

Course Title: Principles of Biology: Organisms to Ecosystems

Course Number: BIOL 2103L

Course Credits: 1

Term: Fall 2026

Section 001 Laboratory Meeting Time: M 8:00 AM – 10:50 AM

Section 002 Laboratory Meeting Time: M 11:30 AM – 2:20 PM

Section 003 Laboratory Meeting Time: M 3:00 PM – 5:50 PM

Section 004 Laboratory Meeting Time: M 6:30 PM – 9:20 PM

Section 005 Laboratory Meeting Time: T 8:00 AM – 10:50 AM

Section 006 Laboratory Meeting Time: T 11:30 AM – 2:20 PM

Section 007 Laboratory Meeting Time: T 3:00 PM – 5:50 PM

Section 008 Laboratory Meeting Time: T 6:30 PM – 9:20 PM

Section 009 Laboratory Meeting Time: W 8:00 AM – 10:50 AM

Section 011 Laboratory Meeting Time: W 3:00 PM – 5:50 PM

Section 013 Laboratory Meeting Time: R 8:00 AM – 10:50 AM

Section 014 Laboratory Meeting Time: R 11:30 AM – 2:20 PM

All Sections Laboratory Location: CAST 42

Laboratory Coordinator: Moses J. Michelsohn (he/him)

Laboratory Coordinator Email: mmichelsohn@unm.edu

Laboratory Coordinator Office: CAST 66

Laboratory Coordinator Student Drop-In Hours: By appointment using link on UNM Canvas.

Course Description: The Biology Introductory Series (BIOL 2101, 2102, and 2103L) introduces undergraduate students to the breadth of topics investigated in the field of biology. BIOL 2103L trains students in basic laboratory practices commonly used in a variety of fields in biology.

Course Goals: Students enrolled in BIOL 2103L will:

- 1) develop an understanding of the scientific method and its application in biology – including the formulation of biological hypothesis statements, null hypotheses, and their corresponding statistical hypotheses.
- 2) be trained to collect data using contemporary laboratory equipment commonly used in research settings in biology, critically evaluate sources of experimental error, and analyze data using common statistical methods.
- 3) learn to critically evaluate sources of scientific knowledge, properly cite source materials, and present new scientific understanding in written and oral formats.

Student Learning Outcomes: Students who successfully complete this course will be able to:

- 1) demonstrate a knowledge of the scientific method and its application and effectively communicate scientific results in written and oral formats.
- 2) demonstrate an ability to formulate biological hypothesis statements and corresponding statistical hypotheses about student laboratory exercises.
- 3) demonstrate an ability to collect, organize, and graphically represent experimental data (including measurements of sample error) using spreadsheets and R.
- 4) demonstrate an ability to calculate and summarize student-collected data using basic summary statistics including the mean, the median, variance, and standard deviation.
- 5) demonstrate an ability to apply and interpret frequentist hypothesis testing using Student's one-tailed and two-tailed t-tests to draw conclusions about student-collected data.
- 6) demonstrate an ability to apply and interpret the coefficient of determination in regression analysis of student-collected data.

- 7) demonstrate the proper use of sources, bibliographic references, and citations in student writing.
- 8) demonstrate proper use and care of common laboratory equipment in biology including compound microscopes, dissecting microscopes, calipers, micropipettes, and spectrometers.
- 9) demonstrate proper sterile techniques in the laboratory environment.
- 10) characterize the cellular morphology of Bacteria, Archaea, and Eukarya and explain the non-treelike relationships between the domains of life.

Required Materials: All course assignments in BIOL 2103L will be completed on UNM Canvas. Students enrolled in BIOL 2103L are required to obtain one of the following companion texts in either digital, print, or audio format (students will choose their text during the first week of the course):

- Isaacson, W. (2022) *The code breaker: Jennifer Doudna, gene editing, and the future of the human race*. Simon & Schuster.
- Kimmerer, R. W. (2015) *Braiding sweetgrass*. Milkweed Editions.
- Kolbert, E. (2015) *The sixth extinction: An unnatural history*. Picador.
- Mukherjee, S. (2023) *The song of the cell: an exploration of medicine and the new human*. Scribner.
- Quammen, D. (2019) *The tangled tree: A radical new history of life*. Simon & Schuster.
- Raff, J. (2022) *Origin: A genetic history of the Americas*. Twelve.
- Yong, E. (2018) *I contain multitudes: The microbes within us and a grander view of life*. Ecco.

