attendance and graded activities in discussion will comprise 6% of your final course grade. Your discussion TA will explain how the discussion will be graded.

**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**

- **Morris's Biology: How Life Works** – You can purchase **either** the etext in Launchpad **or** the etext in Launchpad plus a three-hole punch version of the text. Both are available at University Books Store or Underground Books or can be found on line using the ISBN numbers (ISBN: 9781319198084) or (ISBN: 9781319198138) respectively.
- **TopHat Account** – Required – see instructions on Canvas in the “How to ...” module.
- **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 lecture schedule and 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, exam scheduling, and other matters.**

### **LECTURE EXAM SCHEDULE**

Exam I	Evolution	Tues. 2/27	8:15-9:45 pm	Location: To Be Announced
Exam II	Plant	Thurs. 4/05	8:15-9:45pm	Location: TBA

### Exam Policy

- **Exam Conflicts:** 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, discussion, or lecture period in Intro Bio 152, you must request an alternate exam time from your professor. Likewise, we will provide alternate exam times for students with legitimate course conflicts of this nature.
- **No electronic devices** will be allowed during exams, including calculators. Any calculations required as part of an exam will require only basic math skills that you should be competent in at this time.
- **There will be no late make-up exams** except for extreme cases such as sudden illness. See your coordinator for scheduling a make-up exam.
- In the unlikely event of a disturbance during an exam, you will be expected to observe the following rules.
  - Follow the directions of your proctors and exit the building in an orderly fashion.
  - Wait at a safe distance outside, in a single location as instructed by you proctor.
  - While waiting to return to the testing room, do not check your notes or discuss the exam with your peers. If caught doing so, you will receive an automatic deduction of 20 points from your exam grade.
  - If you are able to return to the testing room, you will be given extra time amounting to the duration of the alarm plus 10 minutes to compensate for the disturbance.
  - If you are unable to return to the testing room, your coordinators will schedule a make-up exam. This exam will contain different questions and we reserve the right to change the format (short answer, fill-ins, etc).

### 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

- The Mentored Research option is the recommended Honors option for Intro Bio152. If you are doing mentored research you are eligible for Honors in 152. If you are doing Meta-Analysis Research for your IP and want to take the course for Honors, see your coordinator for additional options.
- If you are registered for this course for Honors and are fulfilling the requirements for that designation, you can drop the Honors credit via My UW.
- If you want to take this course for Honors and have not registered for Honors credit you will need to register for Honors credit in this course via My UW and Web Enrollment. 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/](http://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](http://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/>

## Schedule - Spring 2018

Wk	Day	Date	Lecture title	Assignments
1	W	1/24	Darwin and evolution	For weeks 1 to 5: Refer to reading and other assignments posted for each lecture on the course
	F	1/26	Common ancestry and evidence for evolution	
2	M	1/29	Tree thinking/Trait evolution	
	W	1/31	Phylogenetic inference	
	F	2/02	Introduction of population thinking/Genetic Drift	Evolution quiz 1 opens - deadline 11:45pm Sunday 2/04
3	M	2/05	Genetic drift	
	W	2/07	Natural selection	
	F	2/09	Adaptation	Evolution quiz 2 opens - deadline 11:45pm Sunday 2/11
4	M	2/12	Speciation	
	W	2/14	Human evolution	
	F	2/16	Animal diversity	Evolution quiz 3 opens - deadline 11:45pm Sunday 2/18
5	M	2/19	Eukaryotic diversity	
	W	2/21	Origin of eukaryotes	
	F	2/23	Origin of life	
6	M	2/26	Introduction to plants	Refer to additional assignments on Canvas and links to Launchpad etext, etc.
	T	2/27	Evolution Exam -8:15 to 9:45 pm	
	W	2/28	Origin of land plants	Chpt 33.1-33.2; 30.1
	F	3/02	Plant diversity:the rise of seeds, pollen and vasculature	Chpt 33.3-33.4
7	M	3/05	Plant diversity:angiosperms	Chpt 33.5 - Plant quiz 1 - opens - Deadline 11:45 pm Thursday, 3/8.
	W	3/07	Plant structure	Chpt 31.1, 31.4
	F	3/09	Plant growth	Chpt 31.3

8	M	3/12	Transport	Chpt 29.3-29.4; <b>Plant quiz 2 - opens - Deadline 11:45 pm Thursday, 3/15.</b>
	W	3/14	Water/gas relations	Chpt 29.1-29.2
	F	3/16	Plant nutrition	Chpt 29.5

