

## Master Course Syllabus

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

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**Semester:** Spring

**Course Prefix:** BIOL

**Course Title:** Principles of Evolution

**Year:** 2025

**Course and Section #:** 4500-X01

**Credits:** 3

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### *Course Description*

Focuses on the concepts of evolution as a fundamental principle of biology. Emphasizes the mechanisms and explanations of the tremendous diversity of life. Studies classical, molecular and current explanations of evolution in the background of current techniques and understanding of the genetic processes. Examines the principles of evolution and the various aspects of natural selection and speciation.

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### *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.*

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### *Instructor Information*

**Instructor Name:** Savannah Olroyd

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### *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 posters, scientific manuscripts, mock grant proposals, articles for engagement with the general public, etc.
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## ***Course Materials and Texts***

Access to the Canvas site will be critical as exams, quizzes, assignments, grades, discussion boards, and other announcements will be posted there. A pdf of Evolution 3rd edition by Ridley is available on Canvas to use for free.

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## ***Course Requirements***

### **Course Assignments, Assessments, and Grading Policy**

#### Paper summary (10%)

Each week you will be required to read a scientific paper and submit a summary of it. This should include 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.

#### Paper discussions (20%)

A discussion board will be opened each week to discuss the paper you read. You are required to make at least one thoughtful post about the paper. These posts can be describing something you liked or didn't like about the paper, something you didn't understand, ideas or things you were curious about, etc.

#### Quizzes and assignments (25%)

You will take a quiz at the end of each module.

#### Exams (20%)

There will be two take home exams throughout the semester (see dates on schedule) and make up 20% of your final grade (10% 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. Olroyd, 4) peer review, 5) in class review of projects. More details are available on Canvas.

#### **Grading Scale:**

A 100% - 94%; A- 93.9% - 90%; B+ 89.9% - 86%; B 85.9% - 83%; B- 82.9% - 80%; C+ 79.9% - 76%; C 75.9% - 73%; C- 72.9% - 70%; D+ 69.9% - 66%; D 65.9% - 63%; D- 62.9% - 60%; E 59.9% and below

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### **Required or Recommended Reading Assignments**

A pdf of Evolution 3rd edition by Ridley is available on Canvas to use for free.

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### **General Description of the Subject Matter of Each Lecture or Discussion**

Introduction to evolutionary biology: How scientists study evolution.

History of evolutionary study: Evolutionary ideas from before Darwin to the Modern Synthesis

The fossil record: How fossils form, what information we can get from them, and what they tell us about the history of life

Writing practices: How to write a paper with a well-supported argument

Phylogenetics: Methods for determining evolutionary relationships between organisms

Genetics: Mendelian genetics, signatures of selection, evolution and development, quantitative genetics

Mechanisms of evolution: Natural selection, genetic drift, artificial selection, and sexual selection

Speciation: Specie concepts and barriers to hybridization

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Macroevolution: Species selection, extinction and origination rates, coevolution

Human Evolution: The fossil record of human ancestors

Evolutionary medicine: Antibiotic resistance and other medical applications of evolutionary biology

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## ***Required Course Syllabus Statements***

### **Generative AI**

AI is rapidly expanding as an important tool in a wide range of fields. However, it is crucial to learn how to use it correctly. AI is great to use as a starting point, but it should not be a replacement for your own work. Often times, AI is not factually reliable and will not only make things up, but will lie about where it got its information. If you use AI to help you complete an assignment, you must fact check it, which often involves greater mastery of a subject than simply writing your own answer. You must also indicate that AI was used to complete that assignment, as documenting the use of AI for work is becoming a standard practice. For some assignments I will not allow the use of AI, and I will specify which those are.

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### **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.

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## ***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](mailto: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](mailto:DHHservices@uvu.edu)

DHH is located on the Orem Campus in BA 112.

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### **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](#).

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### **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](mailto:TitleIX@uvu.edu) – 800 W University Pkwy, Orem, 84058, Suite BA 203.

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### **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](mailto: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.