Course Requirements: Student performance in BIOL 2103L is based on the following:

- **Laboratory Products (LP):** Students are required to complete a laboratory product based on the activities completed during each week's laboratory. Laboratory Products usually consist of a figure and figure caption generated in R-Studio. Laboratory Products must be submitted on UNM Canvas by 11:59pm on the Sunday following each week of laboratory. The lowest two scores (of thirteen total) will be dropped automatically for each student.
- **Reading Assignments (RA):** Students will choose and read a companion text throughout the semester. Individual Reading Assignments will be completed on UNM Canvas each week.
- **Course Surveys (CS):** Students will complete two course survey assignments during the semester – one at the start of the semester and one at the end of the semester. These surveys will be completed on UNM Canvas. Anonymized results of these surveys will be used by the Department of Biology to evaluate, revise, and improve the curricula of biology courses.

Student Time Management: Students are expected to spend approximately two hours working on course materials outside of their scheduled laboratory section each week. Students are encouraged to review the schedule of Student Assistance Drop-in Hours (available on UNM Canvas) while planning when to work on their assignments.

Attendance and Late Work: Students are expected to attend all laboratory sessions each semester. Students are required to arrive on-time to their registered laboratory section every week, and are expected to remain in class for the duration of their scheduled section. Students that arrive late will not be allowed into the their scheduled laboratory session once it has begun. Students that choose to leave before they are dismissed by their Graduate Teaching Assistant will receive a zero for the Laboratory Product grade associated with that laboratory session.

Students that miss their registered laboratory section will receive a zero for the Laboratory Product grade associated with that laboratory session. Students cannot attend other sessions during the week to make up for a missed laboratory session.

All late work in BIOL 2103L (Laboratory Products, Reading Assignments, and Course Surveys) will receive a zero. All assignments associated with the course are completed or submitted online through UNM Canvas and will not allow student access following their due dates.

The lowest two scores on Laboratory Products are dropped automatically for all students in BIOL 2103L. This grading scheme gives students two chances to miss a laboratory session during the semester without serious implications for their course grade (zeros on Laboratory Products dropped as lowest grades). Students who miss lab without excuse do not need to contact their Graduate Teaching Assistant or the Lab Coordinator following a missed laboratory.

Students who miss a laboratory for a potentially excused reason (Medical, Bereavement, Armed Services, UNM Athletics, Traditional Obligation, etc.) must submit an absence report to the Lab Coordinator using the link on UNM Canvas in a timely fashion to arrange for an alternative assignment.

Course Grades: Students are responsible for actively tracking their grades online through UNM Canvas. Students with grade concerns should address them with their course instruction team as soon as possible upon receiving graded work. All grades are considered permanent two weeks after the grade is assigned. Students are responsible for adhering to all UNM grade policies. This course is not offered for Credit/No Credit.

Course Grading Scheme

Assignment Category	Iterations	Drops	Grade Portion
Laboratory Products	12	Two lowest scores	70%
Reading Assignments	12	None	29%
Course Surveys	2	None	1%

Semester Grading Scheme

Grade Range	0 - 59.49	59.5 - 69.49	69.5 - 77.49	77.5 - 79.49	79.5 - 87.49	87.5 - 89.49	89.5 - 97.49	97.5+
Letter Grade	F	D	C	C+	B	B+	A	A+

UNM Accommodations Statement: UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact Accessibility Resource Center at arcsrvs@unm.edu or 505-277-3506.

