Course Report
(Bachelor)

Course Title:	**Reclamation of Arid and Impacted Lands**
Course Code:	**EVS 1012**
Program:	**Environmental Science**
Department:	**Biology**
College:	**Science**
Institution:	**Imam Mohammad Ibn Saud Islamic University**
Version:	**1**
Last Revision Date:	**-**

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A. General information about the course:

1. Course Identification

1. Credit hours: 2 (2 Lecture + 0 + 0)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (Not determined)					
4. Course general Description:					
This course explores the principles and practices involved in the reclamation and restoration of arid and environmentally impacted lands. Students will examine the ecological foundations necessary to understand the degradation processes and the challenges specific to arid environments. The course covers a range of topics including soil chemistry, erosion control, hydrology, native vegetation restoration, and the use of innovative technologies in land reclamation. Through a combination of lectures, case studies, and fieldwork, students will learn about the strategies for mitigating the effects of mining, industrial activities, and unsustainable land use practices that lead to land degradation. The course will also address the policy and planning aspects of land reclamation projects, emphasizing sustainable practices and community involvement.					
5. Pre-requirements for this course (if any)**:**					
EVS 1110 EVS 1114					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The main objective of the course "Reclamation of Arid and Impacted Lands" is to equip students with the knowledge and skills necessary to effectively restore and manage arid and environmentally degraded lands. Specifically, the course aims to: • Educate students on the ecological, chemical, and physical processes that affect arid and degraded landscapes. • Develop critical thinking and practical skills in identifying, planning, and implementing reclamation strategies that are scientifically sound and sustainable. • Foster an understanding of the socio-economic and policy contexts that influence land reclamation efforts, promoting an integrated approach to environmental management.					

Encourage students to apply theoretical knowledge through hands-on experience in assessing, designing, and managing reclamation projects.
This objective is crafted to prepare students for professional roles in environmental science, ecology, land management, and related fields, focusing on both the scientific and practical aspects of land reclamation.
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2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	100%
2	E-learning	-	-
3	Hybrid • Traditional classroom • E-learning	-	-
4	Distance learning	-	-

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Method

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	**Outline the ecological characteristics of arid lands: Students will gain a deep understanding of**	K1	Lecture and take-home research assignment	Quizzes, midterm exam and final exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	Describe the unique ecological features, biodiversity, and environmental processes that define arid regions, including how these factors influence land degradation and restoration potential.			
1.2	**Identify the causes and consequences of land degradation: Learners will identify various factors contributing to land degradation in arid and impacted environments, such as soil erosion, salinization, and the impacts of industrial activities, and understand their ecological and socio-economic implications**	K2	Lecture and take-home research assignment	Quizzes, midterm exam and final exam
1.3	**List the reclamation techniques and their applications: Students will understand a range of land reclamation**	K3	Lecture and take-home research assignment	Quizzes, midterm exam and final exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	methods, including soil amendment, erosion control, water management, and the reintroduction of native species, along with their suitability and effectiveness in different contexts			
1.4	**Explain the principles of sustainable land management: Students will learn about the principles underlying sustainable practices in land management and reclamation, including the integration of environmental, economic, and social considerations in planning and decision-making**	K4	Lecture and take-home research assignment	Quizzes, midterm exam and final exam
2.0	Skills			
2.1	**Evaluate and analyze the causes and impacts of land degradation in arid regions using scientific methods.**	S1	Laboratory and take-home research assignment	Lab reports and Lab exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	**Interpret data from physical, chemical, and biological assessments to develop effective reclamation strategies**	S2	Laboratory and take-home research assignment	Lab reports and Lab exam
2.3	**Use of modern tools and technologies for soil analysis, hydrological assessment, and vegetation mapping. Implement erosion control techniques and soil amendment practices to restore land functionality.**	S3	Laboratory and take-home research assignment	Lab reports and Lab exam
2.4	**Plan and execute reclamation projects, from initial assessment through to monitoring and maintenance phases. Coordinate with multiple stakeholders, including government bodies, local communities, and private enterprises,**	S3	Laboratory and take-home research assignment	Lab reports and Lab exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	to ensure project success			
2.5	**Design innovative solutions to complex problems of land degradation, considering ecological sustainability and economic feasibility. Adapt reclamation methods to specific environmental conditions and project constraints**	**S4**	Laboratory and take-home research assignment	Lab reports and Lab exam
3.0	**Values, autonomy, and responsibility**			
3.1	**Demonstrate independence and collaborate with a team**	V1	Lecture, laboratory and take-home research assignment	Quizzes, midterm exam, Lab reports, project presentations, Lab exam and final exam
3.2	**Share in specialized meetings and present data through oral presentations and written formats.**	V2	Lecture, laboratory and take-home research assignment	Quizzes, midterm exam, Lab reports, project presentations, Lab exam and final exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.3	**Demonstrate accountability and adhere to ethical regulations while performing a research work.**	V3	Lecture, laboratory and take-home research assignment	Quizzes, midterm exam, Lab reports, project presentations, Lab exam and final exam

