



Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

Semester: Spring

Course Prefix: BIOL

Course Title: Principles of Evolution

Year: 2025

Course and Section #: 4500-004

Credits: 3

Course Description

“Nothing in biology makes sense except in the light of evolution”—Theodosius Dobzhansky

Evolutionary biology seeks to make sense of the miraculous diversity that exists within and among organisms on the planet. The concepts within this field of biology help us make sense of disease, viruses, ecology, and variation as a whole. This course will provide students with a broad conceptual foundation and capstone for life science courses they have taken or will take.

Course Attributes

This course has the following attributes:

- General Education Requirements
- Global/Intercultural Graduation Requirements
- Writing Enriched Graduation Requirements
- Discipline Core Requirements in Program
- Elective Core Requirements in Program
- Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Dr. Carl E Hjelman

Student Learning Outcomes

- Discuss classic literature and historical figures on the subject of evolutionary biology.
- Explain the molecular and genetic basis for evolution.
- Explain the mechanisms of evolution (natural selection, migration, genetic drift, mutation, and nonrandom mating) and their relationship to genetics of populations and sources of variability.
- Apply Hardy-Weinberg calculations to various populations.
- Describe the mechanisms of speciation and origin of new species.
- Evaluate how the fossil record relates to current views of evolution.
- Analyze evolutionary trends demonstrated by phylogeny.

- Investigate the course of evolution in prokaryotes and eukaryotes, with an emphasis on hominin evolution.
 - Compose a variety of disciplinary-appropriate texts; for example, scientific essays evaluating various evolutionary topics, scientific posters, scientific manuscripts, mock grant proposals, etc.
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Course Materials and Texts

Recommended text: Evolution 3rd Edition
Bergstrom and Dugatkin

We will be discussing a number of papers and classic literature. These required readings will be posted in PDF format on Canvas.

Course Requirements

Course Assignments, Assessments, and Grading Policy

Assignments and Project Descriptions

Discussion “précis” (10%)

A précis is a short summary of a text or speech. Each week in which we have a discussion over a paper you will be required to submit a précis that accompanies the text. These are required by the beginning of class to ensure everyone reads the material. A précis includes information such as the question being asked, identification of the hypothesis, a summary of the findings, and at least one question you have about the material. Specific rubrics and descriptions can be found on Canvas.

Leading Discussion (10%)

Many weeks, we will spend Fridays discussing a relevant and/or historical from the primary literature (peer reviewed work). Students must sign up to lead (or co-lead) a discussion. Students may utilize slide shows, the white board, etc., but must be prepared to lead the class in the discussion.

Assignments (25%)

In some of the sections, we will focus on the application of skills and utilization of tools. Handouts will accompany these activities and must be turned in on Canvas for assessment and feedback. Other sections will have short essays and papers to write up. Rubrics will accompany written assignments.

Exams (30%)

There will be two take home exams throughout the semester (see dates on schedule) and make up 30% of your final grade (15% each). These exams will be “take-home” exams and may include some basic recall of information from lectures, but will focus primarily on interpretations, critical thinking, and thoughtful discussion over open-ended questions.

Final Project (25%)

While we will cover a lot of material in this course, we may not cover an organism or evolutionary topic that is of most interest to you. In order to enrich the material we learn in lectures, students will construct their own review of an organism/evolutionary topic. This project will be scaffolded throughout the semester, with: 1) selection of topic, 2) Outline and Annotated Bibliography, 3) Meeting with Dr. Hjelman, 4) peer review, 5) in class review of posters. More details and a rubric to follow.

Students will present their posters in the final week of class.

Late work:

I will keep the window for submitting assignments open, but they will accrue a 10% grade deduction daily.

I understand that life can be chaotic and there are many things outside of your control. **If you are unable to complete an assignment for any reason by the due date, please let me know and we can work something out!** Remember to always let Dr. Hjelman know if you're going to be late!

