

Range Inventory and Analysis

NRM 4304

Fall 2023

Instructor:

Dr. Rob Kinucan

RAS 109

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Lecture: M 10:00-11:50 a.m., RAS 129

Laboratory: W 10:00-11:50 a.m., RAS 129/Field/Mimms Ranch

Office Hours: Tuesday 10:00-12:00 and Wednesday 2:00-4:00. I am also available by appointment.

Course description:

The methodology of measuring and analyzing plant communities and populations. Statistical summarization, analysis and sampling are covered. Demonstrations of techniques used to inventory rangeland resources, such as vegetation sampling techniques and analysis, range condition and trend assessment, and forage production and utilization. Upon completion of the course students will be able to develop management plans and techniques to inventory and analyze rangeland plant communities.

Resources:

No text is required. Readings and course materials will be provided.

Learning objectives:

1. Students will be able to list and discuss major rangeland vegetation inventory techniques.
2. Students will be able to apply these techniques and evaluate collected data.
3. Students will be able to apply techniques in the field by designing and planning a vegetation inventory projects by identifying and selecting proper methods for different vegetation types.

Student Learning Outcomes for the B.S. in Natural Resource Management:

1. Students will be able to identify species of wildland plants and wildlife common to the western United States and describe their natural history.
2. Students will be able to demonstrate knowledge of the elements of an ecosystem.
3. Students will be able to communicate about natural resources and conservation both verbally and in writing.

Marketable Skills for B.S. in Natural Resource Management:

1. Students will demonstrate public speaking skills.
2. Students will demonstrate writing skills.
3. Students will be able to apply course knowledge through a research project.

ADA Statement:

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 Counseling and Accessibility Services, Ferguson Hall, Room 112; Mailing address: P.O. Box C-122, Sul Ross State University, Alpine, Texas; Telephone: 432-837-8203; More resources can be found at: <https://www.sulross.edu/counseling-and-accessibility-services/>

Academic Integrity:

Students are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be punctual, prepared, and focused; meaningful and pertinent class

participation is encouraged. Examples of academic dishonesty include but are not limited to turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden.

Equipment:

1. You will construct your own sampling quadrat and will need to be prepared for fieldwork, note taking and data logging. We will be outside often, and you need to prepare accordingly. Equipment will be checked out as necessary for each field exercise.
2. Field teams will be issued an iPad at the first of the semester to record field data. You will be responsible for the iPad through the semester and will need to return it undamaged at the end of the semester.

Class Organization:

1. Participation is an important criterion in determining how much you learn and how well you do in class and will be evaluated for course activities and exercises.
2. For individual assignments I expect you to do your own work. For team projects I expect you to work effectively with classmates and contribute a fair share to projects.
3. If you miss a class, you may obtain notes from a classmate. Handouts, and assignments may be obtained from me.
4. We will spend many lab periods conducting field exercises. Be prepared for outside work and wear appropriate clothing. We will spend one to two full days (dates noted in the schedule) at the Mimms Ranch at Marfa to sample for the midterm monitoring project.
5. We will stick as closely as we can to the class and lab meeting schedule and outline. Conditions sometime require modifications to these timelines, and I will notify you in advance of any changes.

Grades:

Monitoring project and report	100 points
Stocking rate project and report	100 points
2 exams (100 points ea.)	200 points
Lab Exercises	50 points
Participation	50 points
Total	500 points

Grade assignments: 90-100 = A; 80-89 = B; 70-79 = C; 60-69 = D; <60 = F

Exercises and lab assignments are generally due the following lab period unless otherwise noted. Check the syllabus, course calendar and gradebook for due dates.

Class-lab meetings and tentative topical outline:

Week of:	Lecture	Lab
Aug 28/30	<p>Introductions</p> <p>Syllabus and Blackboard review</p> <p>Inventory and analysis general concepts</p> <p>Quadrat construction assignment</p>	Build a quadrat
Sept 4/6	Labor Day	<p>Sampling theory</p> <p>Descriptive statistics</p> <p>Population attributes and basic computations</p>
Sep 11/13	<p>General sampling approach and sample location</p> <p>iPad checkout</p>	<p>Determining sample size</p> <p>Microsoft Excel for data collection and summary</p>
Sep 18/20	<p>Area methods</p> <p>The quadrat technique</p> <p>Ocular estimation technique</p>	<p>Demonstration of quadrat sampling procedure</p> <p>Quadrat sampling</p>
Sep 25/27	Plotless sampling techniques - line intercept and gap intercept techniques	Line sampling
Oct 2/4	<p>Depicting vegetation</p> <p>Ecological and Range Sites</p>	<p>Introduction to Mimms Ranch sampling project</p> <p>GIS data and Practice Sampling setup for Mimms Ranch project</p>
Oct 9/11	<p>Mimms project preparation</p> <p>Summary calculations for monitoring project</p>	Mimms Ranch field sampling (all day Wednesday, October 11)
Oct 16/18	Summary calculations for Monitoring project	Mimms Ranch field sampling (all day Wednesday, October 18)
Oct 23/25	<p>Exam 1 (1-hour, open note)</p> <p>Mimms project wrap-up</p>	<p>Mimms Monitoring Report Due</p> <p>Map & compass use, remote sensing</p>
Oct 30/ Nov 1	Herbage production	Biomass sampling
Nov 6/8	Plotless sampling techniques: Point quadrat Distance methods	PCQ sampling
Nov 13/15	Stocking rate and & carrying capacity	Stocking rate project
Nov 20/22	Stocking rate project	Thanksgiving Holiday, No Lab
Nov 27/29	Stocking rate data analysis and summary	Utilization estimation techniques

Dec 4/6	Forest sampling techniques	Exam 2 (1-hour, open note) Stocking rate project wrap-up
Dec 11	Stocking rate report due at noon on Dec. 11.	