C. Course Content

No	List of Topics (Lecture)	Contact Hours
1.	**Module 1: Introduction to Land Degradation and Reclamation:** - Overview of land degradation in arid regions: causes, effects, and global significance. - Introduction to the principles and goals of land reclamation.	**4**
2.	**Module 2: Ecological Foundations of Arid Lands:** - Understanding the ecology of arid environments, including flora, fauna, and ecosystem services. - Challenges unique to arid landscapes and the impact of climate change.	**4**
3.	**Module 3: Soil Science and Land Reclamation**: - Soil properties in arid lands: chemistry, fertility, and water retention. - Techniques for soil improvement and erosion control.	**4**
4.	**Module 4: Water Management in Arid Lands:** - Importance of hydrology in land reclamation. - Innovative water conservation and management techniques suitable for arid regions.	**4**
5.	**Module 5: Revegetation Strategies:** - Selection and management of plant species for successful revegetation. - Use of native vs. non-native species in restoration efforts.	**4**
6.	**Module 6: Technological Innovations in Land Reclamation:** **- Recent advancements in technology that support sustainable land reclamation.**	**2**

	- Case studies on successful technology integration in arid land restoration.	
7.	**Module 7: Legal and Policy Frameworks:** - Overview of regulatory landscapes governing land use and reclamation. - Discussion on the role of policies in promoting sustainable practices.	**2**
8.	**Module 8: Community Involvement and Socio-economic Aspects:** - Strategies for engaging local communities in reclamation projects. - Socio-economic benefits of successful land reclamation.	**2**
9.	**Module 9: Assessment and Monitoring of Reclaimed Lands:** - Methods for assessing the success of reclamation efforts. - Long-term monitoring strategies and adaptive management in land restoration.	**2**
10.	**Module 10: Case Studies and Project Planning:** - Analysis of real-world examples of successful and failed reclamation projects. - Students develop hypothetical reclamation projects, integrating knowledge from the course.	**2**
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam 1	5th week	20%
2.	Midterm exam 2	10th week	20%
3.	Quizzes, Participation, Attendance	During the semester	20%
4.	Final Exam	15th week	40%
Total			**100%**

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	• **Restoration Ecology: The New Frontier" by Jelte van Andel and James Aronson.** • **Principles of Soil Conservation and Management" by Humberto Blanco-Canqui and Rattan Lal** • **Arid Land Hydrogeology: In Search of a Solution to a Threatened Resource" by A. S. Alsharhan.**
Supportive References	• **Journal of Environmental Management** • **Restoration Ecology**
Electronic Materials	• **USDA NRCS Web Soil Survey** **An online tool that provides soil data and information produced by the National Cooperative Soil Survey, useful for practical exercises and projects.** • **The Reclamation Library (ReclamationLibrary.com)** **A digital resource hosting a wide range of articles, case studies, and project reports on land reclamation.**
Other Learning Materials	None

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms and Laboratories
Technology equipment (projector, smart board, software)	Projector and Smart board
Other equipment (depending on the nature of the specialty)	Environment-related instruments

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of Students assessment	Program Leader	Direct
Quality of learning resources	Peer Reviewer	Indirect
The extent to which CLOs have been achieved	Program Leader	Direct
Other	-	-

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**Biology Department Council**
REFERENCE NO.	**2**
DATE	**21/02/1446 H**