



Jordan University of Science and Technology
Faculty of Agriculture
Natural Resources & Environment Department

NR471 Rangeland Restoration And Development

Second Semester 2022-2023

Course Catalog

3 Credit Hours. The course is designed to introduce students to the tools of developing and improving range forage resources such as range seeding, control of undesirable range plants, pitting, furrowing, water spreading and fences. The student should know the ecological principles of range improvements, particularly competition, succession and steps in improving range forage resources to prove the desirable forage species with a competitive advantage for resources. In addition, the student should know the economic basis of range development and improvement. The establishment and development of feed sources in pastoral lands, including resistance to weeds, sowing, fertilization, fire, and the use of pasture within environmental bases. Students submit reports and seminars and students participate in discussions within the classroom. (Prerequisite: PP 205)

Text Book

Title	Range Development and Improvements
Author(s)	Vallentine, J. F.
Edition	3rd Edition
Short Name	I
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
II	Range Management Principles and Practices	Holechek, J. L., R. D. Pieper, and C. H. Herbel	3rd Edition	
III	Terrestrial Plant Ecology	Barbour, M.G., J.H. Burk and W.D. Pitts	3rd Edition	
IV	Handout	Instructure	1st Edition	
V	Opportunistic Management for Rangelands not at Equilibrium	Westoby et al. 1989.	1st Edition	

Class Schedule & Room

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2, 3	I- Introduction to Rangeland Improvements 1- Role of range improvements 2- Potential of range improvements 3-Selection and Restriction of range improvement 4- Succession type, driven forces and application	From I, From II, From IV
Weeks 4, 5	II- Rangeland Improvement by Burning 1. Purposes of range burning 2. Terms 3. Burning effects in soil 4. Burning effects on vegetation	From I, From III, From IV
Weeks 5, 6, 7	Weed Control 1- Introduction to plant control 2- Biological plant control 3-Mechanical plant control 4- Herbicidal plant control	From I, From III, From IV
Weeks 8, 9	Rangeland Fertilization 1- Determining soil deficiencies 2- Fertilizer types and needs 3- Fertilizer application 4- Plant responses to fertilizers 5- Fertilizer and plant nutritive content	From I, From IV
Weeks 9, 10, 11, 12	Range Seeding 1- Deciding to reseed 2- Selecting sites for seeding 3- Species adaptation and selection 3- Management after seeding 4- Drought and Dry season management 5- Rainwater harvesting	From I, From IV
Weeks 13, 14	Establishment of Range Seedling 1- Why range seeding fail 2- The Ideal seedbed and seedbed preparation	

	Course Outcome Weight (Out of 100%)	Assessment method
Mapping of Course Outcomes to Program Student Outcomes		
Explain how rangeland restoration is significant and important to increase productivity of rangeland Utilize all of the above improvement tools to develop restoration Develop skill and competencies specific to the rangeland restoration [1PLO3, 1PLO4, 1PLO5, 1PLO6]	25%	
Identify the ecological processes and how these processes interact to determine the success of the improvement tools Learn how, where, when, and ecological effects of rangeland reseeding [1PLO3, 1PLO5]	40%	
Define and describe rangeland burning Understand rangeland fertilization [1PLO3, 1PLO5, 1PLO9]	20%	
Understand the basis of weed control Understand mechanical weed control Understand biological weed control Understand chemical weed control Learn how to control insect, rodents and microorganisms in rangeland Utilize all of the above improvement tools to develop restoration Develop skill and competencies specific to the rangeland restoration [1PLO5, 1PLO6, 1PLO9]	15%	

Relationship to Program Student Outcomes (Out of 100%)								
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
		32.92	6.25	37.92	11.25			11.67

Evaluation	
Assessment Tool	Weight
Med Term Exam	50%
Final Exam	50%

Policy	
Introduce the basis and principles of rangeland improvement and restoration planning, and to develop an understanding and appreciation for the various rangeland restoration techniques available to managers	<p>Explain how rangeland restoration is significant and important to increase productivity of rangeland</p> <p>Utilize all of the above improvement tools to develop restoration</p> <p>Develop skill and competencies specific to the rangeland restoration</p>
Understand the ecology and practices of rangelands reseeding and or revegetation	<p>Identify the ecological processes and how these processes interact to determine the success of the improvement tools</p> <p>Learn how, where, when, and ecological effects of rangeland reseeding</p> <p>Utilize all of the above improvement tools to develop restoration</p> <p>Develop skill and competencies specific to the rangeland restoration</p>
Understanding rangelands burning and fertilization	<p>Define and describe rangeland burning</p> <p>Understand rangeland fertilization</p> <p>Utilize all of the above improvement tools to develop restoration</p> <p>Develop skill and competencies specific to the rangeland restoration</p>
Allow student to know how to control weed and insect in rangelands	<p>Understand the basis of weed control</p> <p>Understand mechanical weed control</p> <p>Understand biological weed control</p> <p>Understand chemical weed control</p> <p>Learn how to control insect, rodents and microorganisms in rangeland</p> <p>Utilize all of the above improvement tools to develop restoration</p> <p>Develop skill and competencies specific to the rangeland restoration</p>