UNM Course Materials Access Statement: Your digital course materials are directly available now on the My Shelf link in Canvas. Your physical course materials, such as books and required lab/studio course kits, are available at the UNM Bookstore, and you will receive an email about how to pick them up. To simplify your course materials access, you are automatically enrolled in a Complete option at a flat rate of \$279 per semester. This will show up on your bursar bill. The Complete option covers all your required course materials for all your Albuquerque campus courses, including any graduate courses you may be taking (branch campus course materials are billed and available separately). If you are interested in course materials access for only selected courses, or if you want to opt out entirely, you will

need to select the option you want in the My Shelf link in Canvas. You can change your selected option in the My Shelf link in Canvas until the registrar's "Last Day to Drop Without a 'W' Grade and 100% Tuition Refund." Make sure that you review the video and information here to understand cost and the options for Complete (automatic enrollment), Select (take action), and Opt-out (take action).

UNM Credit-hour Statement: This is a three credit-hour course. Class meets for three 50-minute sessions of direct instruction for fifteen weeks during the Spring 2025 semester. Please plan for a minimum of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

UNM Respectful Conduct Expectations Statement: We are committed to building with you a positive classroom environment in which everyone can learn. We (the Course Instruction Team) reserve the right to intervene and enforce standards of respectful behavior when classroom conduct is inconsistent with University expectations [and/or classroom community agreements]. Interventions and enforcement may include but are not limited to required meetings to discuss classroom expectations, written notification of expectations, and/or removal from a class meeting. Removal from a class meeting will result in an unexcused absence. The University of New Mexico ensures freedom of academic inquiry, free expression and open debate, and a respectful campus through adherence to the following policies: D75: Classroom Conduct, Student Code of Conduct, University Policy 2240 – Respectful Campus, University Policy 2210 – Campus Violence.

UNM Responsible Learning and Academic Honesty Statement: Cheating and plagiarism (academic dishonesty) are often driven by lack of time, desperation, or lack of knowledge about how to identify a source. Communicate with instructors and ask for help, even at the last minute, rather than risking your academic career by committing academic dishonesty. Academic dishonesty involves claiming that work created by another source is your own original work. It is a Student Code of Conduct violation that can lead to a disciplinary procedure. When you use a resource in work submitted for this class, document how you used it and distinguish clearly between your original work and the material taken from the resource.

UNM Thriving and Finding Support Statement: Students are especially successful at UNM when they take advantage of support and get involved in campus and academic life. Your MyUNM login page provides direct links to wellbeing resources, including financial capability, mental health, food, jobs, and resource centers. MyUNM will help you identify academic resources like peer tutoring and opportunities like study abroad. You can contact academic advisors and resource advisors for information and guidance via Student Hub on MyUNM. We look forward to providing you with information about academic opportunities related to our class and to helping you find support resources.

UNM UAP 2720 and 2740 Statement: Our classroom and university should foster mutual respect, kindness, and support. If you have concerns about discrimination, harassment, or violence, please seek support and report incidents. Find confidential services at LoboRESPECT Advocacy Center, the Women's Resource Center, and the LGBTQ Resource Center. UNM prohibits discrimination on the basis of sex (including gender, sex stereotyping, gender expression, and gender identity). All instructors are "responsible employees" who must communicate reports of sexual harassment, sexual misconduct and sexual violence to Compliance, Ethics and Equal Opportunity. For more information, please see UAP 2720 and UAP 2740.

UNM Indigenous Peoples' Land and Territory Acknowledgement: Founded in 1889, the University of New Mexico sits on the traditional homelands of the Pueblo of Sandia. The

original peoples of New Mexico — Pueblo, Navajo, and Apache — since time immemorial, have deep connections to the land and have made significant contributions to the broader community statewide. We honor the land itself and those who remain stewards of this land throughout the generations and also acknowledge our committed relationship to Indigenous peoples. We gratefully recognize our history.

UNM Religions and Faith Traditions Statement: The University of New Mexico promotes respect for all religions and faith traditions. Any student who is unable to attend classes or to participate in any examination, presentation, or assignment on a given day because of the observance of a major religious holiday or cultural observance, or due to related travel, is encouraged to speak with their instructor about an excused absence and opportunities to make up, without unreasonable burden, any work that has been missed.

