NRM 4303 – Range Ecology
Dept. of Natural Resource Management, Sul Ross State University
Spring 2024 – Course Syllabus

Instructor: Dr. Carlos E. Gonzalez
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Office: 114 RAS
Office hours: Monday and Wednesday, 8:00 a.m. to 10:00 a.m.

Lecture location: RAS 128
Time: Tuesday & Thursday, 12:30 p.m. – 1:45 p.m.

Course Description

Ecology is the study of how organisms interact with each other and their environment at the population, community, and ecosystem levels. *Rangelands* are described as "land on which the indigenous vegetation is predominantly grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem." *Rangeland Ecology* and Management is a field of study devoted to understanding and managing these crucial ecosystems.

Rangelands are dynamic landscapes composed of many resources that produce many products. Human and non-human forces, including grazing, fire, and climate or weather, continually modify the rangeland landscape and its resources. Humans also modify rangelands through development (e.g., energy, mining, transportation, and communications infrastructure) and recreation. People also affect the other forces of change by introducing invasive species, controlling or igniting fires, managing grazing, and potentially impacting the climate and weather patterns through human-caused changes in atmospheric chemistry.

Managers need to predict how management practices or natural disturbance will impact the vegetation on rangelands, so a better understanding of how the system of interest functions is required. This course aims to familiarize the student with ecological theory and its applications that allow to reduce uncertainty of management actions by better understanding how these ecosytems function.

Course Objectives

- Provide an understanding of the ecological theory, which helps improve the range resources and facilitate their use by domestic animals and wildlife.
- To gain an understanding of the broad biological significance of ecological theory.
- To advance an understanding of the questions that ecologists study, the methods they use, and the problems that remain unanswered.

Course Outline. ***Tentative and subject to change***

DATE	**TOPIC**
Jan, 18	Introduction
Jan, 23	Eco. Services: Demand and Supply
Jan, 25	Eco. Services: Demand and Supply
Jan, 30	State & Transition Models
Feb, 1	State & Transition Models
Feb, 6	Climate
Feb, 8	Climate / Review Exam I
Feb, 13	**EXAM 1**
Feb, 15	Soils
Feb, 20	Soils
Feb, 22	Mycorrhiza
Feb, 27	Woody Encroachment
Feb, 29	Agrostology
Mar, 5	Heterogeneity
Mar, 8	Rangelands Distribution
Mar, 11	**SPRING BREAK**
Mar, 15	**SPRING BREAK**
Mar, 19	Invasive Plants
Mar, 21	Invasive Plants / Review Exam II
Mar, 26	**EXAM II**
Mar, 28	Ecohydrology
Apr, 2	Ecohydrology
Apr, 4	Livestock and Rangelands
Apr, 9	Livestock and Rangelands
Apr, 11	Landscape Ecology
Apr, 16	Monitoring Rangelands: Drones
Apr, 18	Monitoring Rangelands: Satellites
Apr, 23	Review Exam III
Apr, 25	**EXAM III**
Apr, 30	Review for Final Exam
May, 2	Dead Day
May, 8	**Final Exam**

Grading. The grading scale will be A = 90-100%, B = 80-89.9%, C = 70-79.9%, D = 60-69.9%.

Grading	Points
Exam 1	100
Exam 2	100
Exam 3	100
Final Exam	100
Total Graded	***300***

A = 270+, B = 269 – 240, C= 239 – 210, D = 209 – 180, F = 179 or less

Grades will be assigned based on student performance in the three categories outlined below.

Exams. Three comprehensive one-hour exams will be given during the semester. Additionally, one final comprehensive one-hour exam will be given at the end of the semester.

- Only the top three grades of the four exams will be used for your final grade.
    - You will have 75 minutes to complete each exam.
    - You will only have one opportunity to take each exam. DO NOT MISS AN EXAM WITHOUT A VALID REASON.
    - The material tested on the final exam covers all the information from the entire semester.

Attendance. Attendance in lectures is not required but strongly encouraged, as we will cover material in class that students will not be able to get from any other source.

Course material. Lecture presentations and PDF files with the PowerPoint slides will be uploaded weekly to Blackboard.

Class etiquette. Please turn cell phones off at the beginning of each class. Put away all computers during lectures and do not web surf or email during class.

Academic Dishonesty:
Academic dishonesty includes copying, sharing, or obtaining information from an unauthorized source, attempting to take credit for the intellectual work of another person, falsifying information, and giving or receiving information about a test, quiz, or assignment to other students. Any student involved in academic dishonesty will receive no credit (0) for work done and/or may be penalized in accordance with published University Rules.

Counseling and Accessibility Services:
Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Mary Schwartze, M. Ed., L.P.C., in Counseling and Accessibility Services, Ferguson Hall, Room 112. The

mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. Telephone: 432-837-8691. Email: mschwartze@sulross.edu.

Students with Special Needs:
Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is a SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request. Please contact me, Ms. Rebecca Greathouse Wren, M.Ed., LPC-S, Director/Counselor, Accessibility Services Coordinator, Ferguson Hall (Suite 112) at 432.837.8203; mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. Students should then contact the instructor as soon as possible to initiate the recommended accommodations.