**Range Inventory and Analysis**
**NRM 4304**
**Fall 2025**

**Instructor:**
Dr. Rob Kinucan
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Lecture: M 10:00-11:40 a.m., RAS 128
Laboratory: W 10:00-11:40 a.m., RAS 128
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 are provided.

**Learning objectives:**
1. Students will be able to list and discuss four 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 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 RossState 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 assigned as necessary for each class exercise.
2. You will need to obtain materials to construct a quadrat (instructions in Bb) and will need two 1/2" dowels and spray paint.
3. Field teams will be issued an iPad at the first of the semester to record field data. You will be responsible for the iPad throughout the semester and must 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 on 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 full day (date 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.

**Connecting with Students for Success:**


This fall we will participate in the Connecting with Students for Success program at Sul Ross in this course. Research has demonstrated that building connections between students and faculty fosters a strong learning environment and better overall success. As part of the program, I will meet individually with each of you, and we will schedule meetings soon. You will also receive a survey from institutional research to complete between October 28 and November 11. I will give 10 points extra credit to those who complete the survey.

**Grades:**

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|---|---|
| Monitoring project and report | 100 points |
| 2 exams (100 points ea.) | 200 points |
| Lab Exercises and participation | 160 points |
| | |
| Total | 460 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 assignment and due dates.

**Class-lab meetings and tentative topical outline:**
(See Blackboard gradebook for due dates)

| Week of: | Lecture | Lab |
|---|---|---|
| Aug 25/27 | Introduction<br><br>Syllabus and Blackboard review<br><br>Inventory and analysis general concepts<br><br>Quadrat construction assignment | Build a quadrat - field |
| Sept 1/3 | Labor Day | Sampling theory<br><br>Descriptive statistics & sample size<br><br>Population attributes and basic computations |
| Sep 8/10 | General sampling approach and sample location<br><br>Stratified random sampling application (how to locate sample plots) - field<br><br>Microsoft Excel for data collection and summary | iPad checkout<br><br>Ocular estimation technique<br><br>Demonstration of quadrat sampling procedure - field |
| Sep 15/17 | Determining adequate sample size<br><br>Area methods - the quadrat technique | Quadrat sampling - field |
| Sep 22/24 | Plotless sampling techniques - line intercept and gap intercept techniques | Line intercept sampling - field |
| Sep 29/<br>Oct 1 | Depicting vegetation<br><br>Ecological and Range Sites<br><br>Calculate 2-stage sample requirement | Introduction to Mimms Ranch sampling project<br><br>Practice sampling setup for Mimms Ranch Project - field |
| Oct 8/8 | Mimms project preparation<br><br>Summary calculations for monitoring project - review | TSSRM-Alpine (attend meeting in lieu of class) |
| Oct 13/15 | Herbage production<br><br>(End of material for Exam 1) | Final planning for Mimms field trip |

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|---|---|---|
| Friday, October 17 | Mimms Ranch field sampling (all day Friday, October 17) – field | |
| Oct 20/22 | (Beginning material for Exam 2)<br>Overview of photogrammetry, topographic maps, and surveying - lab | Maps and surveying continued – lab/field<br><br>Summary calculations for Monitoring Project – work on calculations and report (if needed) |
| Oct 27/29 | Exam 1 (1-hour, open note) | Biomass sampling - field |
| Nov 3/5 | Plotless sampling techniques:<br>Point quadrat method | Point quadrat technique - field<br>**Mimms Group Monitoring Report Due** |
| Nov 10/12 | Distance methods | PCQ sampling - field |
| Nov 17/19 | SRSU Invitational FFA-LDE | Utilization estimation techniques – field<br><br>Stocking rate and & carrying capacity |
| Nov 24/26 | Catch-up day | Thanksgiving Holiday, No Lab |
| Dec 1/3 | Forest sampling techniques - lab/field | Forest sampling techniques - lab/field |
| Dec 5<br>Final | Exam 2 (1-hour, open note)<br>10:15 a.m. in classroom | |