



BIOL 4307 Conservation and Restoration Ecology

Biology Program, Department of Natural Sciences

Instructor information

Instructor: J. Rodolfo Valdez Barillas (Call me Dr. Valdez)

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Office hours: TR 11-1 pm and 3:30-4:30 pm. E-mail me if you need to meet outside these times.

Class meeting place and time: Madla Building 207 (TR 9:30-10:45 am)

Course Description

This course gives the student an introduction to Conservation Biology from a conceptual perspective together with its many applications in the preservation, protection, and sustainable stewardship of life in all Ecosystems. The course will also review policy, strategies, and case studies based on past and current issues. In addition to conservation, the student will be introduced to Restoration Biology. Restoration and Reclamation will be introduced as a follow-up step of Conservation through the analysis of case studies where human intervention affected the outcome of an ecosystem.

Expected Outcomes

The student will learn about different approaches to conservation based on stakeholder agendas and the type of land management in Texas and across the US. The second half of the course focuses on Restoration, the logical and ethical response to the failures of conservation, which attempts to repair what was lost through different levels of human intervention. The restoration topics covered in this second half will follow the International Society for Ecological Restoration guidelines and recommendations. Students will learn how restoration projects are structured and the different approaches to restoration based on the level of degradation and functionality change that is desired and that is achievable. Topics will include case studies, federal and state resources, and guest speakers.

Course Learning Objectives

1. Understand the theoretical principles of conservation biology and the role these play in the preservation of life in our planet
2. Understand the role that restoration plays in the recovery of the physical attributes, the community diversity, and the functional dynamics of an ecosystem.
3. Learn about current strategies for conservation and restoration that have failed or have been successful
4. Understand the vital roles that scientific research plays when helping identify the needs, the strategies to monitor and assess the outcome of a conservation program and/or restoration project.



Recommended resources

- An **Introduction to Conservation Biology** by Anna Sher and Richard B. Primack and 2nd edition ISBN: 9781605358987 and 9781605358970
- **Principles of Conservation Biology** by Groom-Meffe-Carroll 3rd edition ISBN: 978-0-87893-518-5
- **Handouts and online resources:** provided by the instructor via Blackboard. I recommend you print these and organize them in a binder or folders on your computer to be used during your Exams.

Course policies

Attendance: You are required to attend every class. In-class group activities will require your input and participation.

Participation: You are expected to have reviewed the course material for the week and material from previous lectures so you come to class ready with questions. Check announcements frequently.

Communication: All communication and inquiries to the instructor should be e-mailed to jvaldezb@tamusa.edu. This e-mail is intended for communication only. No late assignments will be accepted via e-mail unless the instructor has granted an accommodation. All assignments are submitted via Blackboard.

Course Changes: This course syllabus and lecture schedule are subject to change at any time; however, students will be notified via e-mail or during class should it change.

Makeup Exams: Makeup Exams are granted at the instructor's discretion and cannot be expected unless you have previously communicated your absence in written form within a 24-hour window. Students can only make up one exam, and since one half of the Exam is completed as a group you can only receive credit for the individual portion.

Late assignments: one point will be deducted each day after the due date.

Course Evaluation

Exams: The first half of the exam will be taken individually and the second half as a group.

- **First half:** includes multiple choice, true/false questions.
 - This portion is **closed book, taken individually**, and the questions will come from previous quizzes or will read like previous quiz questions.
 - You will have **30 minutes** to complete the first half during the lecture period



- **Second half:** short answer or essay questions.
 - This section may include figures, tables, diagrams, or articles that will be provided on the day of the Exam.
 - This portion is open book; you may use your notes, internet, and other course materials, but can only share information with your group members.
 - You will have **45 minutes** to complete the second half during the lecture period, and you will complete and submit one document as a group.
- Each exam will include the material covered during the lectures before the day of the exam and the articles as part of reading assignments. **(Check the schedule for Exam dates)**

Quizzes: Quizzes will be available weekly

- Regular quizzes will be available via Blackboard and completed outside of lecture time. You will have 5 days to complete the quiz and submit before the Due date and time.
- Your quiz can be taken three times, and the highest score will be added to your gradebook.
- Questions will be presented one at a time and no backtracking will be possible; the number of questions may range from 5-10.
- Length of quiz may range from 5 to 10 minutes.

