

<b>Programme</b>	B.Sc. (Hons) Agriculture (Major: Soil Science)	<b>Course Code</b>	<b>SS-404</b>	<b>Credit Hours</b>	3(3-0)
<b>Course Title</b>	<b>LAND DEGRADATION AND MANAGEMENT</b>				
<b>Course Introduction</b>					
Types of degraded lands and their effective utilization for crop production are highlighted. The students should be able to know causes of land degradation and their management for crop production.					
<b>Learning Outcomes</b>					
<ol style="list-style-type: none"> <li>1. <b>Identify and describe</b> the various land resources globally and specifically in Pakistan.</li> <li>2. <b>Analyze</b> the significance of land resources for different uses and their management.</li> <li>3. Explain the primary causes of land degradation.</li> <li>4. Classify different types of degraded lands and assess their impacts on the environment and agriculture.</li> <li>5. Apply theoretical knowledge to real-world scenarios through case studies and field observations.</li> <li>6. Demonstrate the ability to develop and implement effective land management strategies.</li> </ol>					
<b>Course Content (Theory)</b>					<b>Assignments/Readings</b>
<b>Week 1</b>	<b>Unit 1</b> 1.1. Land resources and their uses in global and Pakistan perspective 1.1.1. Overview of land resources and their uses in a global context 1.1.2. Focus on Pakistan's land resources and their utilization				Write an essay discussing the various land resources available globally. Focus on the importance of these resources for agriculture, industry, and urban development. Compare and contrast these resources with those in Pakistan.
<b>Week 2</b>	<b>Unit 2</b> 2.1. Types and Causes of Land Degradation 2.1.1. Detailed exploration of the causes of land degradation				
<b>Week 3</b>	2.1.2. Classification of different types of degraded lands				

<p><b>Week 4</b></p>	<p><b>Unit 3</b></p> <p>3.1. Nutrient dynamics and management in degraded lands</p> <p>3.1.1. Understanding nutrient dynamics</p> <p>3.1.2. Management strategies for nutrient depletion in degraded lands</p>	<p>Select a region affected by significant land degradation. Analyze the causes and impacts of this degradation and propose potential management strategies to mitigate the effects. Use real-world data and examples</p>
<p><b>Week 5</b></p>	<p><b>Unit 4</b></p> <p>4.1. Threats to national land use</p> <p>4.1.1. Identifying and analyzing threats to national land use</p> <p>4.1.2. Case studies on specific threats</p>	
<p><b>Week 6</b></p>	<p><b>Unit 5</b></p> <p>5.1. Drought; low and erratic precipitation, lowering of water table; global warming and climate change</p> <p>5.1.1. Effects of drought and erratic precipitation</p>	
<p><b>Week 7</b></p>	<p>5.1.2. Lowering of water tables and its consequences</p> <p>5.1.3. Global warming and climate change impacts on land</p>	<p>Write a report on the impact of climate change on land resources. Focus on how global warming, erratic precipitation, and lowering water tables affect land use and productivity. Propose adaptive strategies to address these challenges.</p>
<p><b>Week 8</b></p>	<p><b>Unit 6</b></p> <p>6.1. Water and wind erosion</p> <p>6.1.1. Causes and effects of water erosion</p> <p>6.1.2. Prevention and management techniques</p>	

<b>Week 9</b>	6.1.3. Causes and effects of wind erosion 6.1.4. Prevention and management techniques	Develop a comprehensive plan to control water and wind erosion in a specific agricultural region. Include detailed descriptions of the techniques and methods you would implement.
<b>Week 10</b>	<b>Unit 7</b> 7.1.1. Nutrient and organic matter depletion 7.1.2. Causes and effects of nutrient and organic matter depletion 7.1.3. Strategies for replenishment and management	
<b>Week 11</b>	<b>Unit 8</b> 8.1. Salinization of soil and water 8.1.1. Causes and impacts of soil and water salinization 8.1.2. Prevention and remediation techniques	
<b>Week 12</b>	<b>Unit 9</b> 9.1. Sea water intrusion 9.1.1. Understanding sea water intrusion and its causes 9.1.2. Impact on coastal areas and preventive measures	What are the key elements of successful integrated land management practices? How can these be applied to degraded lands?
<b>Week 13</b>	<b>Unit 10</b> 10.1. Soil physical degradation: Crusting and compaction 10.1.1. Causes and effects of soil crusting and compaction 10.1.2. Management and prevention techniques	

<b>Week 14</b>	<b>Unit 11</b> 11.1. Water-logging 11.1.1. Causes and consequences of water-logging 11.1.2. Management and mitigation strategies	
<b>Week 15</b>	<b>Unit 12</b> 12.1. Land Sliding 12.1.1. Understanding the causes and impacts of land sliding 12.1.2. Prevention and control measures	
<b>Week 16</b>	12.1.3. Integrated Land Management Practices 12.1.4. Overview of integrated approaches for land management 12.1.5. Case studies on successful management practices	
<b>Textbooks and Reading Material</b>		
7. Chisholm, A. and R. Dumsday. 2009. Land Degradation: Problems and Policies. Cambridge University Press, London, UK. 8. Johnson, D.L. and L.A. Leiois. 2007. Land Degradation: Creation and Destruction. 2nd Ed. Rowman& Littlefield Publishers, Inc. USA. 9. Pessarakali, M. (ed.). 2010. Handbook of Plant and Crop Stress. 3rd Ed. Marcel and Dekker Inc., NY, USA. <b>10.</b> Wong, M.H., J.W.C. Wong and A.J.M. Baker. 1999. Remediation and management of degraded lands.CRC Press, Boca Raton, FL, USA.		
<b>Teaching Learning Strategies</b>		
11. Multimedia 12. White Board 13. Group discussion 14. Quiz/Assignments 15. Demonstration/Activity		
<b>Assignments: Types and Number with Calendar</b>		

16. Write an essay discussing the various land resources available globally. Focus on the importance of these resources for agriculture, industry, and urban development. Compare and contrast these resources with those in Pakistan.
17. Select a region affected by significant land degradation. Analyze the causes and impacts of this degradation and propose potential management strategies to mitigate the effects. Use real-world data and examples.
18. Write a report on the impact of climate change on land resources. Focus on how global warming, erratic precipitation, and lowering water tables affect land use and productivity. Propose adaptive strategies to address these challenges.
19. Develop a comprehensive plan to control water and wind erosion in a specific agricultural region. Include detailed descriptions of the techniques and methods you would implement.
20. What are the key elements of successful integrated land management practices? How can these be applied to degraded lands?

#### Assessment

Sr. No.	Elements	Weightage	Details
	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.