



Evolution - BIOL 3402 – 001
Lecture SciTech 231: 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.
 Telegram (preferred) Chat: https://t.me/+S47xofC_63c0ZGIx
 Email address eborda@tamusa.edu
 Virtual Office Hours Wednesdays, by appointment

Course Resources

Highly Recommended:

Understanding Evolution: https://evolution.berkeley.edu/evolibrary/article/evo_01

Recommended:

Evolution (5th Edition), *Futuyma and Kirkpatric* (2017)

Lesson Topic Overview

Theme/Topic		Theme/Topic	
1	What is Evolution?	5	MicroEvolution
2	Patterns	6	Speciation
3	Mechanisms (I)	7	MacroEvolution
4	Mechanisms (II)	8	Wrap-up

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 expected at all times 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 laboratory assignments will be crucial for being successful in this course. Online lecture and Lab 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 resource, *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. Zoom will be used to conduct weekly lab sessions and will be used to record the in class lecture. A link will be provided and made available via Blackboard.

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.

Grade Scale Distribution

A = >89.5 B = >79.5 C = >70 D = <69.9 F = <60

Course Point Distribution

	Weighted Grade
Course Exams (x 5)	60%
Assignments	20%
Evolution in the News	15%
Quizzes	5%

Exams and Quizzes: There will be four scheduled online exams and a 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 two 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. In order 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 proctored via Respondus Lockdown Browser (via zoom) and/or in the classroom.** 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.

Evolution in the News Presentation: This assignment gives you the opportunity to select an article related to recent evolutionary research of interest to you. Each student will prepare a virtual poster and a pre-recorded 5-minute presentation on their chosen topic/article related to evolution and shared on the Discussion Board. This activity will allow for interaction/questions with your fellow classmates, which will be graded (5% of Evolution in the News grade). Additional instructions will be available in Blackboard.

Assignments: Learning/Lab exercises provide you with hands-on opportunities to learn techniques and develop critical thinking skills that are prerequisites for practicing science. Completion of all assignments is mandatory according to the due dates.

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: All grades will be posted and be 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. This will be the e-mail address that is used for any communication between you and your instructor. E-mail may be sent from student-to-student, or student-to-instructor using the e-mail feature in Blackboard's Communication area. Students who e-mail the instructor Monday-Thursday ordinarily can expect a response within 24 hours. Students who e-mail Friday-Sunday ordinarily can expect a response by Monday morning. The preferred method of communication will always be via Telegram first (link to be provided in Telegram), then e-mail or making a virtual appointment.

IMPORTANT POLICIES AND RESOURCES

Academic Accommodations for Persons with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Support Services in the Central Academic Building, Suite 210, or at (210) 784-1335 or visit <https://www.tamusa.edu/index.html> or email us at dss@tamusa.edu. Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services and their instructors as soon as possible.

Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the *Tools* section of Blackboard. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu, calling (210) 784-1307, or visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment call 210-784-1331 or visit Modular C, Room 166 (Rear entrance).

All mental health services provided by the SCC are free and confidential (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services.

Crisis support is available 24/7 by calling the SCC at 210-784-1331 (after-hours select option '2'). For more information and self-help resources, please visit www.tamusa.edu/studentcounseling

Emergency Preparedness: JagE Alert is Texas A&M University-San Antonio's mass notification. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com/>.

More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/campus-information/safety/university-police-department/documents/emergency-operations-plan.pdf> and <https://www.tamusa.edu/about-us/campus-information/safety/university-police-department/documents/emergency-action-plan.pdf>

Download the SafeZone App for emergencies or call (210) 784-1911. Non-Emergency (210) 784-1900

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the

student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of class. Any student receiving federal financial aid who does not attend the first week of class will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on “Writing, Language, and Digital Composing Center” to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at <https://bit.ly/WLDCCenter>.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Dean of Students (DOS@tamusa.edu) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to provide any resources they may possess.

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to communicate, in advance if possible, and special circumstances (e.g., upcoming deployment, drill requirements, disability accommodations). You are also encouraged to visit the Patriots’ Casa in-person room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu or (210)784-1397.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student’s GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as “F” grades and will impact the student’s GPA.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equality of opportunity and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual within our state, nation, and world. All decisions and actions involving students and employees should be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance

with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, gender identity, gender expression, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units. Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking, know that help and support are available. A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the university's Title IX Coordinator (titleix@tamusa.edu, 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide reasonable accommodations to pregnant students that would be provided to a student with a temporary medical condition and that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status (titleix@tamusa.edu; 210-784-2061; CAB 439K).

Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

Students' Rights and Responsibilities: The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

Students' Rights

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university student rules shall be assured a fundamentally fair process.

Students' Responsibilities

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty and administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, Student Code of Conduct, on our website, University Catalog and to comply with them, as well as federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide an environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notification.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures please review the Student Code of Conduct.