Assignments: This may include a scientific article summary and critiques or in-class activities

- Please read the instructions on how to write an article summary and critique.
- Depending on the assignment, submission may happen during the lecture or after.
- Most assignments will be conducted as a group using a shared Word document.

Conservation & Restoration actions:

- You will earn 10 points after attending or participating in any of the following activities throughout the semester:
 - Conservation or Restoration-related conference, talk, and speaker.
 - Volunteering on a research project led by A&M faculty, graduate students, or academics from outside the University
 - Volunteering for the Science Olympiad
 - Volunteering at a Park or protected area
 - Visiting and documenting a conservation project or restoration project in San Antonio
- You will earn points based on the number of volunteer hours or 5 points for each event.
- I will need an e-mail from the event coordinator confirming your hours, a poster or e-mail announcing the speaker series, or an e-mail from the researcher or volunteering coordinator you helped during the semester



GRADING (Number of quizzes and assignments may be adjusted based on student course load)

Assessment	Cumulative pts
Exams (3+final) 100pts/each	400
Quizzes (11) 10pts/each	110
Assignments (6) 10pts each	60
Conservation & Restoration actions	10
Total	580

Calculation of Final Grades

A = 90 – 100 points

B = 80 – 89.9 points

C = 70 – 79.9 points

D = 60 – 69.9 points

F = <59.9 points

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Week	Date	Course topics	Posting date
Conservation Biology			
1	08/25/2026	Introduction to syllabus and Blackboard	
	08/27/2026	Introduction to Conservation	Quiz 1
2	09/01/2026	What is Biodiversity & the Value of Biodiversity	
	09/03/2026	Conservation Economics and Ethics	Quiz 2
3	09/08/2026	Threats to Biodiversity (Habitat loss, degradation & fragmentation)	
	09/10/2026	Threats to Biodiversity (Pollution & Overexploitation)	Quiz 3
4	09/15/2026	Individual/Group Exam 1	
	09/17/2026	Threats to Biodiversity (Climate Change)	
5	09/22/2026	Threats to Biodiversity (Exotic and invasive species)	
	09/24/2026	Populations and Conservation Genetics	Quiz 4
6	09/29/2026	Conservation In-Situ and Ex-Situ	
	10/01/2026	Conservation Science and Policy	Quiz 5
7	10/06/2026	Conservation Science and Policy	
	10/08/2026	Approaches to Conservation & Protected Areas	Quiz 6
8	10/13/2026	Approaches to Conservation in Non-Protected Areas	
	10/15/2026	Conservation Game	Quiz 7
Restoration Ecology			
9	10/20/2026	Individual/Group Exam 2	
	10/22/2026	What is Ecological Restoration? (Concepts & definitions)	
10	10/27/2026	Stakeholder engagement, Traditional Knowledge, and Reference Ecosystems	
	10/29/2026	Ecosystem Recovery Assessment and Economic Rationale for Restoring Degraded Ecosystems	Quiz 8
11	11/03/2026	Project planning, funding, and assessment	
	11/05/2026	Project vision, targets, objectives, and restoration approach	Quiz 9
12	11/10/2026	Project analysis and logistics (post-implementation and project maintenance)	
	11/12/2026	Case Study 1: Restoration of Arid and Semi-Arid lands	Quiz 10
13	11/17/2026	Individual /Group Exam 3	
	11/19/2026	Case Study 2: Restoration of Grasslands and Shrublands	
14	Thanksgiving week		
15	12/01/2026	Case Study 3: Restoration of Forests and mining-degraded lands	
	12/03/2026	Case Study 4: Restoration of Estuaries and Marine ecosystems	Quiz 11
16	12/08/2026	Final Exam (Same Room December 10-11:50 am)	