هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification
(Bachelor)

Course Title:	Plant Ecosystems
Course Code:	EVS 1120
Program:	Bachelor of Science in Environmental Science
Department:	Biology
College:	Science
Institution:	Imam Mohammed Ibn Saud Islamic University
Version:	1
Last Revision Date:	-

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 (Lecture 2 + Lab 2)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 2 / First year)					
4. Course General Description:					
The earth can be divided up into different types of areas with shared characteristics. The simplest division is that into areas covered by water and areas covered by dry land. This division is based upon simple physical characteristics. There are many other ways of dividing up regions which are far more complex; based upon not just physical characteristics but also the living things that inhabit an area. Regions of the world can be differentiated according to environmental conditions, topography, different plants, animals, microbes, and all other organisms, and all their interrelationships, these are called ecosystems. Different ecosystems (ecological systems) can be distinguished: forest ecosystem, grassland ecosystem, desert ecosystem, tundra ecosystem (polar and high mountains), aquatic ecosystem (freshwater ecosystem, marine ecosystem). Each of these ecosystems will be developed according to their different types, characteristics, components, and functions. The plant palette varies with the ecosystem because this requires the adaptation of various plant species to the specific conditions of each ecosystem. The physiology of the plant varies in this case and we will explain, for each ecosystem, the physiological behavior of plants allowing them their adaptation to the specificities of the environment.					
5. Pre-requirements for this course (if any)**:**					
EVS1110 EVS 1112 EVS1114					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					

The structure of the course ensures that students can acquire the required skills for different plant ecosystems. The objectives of this course are to provide a basic understanding of the characteristics, components, and functions of various plant ecosystems permitting to:
- explain the importance of plants as energy producers within ecosystems,
- describe the effects of plant association and competition on the succession of plants and how they respond to environmental stresses,
- describe the effects of a range of biotic and abiotic environmental factors on plant growth and development,
- relate plant distribution, growth and natural selection to soil, geography, weather and climate,
- explain how planning, environmental assessment and impact analysis may contribute to the conservation process,
- explore how human activities can negatively affect natural ecosystems,
- learn how humans can reduce their impacts on the environment.

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**	30
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	-
Total		**60**

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

Code	Course Learning Outcomes	Code of CLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**			
1.1	Demonstrate a broad and coherent understanding of ecosystems and their different types.	K1-K3	Weekly lectures Class discussions	Quizzes, midterm exams, and final exam
1.2	Outline the diversity and distribution of plants in several ecosystems, including land, water, desert, grassland, and forest.	K2-K3	Weekly lectures Class discussions	Quizzes, midterm exams, and final exam
1.3	Describe a broad and coherent theoretical and practical knowledge through implementing appropriate methodologies for studying plant ecosystems.	K2-K3	Weekly lectures Class discussions	Quizzes, midterm exams, and final exam
1.4	Explain the role of ecological systems in shaping the evolution of plant life histories.	K2-K4	Weekly lectures Class discussions	Quizzes, midterm exams, and final exam
2.0	Skills			
2.1	Evaluate the different factors affecting the plant in the environment.	S1-S2	Weekly lectures Class discussions	Lab reports and Lab exam
2.2	Relate plant distribution, growth and natural selection to soil, geography, weather and climate.	S1-S2	Weekly lectures Class discussions	Lab reports and Lab exam

Code	Course Learning Outcomes	Code of CLOs aligned with the program	Teaching Strategies	Assessment Methods
2.3	Analyse the factors leading to environmental degradation, their reasons and their impact on the environment.	S2-S3-S4	Weekly lectures Class discussions	Lab reports and Lab exam
2.4	Interpret the concepts, types, development, and functions of various plant ecosystems.	S3-S4	Weekly lectures Class discussions	Lab reports and Lab exam
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate independence and cooperate effectively with the research team.	V1	Presentations	Presentations, reports, seminars
3.2	Share in the discussion of scientific issues in the field of plant ecosystems.	V2-V3-V4	Presentations	Presentations, reports, seminars
3.3	Show the ability to present plant environment-related information through different modes to various audiences.	V2-V3	Presentations	Presentations, reports, seminars

C. Course Content

No	List of Topics	Contact Hours
1.	**Forest ecosystem** - Definition - Native plant communities - Forest succession - Components of forest ecosystem - Types of forest ecosystem * Tropical forest ecosystem	**8**

