



## Course Specifications

<b>Course Title:</b>	<b>Principles of Ecology</b>
<b>Course Code:</b>	<b>BIO271</b>
<b>Program:</b>	<b>Bachelor of Science in Biology</b>
<b>Department:</b>	<b>Department of Biology</b>
<b>College:</b>	<b>Faculty of Science</b>
<b>Institution:</b>	<b>University of Tabuk</b>

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## A. Course Identification

<b>1. Credit hours:</b>	<b>3 (2 Theoretical + 1 Practical) hours</b>
<b>2. Course type</b>	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b>	<b>Level 4/Second semester/ Second year</b>
<b>4. Pre-requisites for this course (if any):</b>	<b>General Biology 2 (BIO202)</b>
<b>5. Co-requisites for this course (if any):</b>	

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	50%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other (lab work)	2	50%

### 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	26
2	Laboratory/Studio	26
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	<b>52</b>

## B. Course Objectives and Learning Outcomes

### 1. Course Description

- The course includes some definition of ecology and its concept, components of environment, the biotic and abiotic factors and their role on developing the community, ecosystem; its types, changes and productivity. It also includes the community and ecosystem dynamics Structure of the atmosphere, Water and mineral cycles and energy flow, Ecological pyramids, Succession of vegetation, Natural resources and their conservation, Environmental pollution (types, sources, minimization).

### 2. Course Main Objective

The main purpose of the course are to provide information to the students about the following:

- What is ecology and what ecologists do and what they need to understand to make sense of the patterns and processes in nature.
- This course also aims at providing students with an introduction to the fundamentals of ecology and conservation.
- Subjects such as components of environment, diversity of ecosystems, and structure of natural communities and identification of habitats for wild life are included.
- Subjects such as structure of the atmosphere, food web, ecological pyramids, succession of vegetation, natural resources and their conservation, sources and minimization of pollution are also included.



### 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge and Understanding</b>	
1.1	To define Ecology and its principles in relation to living organisms.	K1
1.2	To describe the components of the environment, structure of the atmosphere and the ecological pyramid .	K2
<b>2</b>	<b>Skills:</b>	
2.1	To demonstrate web based searching on the topics of modern ecology and environment.	S3
2.2	To differentiate between types of ecosystems and their structures	S1
2.3	To write scientific report on structure and types of ecosystems after field trips	S4
2.4	To compare between polluted and unpolluted ecosystems	S1
<b>3</b>	<b>Values:</b>	
3.1	To justify the need and ways to apply environmental techniques to solve ecological issues.	V1
3.2	To question the reasons behind different environmental issues	V2

### C. Course Content

No	List of Topics	Contact Hours
1	Introduction (what is ecology and what ecologists do and what they need to understand to make senses of the patterns and processes in nature)	2
2	Definitions of ecology	2
3	Components of the environment	2
4	Role of biological and physical factors in developing community structure	2
5	Ecosystem (structure and types)	2
6	Productivity of ecosystems	2
7	Community and ecosystem dynamics	2
	<b>Mid Term Exam</b>	
8	Structure of the atmosphere	2
9	Water and mineral cycles and energy flow	2
10	Ecological pyramids	2
11	Succession of vegetation	2
12	Natural resources and their conservation	2
13	Environmental pollution (types, sources, minimization)	2
	<b>Final Exam</b>	
<b>Total</b>		<b>26</b>

No	(List of Topics (laboratory part	Contact Hours
1	Identification and Use of Some Equipment in Ecological Studies	2
2	Identification of different components of environment	2
3	Determine the moisture contents of the given soil samples	2
4	Study the construction of terrestrial food chain	2



5	Study the construction of aquatic food chain	2
6	Measurement of pH of different water samples	2
7	Measurement of dust fall rate using filter papers	2
	<b>Midterm Exam</b>	
8	Determining frequency of a plant species present in a community	2
9	Determining density of a plant species present in a community	2
10	Determining abundance of a plant species present in a community	2
11	Biological magnification in a food chain	2
12	To study energy flow in an ecosystem	2
	<b>Final Exam</b>	
<b>Total</b>		<b>26</b>

## D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and Understanding</b>		
1.1	To define Ecology and its principles in relation to living organisms.	- Lectures.	- Quizzes. - Homework. - Final exams.
1.2	To describe the components of the environment, structure of the atmosphere and the ecological pyramid.	- Activities and homework.	- Quizzes. - Homework. - Final exams.
<b>2.0</b>	<b>Skills</b>		
2.1	To demonstrate web based searching on the topics of modern ecology and environment.	- Lectures. - Individuals and small group tasks.	- Individual and group presentations.
2.2	To differentiate between types of ecosystems and their structures.	- Short essay . - Individual presentation and working as a part of group.	- Case studies. - Demonstrate through posters and charts. - Practical examinations.
2.3	To write scientific report on structure and types of ecosystems after field trips.	- Short essay . - Individual presentation and working as a part of group.	- Case studies. - Demonstrate through posters and charts.
2.4	To compare between polluted and unpolluted ecosystems .	- Short essay . - Individual presentation and working as a part of group.	- Case studies. - Demonstrate through posters and charts.
<b>3.0</b>	<b>Values</b>		
3.1	To justify the need and ways to apply environmental techniques to solve ecological issues.	- Essay writing. - Lab demonstrations.	- Oral and written scientific report.

			- Interactive discussion and participation.
3.2	To question the reasons behind different environmental issues.	- Essay writing. - Lab demonstrations.	- Oral and written scientific report. - Interactive discussion and participation.

## 2. Assessment Tasks for Students

#	*Assessment task	Week Due	Percentage of Total Assessment Score
1	Quizzes + assignments + class discussion	1-13	10%
2	Midterm Theoretical Exam	8	10%
3	Midterm Practical Exam	8	25%
4	Final Practical Exam	14	15%
5	Final Exam	15	40%

\*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 :**

- Office hours 6 hours/ week at least.
- academic guidance for about 30 students as determined by admission and registration.
- Direct supervision of staff or lab works.
- Electronic communication through blackboard and e-mail.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	- Ecology, Second Edition by Michael L. Cain, William D. Bowman, and Sally D. Hacker - Understanding Environmental Pollution, by Hill, Marquita K.
<b>Essential References Materials</b>	- Journal of environmental biology - Journal of environmental pollution - Journal of ecology - Journal of Environmental and experimental biology
<b>Electronic Materials</b>	- Saudi Digital Library - <a href="http://instructors.coursesmart.com">http://instructors.coursesmart.com</a>
<b>Other Learning Materials</b>	

### 2. Facilities Required

Item	Resources
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<p><b>Accommodation</b> Classrooms, laboratories, demonstration) (.rooms/labs, etc)</p>	<p>A sufficient number of classrooms, well - equipped Practical laboratories are available to- accommodate students Virtual session provided by blackboard (which allow- discussion and sharing video and PowerPoint</p>
<p><b>Technology Resources</b> AV, data show, Smart Board, software,) (.etc)</p>	<p>- Data show Wireless connection in the building for students and faculties</p>
<p><b>Other Resources</b> Specify, e.g. if specific laboratory) equipment is required, list requirements or (attach a list</p>	<p>Equipment for environmental monitoring and impact assessment required</p>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	- Students.	Indirect - Questionnaires.
The extent of achieving the course learning outcomes.	- Program committee. - Staff members. - Students.	Direct - Questionnaires. - Reports. - Meetings
Quality of learning resources.	- Program leaders. - Peer Reviewer.	Direct & Indirect - Questionnaires. - Reports. - Meetings

**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	Biology Department Council
Reference No.	
Date	1/6/2022