Required or Recommended Reading Assignments

For Class – Ch. 1
<i>For Class:</i> – Ch. 2
For Class – Ch. 6 –
<i>For Class:</i> – Ch. 2 <i>For Discussion:</i> – Malik 2017
For Class – Ch. 3 <i>For Discussion:</i> – Mayr 1993
<i>For Class:</i> – Ch. 16 <i>For Discussion:</i> – Grant and Grant 2003
<i>For Discussion:</i> – Simmons and Emlen 2006
<i>For Class:</i> – Ch. 7-8 <i>For Discussion:</i> Dobzhansky 1957

<p><i>For Class:</i> – Ch. 14.1</p> <p><i>For Discussion:</i> – Mayr 1996</p>
<p><i>For Class:</i> – Ch. 14.2-3</p> <p><i>For Discussion:</i> – Hutchinson 1959</p>
<p>For Class – Ch. 14.3-4</p> <p>For Discussion: – Felsenstein 1981</p>
<p><i>For Class</i> – Ch. 4 and 5</p> <p><i>For Discussion:</i> – Bush 1993</p>
<p>For Class – Ch. 19</p>
<p>For Class – Ch. 19</p> <p><i>For Discussion:</i> – Mayr 1981</p>

General Description of the Subject Matter of Each Lecture or Discussion

1	Jan. 6	Intro & Syllabus
	Jan. 8	Science as a way of knowing
	Jan. 10	How to read a paper pt. 1
2	Jan 13	How to read a paper pt. 2
	Jan. 15	How to read a paper pt. 3

	Jan. 17	What is Evolution (video recording), no in person class
3	Jan. 20	MLK Jr. Day—NO CLASS
	Jan. 22	Relevance of Mendel/Others
	Jan. 24	Darwin history (no class)
4	Jan. 27	Mendel Cont.
	Jan. 29	Modern Synthesis
	Jan. 31	Discussion: Pre-Darwin Ideas
5	Feb. 3	Mechanisms: Selection
	Feb. 5	Mechanisms: Selection
	Feb. 7	Discussion on Modern Synthesis
6	Feb. 10	Mechanisms: Sexual Selection
	Feb. 12	Mechanisms: Sexual Selection
	Feb. 14	Discussion: Darwin's Finches
7	Feb. 17	Holiday—NO CLASS
	Feb. 19	Mechanisms: Drift/Gene Flow
	Feb. 21	Discussion: Trade-offs
8	Feb. 24	Hardy-Weinberg
	Feb. 26	Hardy-Weinberg
	Feb. 28	Discussion: Genetic Drift
9	Mar. 3	Hardy-Weinberg Work Day
	Mar. 5	What is a species?
	Mar. 7	Discussion: What is a species?
-	Mar. 10-14	SPRING BREAK—NO CLASS
10	Mar. 17	What is a species?
	Mar. 19	What is a species?
	Mar. 21	Discussion: Why are there so many animals?
11	Mar. 24	Speciation

	Mar. 26	Speciation
	Mar. 28	Discussion: Skepticism to Santa Rosalia
12	Mar. 31	Phylogenetics Hands on
	Apr. 2	Phylogenetics Hands on
	Apr. 4	Discussion: Reaffirmation of Santa Rosalia
13	Apr. 7	Speciation and Human Evolution
	Apr. 9	Human Evolution
	Apr. 11	Review of posters
14	Apr. 14	Review of posters
	Apr. 16	Human Evolution
	Apr. 18	Discussion: Biological Classification
15	Apr. 21	Poster Presentations

Required Course Syllabus Statements

Generative AI

Disclaimer – Artificial Intelligence and use of tools like ChatGPT

Artificial intelligence (AI) is becoming an ever-prevalent tool in society and it is important to understand how this tool works. It is important to recognize this as a “tool” and not a “crutch”. AI is prone to “hallucinating” and giving incorrect or false results; it also does not allow me to gauge **your understanding** of material. I encourage use of all resources for your work but ask that you make it your own and that you do not ask AI to complete your assignments for you. If you utilize AI, be sure to indicate it in your response that you used AI and indicate how you corrected the response and made it your own. If I feel you are not adequately responding or that you are relying on AI too much, I reserve the right to remove points on responses, up to zero credit

Using Remote Testing Software

This course does not use remote testing software.

This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers’ immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or

immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.