No Use of Generative AI Permitted. BIOL 3402 assumes that all work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

Important Academic Dates:

January 16	First day of class
March 11 - 17	Spring Break
April 13	Last day to drop with an automatic "W"
April 20	Last day to withdraw from the University
April 29	Last day of Scheduled Classes
April 30	Study Day – No Classes
May 1 - 7	Final exams

The complete academic calendar is available online:

<https://catalog.tamusa.edu/undergraduate/academic-calendar/>



SYLLABUS Spring 2024

Detailed Schedule

Class schedule is subject to changes; Changes will be announced during class on *Blackboard and/or Telegram*.
New Lessons made available every Friday.

Date	Topic	Topics/Activities	Assignments/Due Dates
WEEK 1 (Jan. 17)	What is Evolution?	<ul style="list-style-type: none"> Course Introduction Lesson Review 	<ul style="list-style-type: none"> Video: "Evolution: What Darwin Never Knew"
WEEK 2 (Jan. 24)	History of Evolutionary Thought	<ul style="list-style-type: none"> Introduction to NOVA Evolution Lesson Review 	<ul style="list-style-type: none"> Research in Mexico Video Series
WEEK 3 (Jan. 31)	Tree of Life Building & Interpreting Trees	<ul style="list-style-type: none"> Lesson Review 	<ul style="list-style-type: none"> Due Feb. 2: Evolution 101 Worksheet, Missions 1-6
WEEK 4 (Feb. 7)	EXAM 1	<ul style="list-style-type: none"> Borda in Mexico Exam Review on Zoom (pending field schedule) Exam 1 open: Feb. 7 - 11 	<ul style="list-style-type: none"> Due Feb. 11: Quizzes 1 & 2 Due Feb. 11: Exam 1 (11:59 pm) Video: "Origin of Life – Arrival"
WEEK 5 (Feb. 14)	Mechanisms I Descent with Modification Mechanisms of Change Genetic Variation	<ul style="list-style-type: none"> Borda in Mexico Lesson Review on Zoom (pending field schedule) or pre-recorded Natural Selection Lab Assignment 	<ul style="list-style-type: none"> Video: "Origin of Life – Conquest"
WEEK 6 (Feb. 21)	Mechanisms II Natural Selection/Adaptation Genetic Drift	<ul style="list-style-type: none"> Lesson Review 	<ul style="list-style-type: none"> Group Work Natural Selection in the News Quickies
WEEK 7 (Feb. 28)	EXAM 2	<ul style="list-style-type: none"> Exam 2 Review (3:00- 4:15) Exam 2 Open: 4:30 – 5:45 pm 	<ul style="list-style-type: none"> Mar. 3: Quizzes 3 & 4 Mar. 3: Natural Selection Worksheet

Date	Topic	Topics/Activities	Assignments/Due Dates
WEEK 8 (Mar. 6)	Microevolution What is Microevolution? Molecular Evolution Detecting Microevolution	<ul style="list-style-type: none"> • Lesson Review • Population Genetics Assignment 	<ul style="list-style-type: none"> • Group Work • Population in the News Quickies
WEEK 9 (Of Mar. 11)	**SPRING BREAK**		
WEEK 10 (Mar. 20)	Speciation What is a Species? Speciation Extinction	<ul style="list-style-type: none"> • Lesson Review 	<ul style="list-style-type: none"> • Group Work • Species in the News Quickies
WEEK 11 (Mar. 27)	EXAM 3	<ul style="list-style-type: none"> • Exam 3 Review (3:00- 4:15) • Exam 3 Open: 4:30 – 5:45 	<ul style="list-style-type: none"> • Mar. 24: Quizzes 5 & 6 • Mar. 24: Population Genetics Assignment
WEEK 12 (Apr. 3)	Macroevolution Biogeography Fossils Patterns of Macroevolution	<ul style="list-style-type: none"> • Lesson Review • Biogeography Assignment 	<ul style="list-style-type: none"> • Group Work • Biogeography Assignment
WEEK 13 (Apr. 10)	EXAM 4	<ul style="list-style-type: none"> • Exam 4 Review (3:00- 4:15) • Exam 4 Open: 4:30 – 5:45 	<ul style="list-style-type: none"> • Mar. 24: Quiz 7 • Mar. 24: Population Genetics Assignment
WEEK 14 (Apr. 17)	EVOLUTION IN THE NEWS	<ul style="list-style-type: none"> • Presentation recorded over Zoom • Engage on Discussion Board 	<ul style="list-style-type: none"> • Due Apr. 21: Biogeography Worksheet
WEEK 15 (Apr. 24)	EVOLUTION IN THE NEWS	<ul style="list-style-type: none"> • Presentations recorded over Zoom • Engage on Discussion Board 	<ul style="list-style-type: none"> • Apr. 28: All Missing Assignments
WEEK 16 (May 1)	FINAL EXAM	TBD	TBD

