SYLLABUS
NRES 498/698 FALL 2015
Rangeland Restoration Ecology
T and TH 9:30-10:45am
Room- KRC 105

Instructor
Tamzen Stringham: UNR Dept. of Agriculture, Nutrition and Veterinary Science
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Office Hours: TH 11:00 to noon or by appointment

Course Description: Analysis of ecological concepts involved in disturbance, retrogression, and/or degradation in western rangeland ecosystems. Survey of applied ecological practices used in restoration/rehabilitation.

Prerequisite: NRES 345
Recommended Preparation: NRES 322 (Soils) and NRES 341 (Principles of Range Management)

Required Text: Repairing Damaged Wildlands by Steven Whisenant

Optional Texts:
- Soil Science Simplified by Kohnke and Franzmeier
- Range Development and Improvements by Vallentine
- Great Basin Riparian Ecosystems edited by Chambers and Miller
- Writing for the Technical Professions by Woolever

Silver Core Curriculum. This course requires students to integrate written, oral and multimedia skills (Core Objective 1); to apply observational methods of assessment and utilize experimental data to frame decision making (Core Objective 3); employ cogent reasoning methods in their examination of a rangeland restoration issue and apply science and technology to find a solution (Core Objective 9) and develop planning budgets, carrying capacities, and rangeland improvements (Core Objective 2). Integration of these Core Objective skill sets as applied to a rangeland restoration problem satisfies Core Objective 13 [CO13] ("Integration and Synthesis") and Core Objective 14 [CO14] ("Application").

Brief Description of CO13: Students will be able to integrate and synthesize Core knowledge, enabling them to analyze open-ended problems or complex issues.

Brief Description of CO14: Students will be able to demonstrate their knowledge and skills developed in previous Core and major classes by completing a project or structured experience of practical significance.

Course Objective:

Student Learning Outcomes

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<th>Expected Student Outcomes</th>
<th>Student Outcome Measurements</th>
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<tr>
<td>Explain Clements’ theory of vegetation succession and how that may have shaped current ecological understanding. (CO13)</td>
<td>Exams</td>
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<td>Describe rangeland ecological processes and how these processes interact to determine the resilience of the ecological site. (CO13) (CO14)</td>
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<td>Learn how an ecological site is determined and become familiar with the Federal government publications describing ecological sites. (CO13)</td>
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Describe channel types and riparian functions and methods for monitoring riparian systems. (CO14)

Learn how to apply various mechanical and chemical methods utilized in rangeland rehabilitation projects. (CO14)

Learn the NRCS/BLM/USGS approach to assessing rangeland health. (CO13)

Analyze the scientific debates and ethical concerns of such issues as climate change, wild horse management, sage grouse habitat and others. (CO9, CO13)

Learn a process-based framework for analyzing rangeland functional status and for directing autogenic repair. (CO14)

Utilize all of the above tools and information to develop restoration approaches for the repair of degraded wildlands. (CO14)

Develop skills and competencies specific to the range profession (CO14)

Develop skills for understanding and working with people of diverse backgrounds or cultures (CO14)

Demonstrate knowledge and skills developed by completing a comprehensive restoration and management plan of a rangeland area with a ten year planning horizon. (CO13)(CO14)

Write a coherent, technical report utilizing appropriate citation style and observing the standards of the academic English. APA style preferred. (CO1)

Integrate information from a variety of sources (WebSoil Survey, journal articles, experts, field data) to produce a restoration report based on sound interpretation of scientific information (CO1, CO2, CO3, CO9)

Field Trip Assignments

Group project, Project Presentation and Field trip assignments

**Course Requirements:**

**Field Trip**

**Required:** Date and time to be determined

**Readings & Assignments**

Additional assignments and readings- at instructor’s discretion

Group restoration project plan

Restoration “mini” projects- at instructor’s discretion

Quizzes

2 Exams

Students will be able to demonstrate knowledge and skills developed in this course and previous core and major classes by completing a rangeland restoration project plan, as well as participating in class field trip.

The rangeland restoration project plan includes objectives from silver core 1, 2 and 3 such as; effective composition and communication with an oral presentation and portfolio, quantitative reasoning to estimate suitable stocking rates, critical analysis and use of information to synthesize and incorporate rangeland research and data into the project portfolio.

