Syllabus BIOL 3338 – BIOLOGICAL EVOLUTION – Spring 2026

Professor:
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Course Meeting Time: TTh 12:30-1:50 pm, RBN 3035

Office Hours: M 10-11am, TTh, 10-11:30 am or by appointment

Comments about emails. Emails sent during normal business hours (e.g., 9am to 5pm) can usually expect a reply that day. Emails sent in the evening or early morning (e.g., 1am) most likely will not receive a reply until the following day. Emails sent over the weekend (Friday evening until Sunday evening) or on holidays also most likely will not be answered until the next business day. Nevertheless, I periodically check my email outside of business hours and will reply, when possible, to emergencies. So, if you have an emergency, send the email so that I have record of it and I will respond when I can.

COURSE DESCRIPTION: This course provides an overview of the mechanisms and processes of evolutionary change at the population, organismal, cellular, and molecular levels. It also provides an overview of the history of Earth and its biota including geological time, fossils, and man. Prerequisites: BIOL 1306/1106, BIOL 1307/1107 and BIOL 3332 (Genetics).

STUDENT LEARNING OBJECTIVES: Upon completion of BIOL 3338, the student should be able to

- define biological evolution and discuss the rise of modern evolutionary biology
- apply genetics to evolutionary biology
- identify evidence for evolution
- know what conditions are required for natural selection to operate and other mechanisms of evolutionary change
- distinguish between directional, stabilizing, and disruptive forms of selection
- define adaptation, how they evolve, and understand at what level selection is operating
- differentiate among species concepts and understand the mechanistic hypotheses for speciation
- understand the basics of molecular evolution
- understand phylogenies
- understand mechanisms of speciation
- understand the evolutionary history of humans

Required Texts:

1. Bergstrom, Carl T. and Lee A. Dugatkin. 2023. *Evolution*. Norton. https://wwnorton.com/books/9781324033714

2. Gould, Stephen Jay (1990). *Wonderful Life: The Burgess Shale and the Nature of History*. W.W. Norton Press

Additional required readings from the primary literature may be announced from time to time.

Evaluation: Grades will be partly based on the performance on four exams. The final exam will be optional and will replace the lowest regular exam grade. The final exam will be cumulative. Material for the exams will come from the lecture, videos and guest lectures and the required text. More details may be announced in class.

Evaluation Summary:

1. Four exams (each will be worth 100 points, 400 points total)
    a. Optional Final Exam 100 points (will replace your lowest exam)
2. *Wonderful Life* quiz, taken at the end of the semester (50 points)
3. Attendance (100 points)

Optional Final Exam 100 points (will replace your lowest exam)

Total Points possible: 560 points

Final grades in the course will be determined by a standard grading system
90 – 100% = A 80 – 89% = B 70 – 79% = C 60 – 69% = D < 59% = F

Rounding: Grades will be rounded to the nearest whole number. Therefore, a 79.1 would be rounded down to a 79 (a 'C') and a 79.6 would be rounded up to an 80 (a 'B') and so on. This also means that grades in the middle of a bin, e.g., a 77 or an 87 will not be rounded to an 80 or 90, respectively.

1. **Exams.** Each student will have an entire class period take the exam. Pay attention to all announcements in class on on Canvas. See policy on missed exams and assignments below. Although exams will stress the material preceding each exam, all exams should be considered comprehensive (as is all biology). Exams will cover the materials presented in lectures and assigned readings. Exams may contain a mix of multiple choice, definitions and essay/short answer questions. If you arrive late to class and everyone has completed the quiz or exam, you will not get a makeup quiz or exam. If you arrive late and someone has taken the quiz (or exam) and left the room, you will not get a quiz or exam. Arrive to class on time. **Realize that questions of written exams are not 'open ended questions' or opinion-based. The questions I ask you will have definite, correct answers and will not involve your opinions unless I explicitly ask you for your opinions.** Also realize that if you write a very long answer but do not answer the question and/or provide factually incorrect statements, you may earn 0 points for that question. While you may earn partial credit, depending on the completeness of your answers, do not expect to receive points for effort. If you do not answer the

question, you will receive zero points. Students must answer the questions clearly using complete sentences, not bullets or phrases. This is not meant to torture students, but the ability to communicate effectively and remember content across courses are very important skills. Thus the clarity of written answer will be a factor in grading. Except for invited speakers during the UT Tyler Darwin Day celebration, **I do not give extra credit.**

2. **Attendance.** Attendance is mandatory and will be taken in class. If you sign in for a friend (or friends), all of you will be counted as absent. Also, if you sign in and then leave before class is dismissed, you will be counted as absent. Please realize that some days I will not take attendance.

