



# TEXAS A&M UNIVERSITY SAN ANTONIO

## Syllabus

Evolution - BIOL 3305 – 001

Lecture SciTech 141: Wednesdays, 3:00 – 5:45 pm

### Course Description and Prerequisites:

A conceptual examination of evolutionary theory, as evidenced by case studies of specific organismal evolutionary events. Evidence for the abiotic origin of life is presented, with discussions of micro-evolutionary (e.g., genetic drift, natural selection) and macro-evolutionary (speciation, adaptations, biogeography) mechanisms. Prerequisites: BIOL 2411.

### Course Objectives:

- Enhance your understanding of Darwin's Theory of Evolution that help explain patterns observed in the natural world and through the history of life.
- Evaluate the evidence, key concepts and mechanism of the Theory of Evolution including, mutation, natural selection, speciation, adaptation, population genetics and phylogenetic systematics.
- To illustrate applications of the theory of evolution, specific case studies will be evaluated to provide an understanding of the natural world and how scientists evaluate the evolutionary relationships among living and extinct organisms.
- Apply knowledge gained from the course to identify the underlying mechanisms that explain complex biological systems.

### Instructor Information

**Name:** Liz Borda, Ph.D.  
**Office/Lab:** SciTech 311P / 364  
**Email address:** [eborda@tamusa.edu](mailto:eborda@tamusa.edu)  
**Website:** <https://sites.google.com/site/lizborda/>  
**Office Hours:** Tues/Thurs, 3:30 – 5:00, or by appointment

### Course Resources

#### Highly Recommended:

Understanding Evolution: [https://evolution.berkeley.edu/evolibrary/article/evo\\_01](https://evolution.berkeley.edu/evolibrary/article/evo_01)

#### Recommended:

Evolution (5th Edition), Futuyma and Kirkpatrick (2017)

# Course Policies

## Course Expectations:

Personal and academic integrity, to be open to new ideas, and to share in a community where individuals from diverse backgrounds and cultures help one another grow intellectually, socially, and personally is always expected throughout the course. The faculty and staff of TAMUSA are here to help; however, students must take responsibility for their own learning. Students should strive for a high level of academic performance and to be responsible, respectful, contributing citizens within the university and in outside communities. Above all, students should develop a love of learning that will last a lifetime, along with a life-long interest in maintaining emotional and physical wellness.

## Course Preparation:

Completion of course lessons, quizzes, and assignments will be crucial for being successful in this course. Online lecture and course materials for each Lesson will be made available every Friday. There is no required textbook for this course, but any Evolution textbook can be used as a supplement for topics covered in this course, as well as the online free resources, such as Understanding Evolution. Additional resources will be posted on Blackboard as needed. In general, you should be committing at least 4-6 hours a week on each lesson module, including lab and video assignments.

## Lectures:

Lectures are face-to-face unless specified otherwise in the course schedule. Please make note of “Mandatory in class work” days, where attendance and participation are expected to complete assignments in class. For lecture days that are designated as online, a Zoom link will be provided. For lecture days where the instructor will be unavailable due to travel, a pre-recorded lecture will be provide for that day’s lesson review.

## Grading:

If you believe an error was made in grading, please do not hesitate to bring it to my attention as soon as possible. If you find yourself struggling with this course, please talk to the instructor as soon as possible and do not wait until the end of the semester. You are always welcome to stop by my office or email me to make an appointment to discuss your concerns.

A = 89.5%+      B = 79.5%+      C = 70%+      D = 60%+      F = <60%

<b>Exams (x 4)</b>	50% (Averaged across exams)
<b>Final Exam</b>	25%
<b>Assignments</b>	20%
<b>Post-Quizzes</b>	5%

### Exams and Quizzes:

There will be four scheduled in-class exams and an online final exam. Lecture exams will generally not be cumulative BUT will build on the understanding of material covered in earlier lessons; the Final Exam will be cumulative. Material covered on lecture exams will include the lesson modules prior to the exam (e.g., Exam 1, Lessons 1 and 2; Exam 2, Lessons 3 and 4, and so on). The format will be multiple choice, matching, true/false, problem solving, and short answer. Quizzes are meant to serve as study guides and to test your knowledge on material being covered. To take your exam, please make sure you have access to a computer/laptop with a webcam (for off campus access). The exams will be timed (75 min) and conducted in the classroom (unless specified otherwise). Post-Lecture Quizzes will not be timed, but only single submissions will be allowed, unless there is an error from the instructor's end, or by request.

