



# Course Specification

## (Bachelor)

**Course Title:** Principles of Ecology

**Course Code:** APEP1603

**Program:** Diploma- Technology of Environmental Protection

**Department:** Biology

**College:** Faculty of Science

**Institution:** Umm Al-Qura University

**Version:** 2

**Last Revision Date:** 12- 2024



## Table of Contents

A. General information about the course: .....	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods .....	4
C. Course Content .....	6
D. Students Assessment Activities .....	7
E. Learning Resources and Facilities .....	7
F. Assessment of Course Quality .....	8
G. Specification Approval .....	8



## A. General information about the course:

### 1. Course Identification

**1. Credit hours:** 3 Credits (2 theoretical + 1 practical)

**3 Credits (2 theoretical + 1 practical)**

#### 2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others

B. ☒ Required ☐ Elective

**3. Level/year at which this course is offered: (1<sup>st</sup> Year /1<sup>st</sup> Level)**

#### 4. Course General Description:

This course aims to provide an overview of ecology from the level of individual organisms to populations, communities, ecosystems, and the biosphere. It examines ecological interactions' physical, chemical, and biological components and includes terrestrial and aquatic ecosystems. Also, this course introduces the students to the concept of ecology, components, and the relationships within the ecosystem. Also, Plant vegetation, types, and development

**5. Pre-requirements for this course (if any):**

**6. Co-requisites for this course (if any):**

#### 7. Course Main Objective(s):

The student will be able to:

Taught the students to acquire specialized knowledge of what is Ecology? How living and non-living things affect each other in their environment.

Describe the ecosystem's functional structure.

Illustrate energy in an ecological ecosystem.

Illustrate the biochemical cycles.

Illustrate the meaning of plant vegetation, types, and development.

Illustrate Climate change

Illustrate desertification – land degradation

### 2. Teaching mode (mark all that apply)





No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		80%
2	E-learning		20%
3	Hybrid <ul style="list-style-type: none"> <li>Traditional classroom</li> <li>E-learning</li> </ul>		
4	Distance learning		

### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30 h
2.	Laboratory/Studio	14h.
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recognize knowledge and basic information about ecological factors and the relationships between organisms and the environment. Understanding the concept of ecology and its levels.	K1	-In-class lecturing -Homework assignments -Discussions (connecting what they learn in the class. -Handout of lecture notes for each topic	-Homework and Quizzes. -Midterm and final written exams -Evaluation of reports
1.2	Identifying the meaning of ecosystem and recognizing its components, and describe the different biogeochemical cycles	K3	-Small group discussions.	-Oral presentation





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
...	Defining the importance of plant vegetation.			
2.0	Skills			
2.1	Explain the different factors affecting the organism in the environment.	S1	Application of essential scientific techniques through lectures and essays.	Evaluation of the topics prepared by students.  -Midterm and final exams  -Checking the homework assignments
2.2	Differentiate between food chain and food web.		Small group discussion	
2.3	Summarize major quantitative and qualitative characteristics of the plant community.	S2	Ask the students to make small search projects during the semester	
2.4	Predict the components in the grassland ecosystem.	S4	Class discussions (Engage students in interaction with questions and answers).	
	Homework assignments  Field trip			
3.0	Values, autonomy, and responsibility			
3.1	Analyze and evaluate time management, discipline, and also to ethical behavioral, respect from different points of view.	V1		Assignments (Individual and group)  Presentation (Individual and group) assessments.
3.2	Learn continuously through self-reflection and or experience to recognize the value of learning.	V2 V3		Research search assignments
...				