3. ***Wonderful Life* Quiz**. You are required to read this book. My recommendation would be to read this book early in the semester, take notes and think about it as we explore other topics throughout the semester. This book should help you think about evolutionary history. There will be an in-class, open-note quiz about this book toward the end of the semester. You will need to have read this book to perform well on the quiz. Do not rely on a AI summary or anything other than the original text.
4. **Syllabus Quiz**. There will be a short, online quiz in the first 1-2 weeks on course policy.

More on grading. In the event you wish to dispute an exam question, an essay outlining your argument must be submitted within one week of the exam being handed back to you. Your request must be justified with content from the lecture, textbook or other scientific peer-reviewed source, i.e., not random websites. Calculation mistakes must also be made in writing. No make-up exams will be given, unless arranged ahead of time with a valid excuse (e.g., athletic tournament, hospitalization, etc.).

No Grade Grubbing (please!). Grade grubbing is asking for points you did not earn. It's unethical to ask and would be unethical for me to award points. Also, within the category of grade grubbing is asking for exams or quizzes to be regraded outside the window where you are allowed to do so. Grade grubbing is **not** asking about your grades or trying to understand where you went wrong.

Academic Misconduct: Submitting plagiarized work to meet academic requirements including the representation of another's work or ideas as one's own; the unacknowledged word for word use of another person's ideas; and/or the falsification, fabrication, or dishonesty in reporting research results shall be grounds for charges of academic misconduct. **Any cheating or other type of academic misconduct will be reported to university administration and at minimum will result in automatic failure of the course.** Cell phone use during exams or quizzes is strictly forbidden.

Supplements: Illustrations, announcements and PowerPoint presentations will be available on Canvas. These materials are strictly for your own use, and are not to be disseminated to anyone else, under any circumstances. Lectures may be supplemented by films shown during

class. Films and videos are not 'busy-work' and will contain testable information and will provide new information or reaffirm the information presented in lecture. **Lectures and supplements represent testable material.** The textbook also has an excellent website with quizzes and other study aids. https://learninglink.oup.com/access/bowman6e. While the online supplements will not directly count toward your grade, students who avail themselves of this feature often learn more and have higher grades.

Study Help. I will distribute study guides that contain a list of concepts or pose questions that should help you master the topics in this course. These lists are not exhaustive but should point you toward the correct direction.

Artificial Intelligence Statement

For this course, **AI is not permitted in this course at all**. I expect all work students submit for this course to be their own. I have carefully designed all assignments and class activities to support your learning. Doing your own work, without human or artificial intelligence assistance, is best for your efforts in mastering course learning objectives. For this course, I expressly forbid using ChatGPT or any other artificial intelligence (AI) tools for any stages of the work process, including brainstorming. Deviations from these guidelines will be considered a violation of UT Tyler's Honor Code and academic honesty values.

TENTATIVE CLASS SCHEDULE
(Changes will be announced in class)

Lecture Topics (Chapters)

Introduction (1)
Evidence of Evolution (2)
Natural Selection (3)
Population Structure/Genetic Drift (8)

Feb 5 – Exam 1

Evolution of Sex (16)
Evolutionary Medicine (20)
Evolutionary Genetics/Genomics (6,10)

March 5 – Exam 2

Molecular Evolution Ch. 8, 5(287-304)
Phylogenetics (4, 5)
Speciation (14)
Coevolution (18)

April 2 – Exam 3

History of Life on Earth (11, 12)
Extinction (15)
Human Evolution (19)

April 23 – Exam 4

Final Exam TBA (April 28-May 2)

Important Dates:

January 19: Martin Luther King, Jr Day (No Class)
January 26: Census Date
March 30: Withdrawal Date
March 9-13: Spring Break (No Class)
April 24: Last Day of Classes
April 27-30, Final Exam Week