9	M	3/19	Plant reproduction	Chpt 30.2-30.4; <b>Plant quiz 3 - opens - Deadline 11:45 pm Thursday, 3/22.</b>
	W	3/21	Seed germination & development	Chpt 31.1; 31.4
	F	3/23	Tropism and Hormones	Chpt 31.5

10	M	3/26	Spring Break	
	F	3/30		

11	M	4/02	Hormones	Chpt 31.2
	W	4/04	Environment – Light, rhythms, stress, defense	Chpt 31.6; Chpt 32
	R	4/05	<b>Plant Exam - 8:15 to 9:45 pm</b>	
	F	4/06	Introduction to ecology	<b>Refer to additional assignments on Canvas and links to Launchpad etext, etc.</b>

12	M	4/09	Climate and biomes	Ch 48.1; 48.2
	W	4/11	Microclimate; behavior	Ch 45.1
	F	4/13	Spatial attributes of populations	Ch 46.1

13	M	4/16	Temporal attributes of populations	Ch 46.2; 46.3 - <b>Ecology quiz 1- opens - Deadline 11:45 pm Thursday, 4/19</b>
	W	4/18	Demography; metapopulations	Ch 46.3 and 46.4
	F	4/20	Species interactions	Ch 47.1

14	M	4/23	Niches and competition	Ch 47.2 and 47.3 - <b>Ecology quiz 2 opens - Deadline 11:45 pm Thursday, 4/26</b>
	W	4/25	Community ecology - biodiversity	Ch 47.4
	F	4/27	Disturbances; succession; biogeography	Ch 47.4 and 46.4

15	M	4/30	Food webs - Energy flow	Ch 47.5 - <b>Ecology quiz 31- opens - Deadline 11:45 pm Thursday, 5/3</b>
	W	5/02	Biogeochemical cycles	Ch 48.3

	F	5/04	Human impacts and conservation	Ch 49
	<b>T</b>	<b>5/08</b>	<b>Ecology Exam - 12:25 to 1:55 pm</b>	

**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 <b>Friday, Feb. 23, noon</b> . 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	<b>Before lab</b> Read <i>Experiencing Biology</i> , Appendix A, and <i>Experiencing Biology</i> , Chapter 4. <b>During lab</b> Work on Gravitropism presentation.	
March 19 – 23	Competition Ecology – Week 1	<b>Before lab</b> Read <i>Practicing Biology</i> , module 3 (Competition Ecology) Complete pre-lab.	10 Lab points
		<b>During lab</b> Present gravitropism PowerPoints  Draft proposal for Competition Ecology research project	55 Lab points
	IP – First draft	<b>IP First Drafts due Friday, March. 23, noon.</b> Upload electronic copy to Canvas.	IP Progress points
March 26 – 30		<b>SPRING BREAK</b>	
April 2 – 6	Competition Ecology – Week 2	<b>Before lab</b> Review TA comments on preliminary proposals. <b>During lab</b> Finalize research plan and do plantings.	
April 9 – 13	Competition Ecology – Week 3	<b>During lab</b> Complete cheatgrass case study. Take preliminary measurements of your plants.	10 Lab points
April 16 – 20	Competition Ecology – Week 4	<b>During lab</b> Extract data from plants and begin data analysis	
	Independent Project – Final draft peer review	<b>Before lab</b> Complete final draft of IP paper.	IP Progress points
		<b>During lab</b> Complete peer review.	IP Progress points
	IP – Final draft mentor review	<b>Mentored students only</b> – give your mentor a <b>clean</b> and <b>current</b> copy of your final draft by <b>Tuesday, April 17</b>	IP Progress points
April 23 – 27	Competition Ecology – Week 5	<b>During lab</b> Extract final data from plants and complete data analysis for final write-up.	50 Lab points
	IP – Final paper	<b>Before lab</b> Read <i>Experiencing Biology</i> , Chapter 5.	
		<b>IP Final Papers due Friday, Apr. 27, noon.</b> 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	<u>70</u>	<u>7.0</u>
<b>Total</b>	<b>170 points</b>	<b>17%</b>

<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	<u>100</u>	<u>10.0</u>
<b>Total</b>	<b>170 points</b>	<b>17.%</b>

**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.