## C. Course Content

No	List of Topics	Contact Hours
1.	General introduction meaning of ecology and importance. The levels of ecology.	2
2.	Structure of the ecosystem	2
3.	Factors affecting the organisms in their environment. The climatic factor is precipitation – temperature, light – humidity- wind, and evaporation. Physiographic factor	2
3.	Biological factor, plant-plant relationship- plant-animal relationship Inter-relations of Living Organisms (Mutualism, Commensalism, Parasitism) Plant vegetation, types of plant vegetation, plant vegetation development	2
4.	-Vegetation sampling using quadrat and transect methods -Major quantitative and qualitative characters of plant community	2
5.	- Food web and food chain . -Energy in ecological systems- Biogeochemical cycles	2
6.	Midterm-Exam	2
7,8	-The climate system  The Atmosphere- The World Ocea- Ocean– Atmosphere Interactions- The Carbon Cycle and How It Influences Climate  -Climate change and its drivers and Consequences  The Concept of Radiation Balance, a Scientific Framework for Thinking About Climate Change- Radiative Forcing, Feedbacks, and Some Other Characteristics of the Climate System- Learning from the Climate of the Distant Past	4
9.	Adaptation:  -Behavioral, structural, and functional adaptations: How organisms adapt to their environments through changes in their behavior, structure, or internal functions.  -Biodiversity and adaptation: How adaptation helps maintain species in their different environments.	
10,11	-desertification – land degradation  - Types of deserts  - Desertification stages  - Causing of desertification: drought, rainfall, snowmelt, floods, overgrazing, deforestation, farming practices.  - Causing of desertification: urbanization and land development, population growth, climate changes, stripping the land for resources and natural disasters	4
12.	Natural environments	2
13.	Natural Resources and Environmental Management: Types of Natural Resources: Renewable and Non-Renewable Resources. Challenges Associated with the Use of Natural Resources. Strategies for Conserving Natural Resources and Sustainable Management	2
14.	Identification of Environment & Health and the interactions between human & Environment.	2
15.	Population of Ecology Environmental Health	
Total		30



## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz 1 (Theory)	3	5%
2.	Midterm examination (Theory)	6	15%
3.	Midterm examination (practical)	7	10%
4.	Group project	9-10	10%
5.	Final examination (practical)	15	20%
6.	Final examination (Theory)	16	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	<ul style="list-style-type: none"> <li>- Beeby &amp; Brennan: First Ecology - Ecological Principles and Environmental Issues 3rd edition</li> <li>- Begon, M. et al (1996 and many subsequent editions) Ecology. Blackwells, Oxford</li> <li>- Krebs, C. (2008, or earlier editions). Ecology: The Experimental Analysis of Distribution and Publisher: Benjamin Cummings</li> <li>- Molles, M. C. (2019). Ecology: Concepts and Applications (8th ed.). McGraw-Hill Education.</li> </ul>
Supportive References	
Electronic Materials	<a href="https://uoh.blackboard.com">https://uoh.blackboard.com</a> <ul style="list-style-type: none"> <li>• <a href="http://www.google.com">www.google.com</a></li> <li>• <a href="http://herbiers.univ-bpclermont.fr/">http://herbiers.univ-bpclermont.fr/</a></li> <li>• <a href="http://www.cabi.org/">http://www.cabi.org/</a></li> <li><a href="http://plantdiversityofsaudi Arabia.info/">http://plantdiversityofsaudi Arabia.info/</a></li> </ul>
Other Learning Materials	

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> <li>• Classrooms</li> <li>• Laboratory assistance.</li> </ul>



Items	Resources
<b>Technology equipment</b> (projector, smart board, software)	- Computers and internet connection. -E-mail communications. - projector, smart board, software
<b>Other equipment</b> (depending on the nature of the specialty)	

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty	Course report
Effectiveness of Students assessment	Students	Course Evaluation Template
Quality of learning resources	Program leader / Head of the Department Quality Committee	Annual program report
The extent to which CLOs have been achieved	Umm Al-Qura University Council 851141114462/190635 22/11/1446	

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	Umm Al-Qura University Council
<b>REFERENCE NO.</b>	851141114462/190635
<b>DATE</b>	22/11/1446

