NRM 91 Course Outline as of Fall 2009

CATALOG INFORMATION

Dept and Nbr: NRM 91 Title: RANGELAND MANAGEMENT
Full Title: Rangeland Management
Last Reviewed: 11/25/2024

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	17.5	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	ANSCI 91
Formerly:	

Catalog Description:
Basic principles of range management as they apply to various regions and vegetative types. Relationship of range management practices to livestock production, wildlife management, forestry, hydrology and other land uses. Field trip participation required.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Basic principles of range management as they apply to various regions and vegetative types. Relationship of range management practices to livestock production, wildlife management, forestry, hydrology and other land uses. Field trip participation required. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Spring 2006	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon completion of this course, students will be able to:
1. Discuss the principles of rangeland management.
2. Differentiate among the major rangeland types.
3. Recognize the basic morphology and physiology of rangelands.
4. Analyze basic ecological factors affecting rangelands.
5. Apply concepts of range plant physiology to range management.
6. Discuss the principles and options for wildlife management and utilization on rangelands.
7. Demonstrate proficiency in range inventory and assessment methods.
8. Develop grazing management plans.
9. Determine options for managing and improving California's rangelands.

Topics and Scope:

Some topics include lab activities. These may vary from semester to semester and depending on instructor.

I. Introduction, Definition of rangelands, products and uses
   - A. Importance of rangeland worldwide
   - B. Importance of Rangelands to Humans
   - C. Environmental importance
   - D. Rangeland management issues

II. Rangeland Physical Characteristics
   - A. Precipitation
   - B. Wind
   - C. Temperature
   - D. Humidity
   - E. Climate Types
   - F. Topography
   - G. Soils

H. Influence of Physical Characteristics upon Range Animals

III. Rangeland Types
- A. Major Types
  1. Grasslands
  2. Desert shrublands
  3. Savanna woodlands
  4. Forests
  5. Tundra
- B. U.S. types
  1. Tallgrass prairie
  2. Southern mixed prairie
  3. Northern mixed prairie
  4. Shortgrass prairie
  5. California annual grassland
  6. Palouse prairie
  7. Hot desert
  8. Cold desert
  9. Pinion-Juniper woodland
  10. Mountain browse
  11. Western coniferous forest
  12. Southern pine forest
  13. Eastern deciduous forest
  14. Oak woodland
  15. Alpine tundra

IV. Range Ecology
- A. Rangeland ecosystem components and functions
- B. Succession and climax
- C. Drought
- D. Competition
- E. Plant Succession

V. Range Plant Physiology
- A. Basic concepts
- B. Uses of products of photosynthesis
- C. Food cycle and growth
- D. Factors regulated by range managers
- E. Carbohydrate reserves
- F. Plant morphology and growth
- G. Resistance to grazing
- H. Grazing optimization theory
- I. Range management principles

VI. Herbivory
- A. Feeding strategies
- B. Foraging behavior
- C. Effects on the rangeland ecosystem

VII. Range Inventory and Monitoring,
- A. Vegetation mapping
- B. Grazing surveys
- C. Determining grazing capacity
- D. Determine grazing utilization
- E. Range condition - National Research Council procedure

VIII. Stocking Rate (SR),
- A. Foraging strategies and effects on the rangeland ecosystem

B. Definition of animal unit
C. SR determined by forage production
D. SR determines livestock productivity
E. SR determines economic return
F. Grazing intensity
G. Importance of minimum residual biomass
H. Range readiness and timing
I. Calculation of SR - Adjustments for distance to water and slope
J. Key-plant and key area indicators
K. Range management principles

IX. Grazing Methods and Livestock Distribution
A. Continuous
B. Deferred-rotation
C. Merrill three-herd, four-pasture system
D. Seasonal-suitability
E. Best pasture
F. Rest rotation
G. High intensity-low frequency
H. Short-duration

X. Manipulation of Range Vegetation
A. Rangeland Problems in the Western United States
B. Control of Unwanted Plants
C. Economic Considerations
D. Vegetation manipulation
1. Seeding
2. Fertilization
a. Fire
b. Chemical
3. Mechanical

XI. Range Wildlife Management
A. Wildlife habitat monocultures
1. Crested wheat grass
2. Big sagebrush
B. Impact of grazing on wildlife
1. Direct
2. Indirect
C. Wildlife-livestock interactions
D. Grazing systems to enhance wildlife
1. Game birds
2. Big game
E. Brush control
F. Game ranching
G. Wild horses and burros
H. Small mammal problems
I. Rangeland management principles

Assignment:

1. Reading: approximately 20-30 pages per week.
2. Labs (representative assignments):
a. Rangeland plant sample collection and identification;
b. Inventory and monitoring in the field;

c. Setting up and evaluating stocking rates;
d. Set up, implement, and evaluate a grazing system;
e. Assessment of plant progression at a burn site;
f. Inventory of a rangeland parcel.
Labs may be conducted at Shone Farm or involve field trips (3-7) to various pasture and rangeland sites.
3. Lab reports (graded 30% writing; 70% problem solving).
4. Evaluate assigned location and develop an inventory, assessment, and management plan (5-10 pages; graded 30% writing; 70% problem solving).
5. Quizzes (2-4); midterm; final exam.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Lab reports	Writing 20 - 30%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Management plan.	Problem solving 30 - 40%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, true/false, matching items, completion, short answer.	Exams 30 - 40%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation.	Other Category 0 - 10%

Representative Textbooks and Materials:
Range Management - Principles and Practices. J.L. Holechek, R.D. Pieper and C.H. Herbel. Prentice Hall, fifth edition, 2004.
Rangeland Health: New Methods to Classify, Inventory, and Monitor Rangelands. National Academy of Sciences, Washington D.C., 1994. Classic