هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	**Fundamentals of Ecology**
Course Code:	**301 ZOO**
Program:	**Bachelor of Biology**
Department:	**Biology Department**
College:	**College of Science**
Institution:	**Jazan University**

Table of Contents

A. Course Identification

1. Credit hours: 2
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: **5th Level / 3rd Year**
4. Pre-requisites for this course (if any)**:** **None**
5. Co-requisites for this course (if any)**:** **None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	15	% 100
2	**Blended**	---	
3	**E-learning**	---	
4	**Distance learning**	---	
5	**Other**	---	

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	15 Per Semester
2	**Laboratory/Studio**	28 Per Semester
3	**Tutorial**	
4	**Others** (specify)	
	Total	**43**

B. Course Objectives and Learning Outcomes

1. Course Description

Course Title	Course Code	Number of Study Hours				Year	Level	Prerequisites
		Theo.	Tut.	Lab.	Credit			
Fundamentals of Ecology	301BIO	1		2	2	3rd	5th	-

(1) Brief Course Description

Introduction to ecological concepts, and the applications of this science in reducing environmental pollution.

(2) Course Objectives

This course is designed to provide students with the following concepts:

1. Identify environmental factors.
2. Study the impact of environmental factors on the ecosystem.
3. Explain the human role in the environment positively and negatively.
4. Awareness of the importance of the environmental protection from pollution.

(3) Course Contents

a. Theoretical part:

1. Introduction to Ecology: Concept of ecology and its fields and its relation to other sciences.
2. The ecosystem: The components of the natural ecosystem and the types of ecosystems, Living and non-living environmental factors and their impact on living organisms.
3. Effect Environment on the physical, anatomical and physiological aspects of organisms. Energy conservation in the natural ecosystem.
4. Living organisms and levels of nutrition, food chains and food webs - ecological pyramids.
5. Ecosystem Balance - natural ecosystems - conservation of natural resources, tolerance of organisms to chemical and physical agents, Natural environment.
6. Biogeochemical elements cycle: water, carbon, oxygen, nitrogen, phosphorus cycles.
7. Environmental pollution: Water pollution, food contamination, air Pollution soil pollution, desertification, radiation pollution, noise pollution, thermal pollution, electromagnetic pollution, climate change, global warming and Ozone layer depletion.

b. Practical part:

1. Methods of measuring environmental factors (temperature, wind, atmospheric pressure, rain, relative humidity, Soil analysis, Scientific field trip to the meteorological station at the Center of Environmental Studies and Research.

(4) Assessment Criteria

- Quizzes , Midterm Exam and Assignments : 20 %
- Practical Section: 30 %
- Final exam: 50%

(5) Course Teaching Strategies

- Lectures, Reports and Essay Assignments, Homework, and Web-based Assignments.

(6) Text Book

- **Hayati, A. A.** (**2007**). *Fundamentals of Ecology(in arabic)*, First Ed., Dammam, Saudi Arabia.

(7) Reference Books

- Al-Oudat, Mohamed Abdo and Abdullah Yahya Basahey (2001), Pollution and Environmental Protection, Deanship of Library Affairs, King Saud University, Riyadh - Saudi Arabia.
- Alyaa Atokh Boran and M. Abo Deyah (2014) Ecology 4th Eddition, Amman, Jordan.
- Molles M.C.(2015) Ecology: Concepts and Applications 7th Edition, McGraw Hill, New York.
- General Authority for Meteorology and Environmental Protection Saudi Arabia http://www.pme.gov.sa
- Saudi Wildlife Authority Website http://www.swa.gov.sa/index.php/en

2. Course Main Objective:

This course is designed to provide students with the following concepts:

1. To introduce the students to the concept of ecology, its divisions, and components
2. Relationships within the ecosystem.
3. Identify environmental factors.
4. Study the impact of environmental factors on the ecosystem.
5. Explain the human role in the environment positively and negatively.
6. Awareness of the importance of the environmental protection from pollution.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Define all principles, concepts, aspects related to Ecology..	K1
1.2	Distinguish different structures and features related to Ecology.	K2
2	Skills :	
2.1	Explain aspects, theories, and processes relevant to Ecology,	S1
2.2	Apply the theoretical knowledge and understanding lab experiments	S2
3	Values:	
3.1	Illustrate ability to teamwork, self-expression and caring a responsibility	V1