UNM Statement Acknowledging the Labor and Sacrifices of Black Americans: UNM Statement Acknowledging the Labor and Sacrifices of Black Americans: At UNM, we respectfully acknowledge the traumatic history of brutality against and forced labor by Black Americans who have advanced our country. We are indebted to the enslaved and exploited descendants of the African continent whose sacrifices established our U.S. infrastructure and economy, advanced civil rights, and continue to influence popular culture, agriculture, the sciences, health care, and all aspects of society. We are obligated to continuously recognize, and repair historic and current systemic oppression and injustices placed on Black Americans. We are grateful to them and their ancestors; without them, we would not be where we are today.

UNM Statement Honoring Immigrants in The United States: UNM Statement Honoring Immigrants in The United States: The United States of America is a country that is built on the strength of immigrants that came here, either voluntarily or involuntarily. Whether they look or speak differently from us, we will do our best to understand, respect, appreciate, and value their cultures and contributions, with the ultimate goal to welcome them and elicit their potential for the betterment of all societies.

BIOL 2103L Use of Artificial Intelligence (AI) Statement: Student use of generative Artificial Intelligence (AI) tools is welcome so long as student use aligns with the course goals and student learning outcomes. Reading Assignments (RA) are the only 'open-book' graded assignments in this course. Reading Assignments are intended to inspire students to engage with interesting topics in biology and highlight important aspects of the reading – students are asked to complete these assignments in ways that encourage their own professional growth and understanding. RA-11 asks students to write a summary of a chosen scientific work demonstrating the ability to engage with, understand, and communicate scientific concepts – use of generative AI on this assignment is not permitted.

Laboratory Schedule: Fall 2026

Week	Date	Lecture Topic and Assigned Readings
01	Aug 17 - Aug 21	Laboratory Topic: The Process of Science Due by 11:59 PM on Aug 23: LP-01, RA-01, CS-01
02	Aug 24 - Aug 28	Laboratory Topic: Characterizing a Freshwater Community Due by 11:59 PM on Aug 30: LP-02
03	Aug 31 - Sep 04	Laboratory Topic: Ecomorphology of Kingfishers Due by 11:59 PM on Sep 06: LP-03, RA-02
04	Sep 07 - Sep 11	No Laboratory: Labor Day Due by 11:59 PM on Sep 20: RA-03
05	Sep 14 - Sep 18	Laboratory Topic: Tree Thinking Due by 11:59 PM on Sep 20: LP-04, RA-04
06	Sep 21 - Sep 25	Laboratory Topic: Phylogenetic Inference Due by 11:59 PM on Sep 27: LP-05, RA-05
07	Sep 28 - Oct 02	Laboratory Topic: Domains of Life Due by 11:59 PM on Oct 04: LP-06, RA-06
08	Oct 05 - Oct 09	No Laboratory: UNM Fall Break
09	Oct 12 - Oct 16	Laboratory Topic: Genetics of PTC Response Due by 11:59 PM on Oct 18: LP-07, RA-07
10	Oct 19 - Oct 23	Laboratory Topic: Metabolism in Yeast Due by 11:59 PM on Oct 25: LP-08, RA-08
11	Oct 26 - Oct 30	Laboratory Topic: Quantifying Biodiversity Due by 11:59 PM on Nov 01: LP-09, RA-09
12	Nov 02 - Nov 06	Laboratory Topic: Population Dynamics Due by 11:59 PM on Nov 08: LP-10, RA-10
13	Nov 09 - Nov 13	Laboratory Topic: Ecological Disturbance Due by 11:59 PM on Nov 15: LP-11, RA-11
14	Nov 16 - Nov 20	Laboratory Topic: The Carbon Cycle Due by 11:59 PM on Nov 22: LP-12, RA-12
15	Nov 23 - Nov 27	No Laboratory: Thanksgiving
16	Nov 30 - Dec 04	Laboratory Topic: Conservation Due by 11:59 PM on Dec 06: LP-13, CS-02
17	Dec 07 - Dec 11	No Laboratory: UNM Final Examinations