	* Temperate forest ecosystem * Taiga/Boreal forest ecosystem - Plant physiology in a forest ecosystem - Effects of human activities on forest ecosystem	
2.	**Grassland ecosystem** - Definition - Native plant communities - Components of grassland ecosystem - Types of grassland ecosystem * Desert grasslands * Flooded grasslands * Montane grasslands * Tropical grasslands * Temperate grasslands - Plant physiology in a grassland ecosystem - Effects of human activities on grassland ecosystem	**6**
3.	**Desert ecosystem** - Definition - Native plant communities - Components of desert ecosystem - Types of desert ecosystem * Hot and dry desert ecosystem * Semi-arid desert ecosystem * Coastal desert ecosystem * Cold desert ecosystem - Plant physiology in a desert ecosystem - Effects of human activities on desert ecosystem	**4**
4.	**Tundra ecosystem (polar and high mountains)** - Definition - Native plant communities - Components of tundra ecosystem - Types of tundra ecosystem * Arctic tundra * Alpine tundra * Antarctic tundra - Plant physiology in a tundra ecosystem - Effects of human activities on tundra ecosystem	**4**

5.	**Aquatic ecosystem** - Definition - Native plant communities - Components of aquatic ecosystem - Types of aquatic ecosystem * Freshwater ecosystem • Lotic ecosystem • Lentic ecosystem • Swamps and wetlands ecosystem * Marine ecosystem • Ocean ecosystem • Coastal ecosystem • Estuaries ecosystem • Coral reefs ecosystem - Plant physiology in an aquatic ecosystem - Effects of human activities on aquatic ecosystem	**8**
Total		**30**

No	List of Topics (Labs)	Contact Hours
1.	Study of some plant species in a forest ecosystem	**4**
2.	How to limit negative impacts of human activities on forest ecosystem?	**4**
3.	Study of some plant species in a grassland ecosystem	**2**
4.	How to limit negative impacts of human activities on grassland ecosystem?	**4**
5.	Study of some plant species in a desert ecosystem	**4**
6.	How to limit negative impacts of human activities on desert ecosystem?	**4**
7.	Study of some plant species in a tundra ecosystem	**2**
8.	How to limit negative impacts of human activities on tundra ecosystem?	**2**
9.	Study of some plant species in an aquatic ecosystem	**2**
10.	How to limit negative impacts of human activities on aquatic ecosystem?	**2**
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam 1	Around 4th - 5th week	15%
2.	Midterm exam 2	Around 7th - 8th week	15%
3.	Quizzes, Participation, Attendance	During the semester	10%
4.	Lab reports	During the semester	5%
5.	Lab Exam	15th week	15%
6.	Final Exam	16th 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	- Grime G.P., 2001. Plant strategies, vegetation processes, and ecosystems properties, Publisher: Wiley, Second edition, 417 pages, ISBN: 9780470850404, 047085040X. - Smith T. M., Shugart H. H., Woodward F. I., 1997. Plant functional types. Their relevance to ecosystem properties and global change, 388 pages, ISBN: 9780521566438. - Chapin III F.S., Matson P.A., Vitousek P.M., 2011. Principles of terrestrial ecosystem ecology, Springer New York, Second edition, 529 pages, ISBN: 9781441995049, 1441995048. - Schulze E.D., Beck E., Buchmann N., Clemens S., Müller-Hohenstein K., Scherer-Lorenzen M., 2019. Plant ecology, second edition, Springer, 928 pages, ISBN 978-3-662-56231-4. - Mahalingam R., 2014. Plant ecosystem, Agrotech Press, ISBN-10 : 9383101741. - Lack A., 2022. Plant ecology and conservation, Publisher: Garland Science, 328 pages, ISBN: 1000597881, 9781000597882. - Maarel E. van der, Franklin J., 2012. Vegetation ecology, Publisher: Wiley Blackwell, 576 pages, ISBN: 9781118452486, 1118452488.

Supportive References	- Larcher W., 2003. Physiological plant ecology, 4th edition, Springer, 513 pages, ISBN: 9783540435167, 3540435166. - Kurzius A., 2019. Plants and ecosystems, Publisher: Scholastic Incorporated, 48 pages, ISBN: 9780531234648, 0531234649.
Electronic Materials	-
Other Learning Materials	-

2. Required Facilities and equipment

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

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 Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	