C. Course Content

Theoretical Content

No	List of Topics	Contact Hours
1	Introduction to Ecology: Concept of ecology and its fields and its relation to other sciences.	1
2	The ecosystem: The components of the natural ecosystem and the types of ecosystems.	1
3	Living and non-living environmental factors and their impact on living organisms.	1
4	Effect Environment on the physical, anatomical and physiological aspects of organisms.	1
5	Energy conservation in the natural ecosystem.	1
6	Living organisms and levels of nutrition, food chains and food webs - ecological pyramids.	1
7	Ecosystem Balance - natural ecosystems - conservation of natural resources.	1
8	Tolerance of organisms to chemical and physical agents.	1
9	Biodiversity	1
10	Biogeochemical elements cycle: water, carbon, oxygen, nitrogen, phosphorus cycles.	1
11	Biogeochemical elements cycle: nitrogen, phosphorus and sulfur cycles.	1
12	Environmental pollution: Water and food pollution, air and soil pollution.	1
13	Desertification, radiation, noise pollution, thermal pollution, electromagnetic pollution, climate change, global warming and Ozone layer depletion	1
14	renewable Energy	1
Total		14

Practical Content

No	List of Topics	Contact Hours
1	Introduction to Ecology and Lab. safety	2
2	Abiotic factors or non-living factors that impact an ecosystem.	2
3	Effect of Temperature in ecosystem	2
4	Effect of Humidity in ecosystem	2
5	Effect of Rain in ecosystem	2
6	Effect of Light in ecosystem	2
7	Effect of Wind in ecosystem	2
8	Effect of Oxygen in ecosystem	2
9	Effect of Salinity (the concentration of salt in water) in ecosystem	2
10	Effect of Radiation in ecosystem	2
11	Effect of Soil composition in ecosystem	2
12	Soil analysis	2
13	Effect of Pollution in ecosystem	2
Total		26

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define all principles, concepts, aspects related to Ecosystem..	Lectures, lab work	Quizzes, Short Answer Question, Assignments
1.2	Distinguish different structures and features related to Ecosystems .	Lectures, Lab work	Quizzes, Short Answer Question, Assignments
2.0	**Skills**		
2.1	Explain aspects, theories, and processes relevant to Ecology,	Lectures, Lab work	Quizzes, Short Answer Question, Assignments
2.2	Apply the theoretical knowledge and understanding lab experiments	Lectures, Lab work, Group Discussion	Quizzes, Short Answer Question, Lab work assessment
3.0	**Values**		
3.1	Illustrate ability to teamwork, self-expression and caring a responsibility	Group Discussion, Lab work	Lab work assessment, assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Written assignment	3	3
2	Theoretical quiz	5	5
3	Mid-term exam	7	10
4	Practical Mid-term exam	9	10
5	Practical assignment	11	5
6	Final practical exam	13	15
7	Final Exam	15	50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : **10 Office hours/faculty/week.**

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**Hayati, A. A. (2007).** *Fundamentals of Ecology (in Arabic),* First Edition, Dammam, Saudi Arabia.
Essential References Materials	• Al-Oudat, Mohamed Abdo and Abdullah Yahya Basahey (2001), Pollution and Environmental Protection (in Arabic) , Deanship of Library Affairs, King Saud University, Riyadh - Saudi Arabia. • **Alyaa** Atokh Boran and M. Abo Deyah (2014) Ecology (in Arabic) 4th Eddition, Amman, Jordan. • Molles M.C.(2015) Ecology: Concepts and Applications 7th Edition, McGraw Hill, New York. • Molles M.C. (2008) Ecology. McGraw Hill, New York. • Botkin D.B. Keller E.A. (2007) Environmental Science. Wiley, New York.
Electronic Materials	• General Authority for Meteorology and Environmental Protection Saudi Arabia http://www.pme.gov.sa • Saudi Wildlife Authority Website http://www.swa.gov.sa/index.php/en
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1 Lecture room(s) for groups of 50 students. 1 Laboratory for group of 25 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	AV, data show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Light microscopes, glassware, chemicals, consumables, dissection tools.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Faculty	Direct (Questionnaire)
Effectiveness of assessment	Peer Reviewer	Direct (Cross Check marking)
Extent of achievement of course learning outcomes	Program Leader	Indirect (QA Committee)
Quality of learning resources	QA. Committee	Indirect (Benchmarking)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Consultant Committee/ Board of Biology Department
Reference No.	
Date	