

Range Inventory and Analysis  
NRM 4304  
Fall 2021

Instructor:

Dr. Rob Kinucan  
RAS109

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Lecture: M 9:00-10:50 a.m., RAS 128

Laboratory: W 9:00-10:50 a.m., RAS 128/Field/Mimms Ranch

Office Hours: Tuesday at 10:00-12:00 and Wednesday at 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 through Blackboard.

Equipment:

1. You will construct your own sampling quadrat and will need to be prepared for field work, note taking and data logging. We will be working outside during labs and you to be prepared accordingly. Equipment will be checked out to you prior to each field lab for completion of that day's work.
2. You will be issued an iPad mini and bad elf GPS at the first of the semester and will use it to record your field data. You will be responsible for the iPad and bad elf through the semester and will need to return it undamaged at the end of the semester. If you have a personal tablet, you can use that rather than an SRSU tablet.

Learning objectives:

1. Students will be able to list and discuss all common vegetation inventory techniques.
2. Students will be able to apply these techniques and evaluate the data collected.
3. Students will be able to apply this information in the field by designing and planning a vegetation inventory project for implementing in the field lab. This will be accomplished 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 (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email [rebecca.wren@sulross.edu](mailto:rebecca.wren@sulross.edu). Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, SUI Ross State University, Alpine, Texas, 79832.

Class Organization:

1. Participation is an important criterion in determining how much you learn and how well you do in class. Attendance will be taken each class and lab as noted by participation in activities and exercises.
2. I expect you to do your own work.
3. If you miss a class, you may obtain notes from a willing 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 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	200 points
Carrying capacity project	200 points
Field exercises and attendance	200 points
Total	600 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:

<b>Week of:</b>	<b>Lecture</b>	<b>Lab</b>
Aug 23	Introduction, the Scientific Method, and population attributes  Quadrat construction assignment	Introduction to vegetation parameters and field sampling  Build a quadrat (30 pts)
Aug 30	Descriptive statistics, measures of central tendency and dispersion.  Considerations for sampling  Sampling attributes	Microsoft Excel for sampling and data summary (10 pts)
Sep 6	Area sampling techniques -Quadrat techniques	Quadrat sampling (30 pts)
Sep 13	Plotless sampling techniques - Gap intercept and line intercept techniques	Line sampling (30 pts)
Sep 20	Density, Dominance and Frequency evaluation	Introduction to Mimms Ranch sampling project  GIS data and Practice Sampling setup for Mimms project (10 pts)
Sep 27	Summary calculations for Monitoring project	Mimms Ranch field sampling (all day Wednesday, September 29)
Oct 4	Summary calculations for Monitoring project	Mimms Ranch field sampling (all day Wednesday, October 6)
Oct 11	Soil Survey and Ecological sites	Summary calculations for monitoring project Aerial Photography and mapping (10 pts)
Oct 18	Locating samples and sample size estimation	<b>Midterm Monitoring Report Due</b> (Review and makeup date). (200 points)
Oct 25	Calculating carrying capacity and stocking rates	Biomass sampling and utilization (30 pts)
Nov 1	Plotless sampling techniques, continued - Point techniques and summary calculations	Final project sampling (10 pts)
Nov 8	Distance techniques - PCQ and summary calculations	PCQ sampling (30 pts)
Nov 15	Rangeland health and erosion	Analysis and calculations for Final Report (10 pts)
Nov 22	Carrying capacity data analysis and summary	No Lab, Thanksgiving Holiday
Nov 29	Carrying capacity data analysis and summary	Complete analysis and summary for final report
Dec 6		<b>Final report due at noon on Dec. 6.</b> (200 points)