Evolution (Laboratory)

Course Title: Evolution
Course Number: BIOL 300C
Course Prerequisites: BIOL 2101, BIOL 2102, and BIOL 2103L
Course Credits: 4
Term: Spring 2026
Section 001 Laboratory Meeting Time: M 8:00 AM – 10:50 AM
Section 003 Laboratory Meeting Time: M 11:30 AM – 2:20 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 009 Laboratory Meeting Time: W 8:00 AM – 10:50 AM
Section 011 Laboratory Meeting Time: W 3:00 PM – 5:50 PM
All Sections Laboratory Location: CAST 60

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: This combined lecture and laboratory course provides an overview of basic principles and contemporary issues in evolution.

Course Goals: Students will learn principles and concepts in evolution, the foundational process which underlies all of biology. There will be a strong emphasis on understanding the process of science as applied by evolutionary biologists. Your analytical and quantitative abilities will be reinforced and improved, and you will gain skills in critical thinking that will make you a more scientifically-aware participant in society.

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

1. Describe the historical development of the ideas of evolutionary change and evolution by natural selection.
2. Synthesize the evidence in support of major evolutionary concepts including microevolution, speciation, macroevolution, and common descent.
3. Demonstrate an ability to interpret and build phylogenetic trees, and to use them to answer evolutionary questions.
4. Describe basic microevolutionary mechanisms shaping genetic variation in nature.
5. Apply the framework and assumptions of Hardy-Weinberg Equilibrium to understand how and why allele frequencies shift within populations.
6. Synthesize examples to describe the power and limitations of natural selection in driving adaptation in nature.
7. Explain the causes and consequences of the evolution of sex, sexual selection, and inbreeding.
8. Understand the genetic basis of complex traits.
9. Describe the landmark events in the history of life and the drivers of speciation and extinction.
10. Synthesize evolutionary principles to explain how evolution has shaped and continues to shape human biology, health, culture, and society.

Required Materials: Some course assignments in BIOL 300C will be completed on UNM Learn. Students enrolled in BIOL 300C are required to obtain the following materials:

- Futuyma, D. J., & M. Kirkpatrick. (2023). *Evolution* (Fifth Edition). Oxford University Press

Laboratory Requirements: Student performance in BIOL 300C laboratory 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 Learn 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.
- **Research Report (RR):** Students will work throughout the semester to write and revise a research report based on data collected in the laboratory. Individual Research Report assignments will be introduced each week in the laboratory, or online on UNM Learn. A final Research Report will be submitted near the end of the semester incorporating many of the components composed and revised by students throughout the semester.
- **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 Learn. Anonymized results of these surveys will be used by the Department of Biology to evaluate, revise, and improve the curricula of biology courses.

Laboratory 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 300C (Laboratory Products, Research Report assignments, and Course Surveys) will receive a zero. All assignments associated with the laboratory are completed or submitted online through UNM Learn 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 300C. 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 Learn 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.

Laboratory Grading Scheme

Assignment Category	Iterations	Drops	Grade Portion

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Laboratory Products	13	Two lowest scores	10%
Research Report	12	One lowest score	14%
Course Surveys	2	None	1%

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.

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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 300C Laboratory Use of Artificial Intelligence (AI) Statement: Student use of generative Artificial Intelligence (AI) tools in writing assignments (RR) is not permitted.

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Students are expected to read and interpret scientific literature, then compose original scientific writing based on their understanding and the results of their experiments. Use of generative AI in the composition of writing assignments (RR) will result in a zero for the individual assignment.

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Laboratory Schedule: Spring 2026

Week	Date	Lecture Topic and Assigned Readings
01	Jan 19 – Jan 23	No Laboratory: Martin Luther King Jr. Day
02	Jan 26 – Jan 30	Laboratory Topic: Darwinian Evolution **Due by 11:59 PM on Feb 01: LP-01, RR-01, CS-01**
03	Feb 02 – Feb 06	Laboratory Topic: Origins of COVID-19 **Due by 11:59 PM on Feb 08: LP-02, RR-02**
04	Feb 09 – Feb 13	Laboratory Topic: Literature Analysis: Crandall (1995) **Due by 11:59 PM on Feb 15: LP-03, RR-03**
05	Feb 16 – Feb 20	Laboratory Topic: Trait Evolution in a Model Population **Due by 11:59 PM on Feb 22: LP-04, RR-04**
06	Feb 23 – Feb 27	Laboratory Topic: Modeling Selection *in silico* **Due by 11:59 PM on Mar 01: LP-05, RR-05**
07	Mar 02 – Mar 06	Laboratory Topic: Modeling Non-selective Evolution *in silico* **Due by 11:59 PM on Mar 08: LP-06, RR-06**
08	Mar 09 – Mar 13	Laboratory Topic: Literature Analysis: Kimoura (1968) **Due by 11:59 PM on Mar 22: LP-07, RR-07**
09	Mar 16 – Mar 20	No Laboratory: UNM Spring Break
10	Mar 23 – Mar 27	Laboratory Topic: Patterns of Origination and Extinction **Due by 11:59 PM on Mar 29: LP-08, RR-08**
11	Mar 30 – Apr 03	Laboratory Topic: Artificial Selection in a Model Population **Due by 11:59 PM on Apr 05: LP-09, RR-09**
12	Apr 06 – Apr 10	Laboratory Topic: Patterns of Species Diversification **Due by 11:59 PM on Apr 12: LP-10, RR-10**
13	Apr 13 – Apr 17	Laboratory Topic: Literature Analysis: Gould & Lewontin (1979) **Due by 11:59 PM on Apr 19: LP-11, RR-11**
14	Apr 20 – Apr 24	Laboratory Topic: Red Queen Dynamics **Due by 11:59 PM on Apr 26: LP-12, RR-12**
15	Apr 27 – May 01	Laboratory Topic: Conservation Genetics **Due by 11:59 PM on May 03: LP-13, CS-02**
16	May 04 – May 08	No Laboratory
17	May 11 – May 15	No Laboratory: UNM Final Examinations

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