### Assignments:

Learning exercises during class provide you with hands-on opportunities to apply your knowledge and develop critical thinking skills that are prerequisites for practicing science. Completion of all assignments is mandatory.

If you make no attempt to communicate with the instructor/teaching assistant regarding your reasons for not completing assignments, you will receive a zero/NC.

### Blackboard and Course Communication:

The instructor will hold virtual office hours by appointment, to be available to answer any questions or conduct minor reviews of course material. Grades will be posted and made accessible through the course's Blackboard site. Students must login regularly to both the Blackboard site and to their TAMUSA email account to keep updated on information or changes related to the class. Each student **MUST** have an active TAMUSA e-mail account. Messages may be sent student-to-instructor using the Message tab feature in Blackboard. Please allow 24 hours for a response.

### Student Support and University Policies:

Please refer to **Important Policies and Resources** in separate document available on Blackboard (Syllabus tab), that provides detailed information on academic accommodations, tutoring and writing support, counseling and wellness resources, emergency preparedness, financial aid attendance requirements, student rights and responsibilities, diversity and inclusion expectations, military and religious accommodations, and other essential university policies and services.

## Detailed Schedule

Class schedule is subject to changes

Week of	Topic	Topics/Activities	Assignments/Due Dates
Jan 19	<b>LESSON 1: What is Evolution?</b>	<ul style="list-style-type: none"> <li>Course Introductions and Overview</li> </ul>	<ul style="list-style-type: none"> <li>Video: "Evolution: What Darwin Never Knew"</li> </ul>
Jan 26	<b>LESSON 1a: History of Evolutionary Thought</b>	<ul style="list-style-type: none"> <li>Before Darwin</li> <li>Darwin and after</li> </ul>	
Feb 2	<b>LESSON 2: Patterns</b>	<ul style="list-style-type: none"> <li>Tree of Life</li> <li>Building &amp; Interpreting Evolutionary Trees</li> </ul>	<ul style="list-style-type: none"> <li>Video: "Origin of Life – Arrival"</li> </ul>
Feb 9	<b>Exam 1</b>	<ul style="list-style-type: none"> <li>Exam 1 Review</li> </ul>	<ul style="list-style-type: none"> <li><b>Feb 11: Exam 1</b></li> </ul>
Feb 16	<b>LESSON 3: Mechanisms I</b>	<ul style="list-style-type: none"> <li>Descent with Modification</li> <li>Mechanisms of Change</li> <li>Genetic Variation</li> </ul>	<ul style="list-style-type: none"> <li>Video: Origin of Life – Conquest</li> </ul>
Feb 23	<b>LESSON 4: Mechanisms II</b>	<ul style="list-style-type: none"> <li>Genetic Drift</li> <li>Natural Selection/Adaptation</li> </ul>	<ul style="list-style-type: none"> <li>Natural Selection Exploration</li> </ul>
Mar 2	<b>EXAM 2</b>	<ul style="list-style-type: none"> <li><b>Exam 2 Review</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Mar 4: Exam 2</b></li> </ul>
Mar 9	<b>SPRING BREAK</b>	<b>NO CLASS</b>	
Mar 16	<b>LESSON 5: Microevolution</b>	<ul style="list-style-type: none"> <li>What is Microevolution?</li> <li>Molecular Evolution</li> <li>Detecting Microevolution</li> </ul>	<ul style="list-style-type: none"> <li>Population Genetics Practice</li> </ul>
Date	Topic	Topics/Activities	Assignments/Due Dates
Mar 23	<b>LESSON 6: Speciation</b>	<ul style="list-style-type: none"> <li>What is a Species?</li> <li>Speciation, Extinction</li> </ul>	<ul style="list-style-type: none"> <li>Species exploration</li> </ul>
Mar 30	<b>EXAM 3</b>	<ul style="list-style-type: none"> <li><b>Exam 3 Review</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Apr 1: Exam 3</b></li> </ul>
Apr 6	<b>LESSON 7: Macroevolution</b>	<ul style="list-style-type: none"> <li>Biogeography, Fossils</li> <li>Patterns of Macroevolution</li> </ul>	<ul style="list-style-type: none"> <li>Biogeography exploration</li> </ul>
Apr 13	<b>EXAM 4</b>	<ul style="list-style-type: none"> <li><b>Exam 4 Review</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Apr 15: Exam 4</b></li> </ul>
Apr 20	<b>CATCH UP WEEK</b>		
Apr 27	Final Exam	<ul style="list-style-type: none"> <li>Final Exam (Online)</li> </ul>	<b>May 4: All Missing Assignments</b>