**Attendance:** Attendance is mandatory. In order to succeed in this course each student must attend every class. There are many details in this course and you will be responsible for all information covered in lecture, on tests and quizzes. Please email me if you will be missing class due to a legitimate excuse (i.e. illness, family emergency, legitimate professional obligations etc.).
**Graduate Student Requirements**
Graduate students will be required to read and abstract additional journal articles. Mid-term exams will have a number of questions not included in the undergraduate exam that will require students to demonstrate synthesis of subject matter and critical thinking skills in problem solving. Restoration mini-projects for graduate students will include additional components.

**Grading**

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<th>Component</th>
<th>Weight</th>
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<tr>
<td>Mid-term</td>
<td>22.5%</td>
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<td>Projects</td>
<td>30 %</td>
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<td>Participation etc.</td>
<td>10 %</td>
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<tr>
<td>Assignments/ Quiz</td>
<td>15%</td>
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**Exams:** These 100-pt exams will be non-cumulative and are designed to test understanding of the book, lecture materials, additional readings, assignments and discussion from the class field trip. Questions will be a mixture of multiple choice, true/false, short answer and essay questions. Exams must be taken at the assigned time. If an emergency should occur, the instructor must be notified before the exam time or the student receives a zero.

**Homework and Quizzes:** Homework assignments are designed to help students gain a better understanding of the lecture material and any classroom discussions. Additional readings will be assigned per topic of lecture; students are expected to come to class prepared to discuss these readings. Short quizzes may be assigned during class periods in order to gain a better understanding of the knowledge of the students and help meet the course objectives. Students that are late or miss class, unless due to an emergency and notification of instructor prior to class occurs, will not be allowed to make up the quiz and the student will receive a zero.

**Restoration Project:** Each student will be assigned to a group of 3 or 4. Each group is responsible for one project report and a project presentation. A project location will be provided that will include multiple ecological sites, each with a unique set of vegetation and soils. The project area will be visited and data collected during the class field trip. Experts from the public land management agency(s) and the livestock permittee (if applicable) will meet with the class and discuss the current management concerns and constraints. Each location has an assumed project work area as well as some constraints. The overall management and restoration plan has a ten year planning horizon and must contain a year by year grazing prescription, restoration work plan and monitoring plan. This project will be discussed at length throughout the course as well as during the class field trip. Each student team will present the final restoration and management project to the class in a 30 minute presentation. Stakeholders will be invited. The project is the culmination of this course and should reflect the knowledge of the student and meet the overall course objectives.

**Restoration Project Grading:**
Each member of the team will receive an *individual grade* for project participation, contribution and quality of products produced and oral presentation. **Project report MUST include a Table of Contents with authorship clearly stated.** Teams may choose to develop an evaluation matrix for members of the team that may be provided to the instructor at the time the report is due. Evaluation matrix must be based on quantifiable components, i.e., number of team meetings attended; assigned tasks completed on time, etc.

Overall report will receive a stand-alone grade.

*The overall report grade and the individual team member grade will be averaged to produce the project grade for each individual student.*
Disability Services: Any student with a disability needing academic adjustments or accommodations is requested to speak with me or the Disability Resource Center (Thompson Building, Suite 101) as soon as possible to arrange for appropriate accommodations.

Academic Success Services: Your student fees cover usage of the Math Center (784-443 or www.unr.edu/mathcenter/), Tutoring Center (784-6801 or www.unr.edu/tutoring/), and University Writing Center (784-6030 or www.unr.edu/writing_center). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

Academic Dishonesty: Cheating, plagiarism or otherwise obtaining grades under false pretenses constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated and penalties can include canceling a student's enrollment without a grade, giving an F for the course or for the assignment. For more details, see the UNR General Catalog.

Audio and Video Recording: “Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded”

Cell Phones/Other Devices: Cell phones must be turned off during class. If you have a family or work situation that requires you to wear a beeper or carry a cell phone, please discuss this with the instructor after the first class. Students whom are found texting on technological devices or surfing the web during lecture will be asked to leave the lecture. Remember you can only learn if you are 100% attentive to the lecture and discussion during class.

Late or Missed Assignments/Classes: If you choose to miss class it is up to you to get notes and handouts from others. Instructor notes are not available to students. No late assignments will be accepted. The course outline at the end of the syllabus will help alert you to when assignments are due and when quizzes and exams will occur in class.