



# Course Specification

## (Postgraduate Programs)

Course Title: **Threats to Biodiversity**

Course Code: **BIOD509**

Program: **Master's in Biodiversity**

Department: **Department of Biology**

College: **Faculty of Science**

Institution: **University of Tabuk**

Version: **2**

Last Revision Date: **18/11/1444 H**

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## A. General information about the course:

### 1. Course Identification:

1. Credit hours: 3 Credit Hours (3 Theoretical)

#### 2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track

B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (Level 3/Second year)

#### 4. Course General Description:

This course explores the primary threats to biodiversity and the risks posed by human activities. It examines various factors causing habitat loss, species distribution changes, and the consequences of biodiversity loss for both humans and the environment. The course includes a discussion on the impacts of overhunting, overfishing, and over-harvesting, supported by historical examples. Additionally, it covers topics such as environmental pollution, climate change, exotic species, and ecosystem disturbances.

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

- Population and Community Ecology (BIOD504)

#### 6. Pre-requirements for this course (if any):

- None.

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

- Describe the main threats to biodiversity.
- Describe the risk of human activities to biodiversity.
- Analyze different risks and threats that cause loss of habitat and render the distribution of species.
- Analyze the consequences of biodiversity loss of species on ecosystems.
- Identify the impact of overhunting, overfishing, and over-harvesting on biodiversity.
- Discuss the effect of environmental pollution and climate changes on biodiversity.
- Explain the importance of exotic species and disturbance of the ecosystem.

### 2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		





No	Mode of Instruction	Contact Hours	Percentage
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	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify).....	
Total		45

## 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	Explain how key environmental variables (e.g., light, temperature, salinity, nutrients) and anthropogenic threats (e.g., pollution, habitat destruction, climate change) impact biodiversity across different ecosystems.	K1	<ul style="list-style-type: none"> <li>Lectures.</li> <li>Seminars.</li> <li>Class discussions.</li> <li>Problem-solving classes.</li> <li>Self-learning.</li> <li>Case studies.</li> </ul>	<ul style="list-style-type: none"> <li>Written exams (Midterm and Final exams).</li> <li>Quizzes.</li> <li>Class discussions.</li> </ul>
	Identify key threats to biodiversity, such as habitat loss, climate change, and pollution, and understand the	K2	<ul style="list-style-type: none"> <li>Lectures.</li> <li>Seminars.</li> <li>Class discussions.</li> <li>Problem-</li> </ul>	<ul style="list-style-type: none"> <li>Written exams (Midterm and Final exams).</li> <li>Quizzes.</li> <li>Class discussions.</li> </ul>



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	methods used to address them.		solving classes. - Self-learning. - Case studies.	
<b>2.0</b>	<b>Skills</b>			
2.1	Assess how specific human activities impact biodiversity using case studies and real-world examples.	<b>S2</b>	<ul style="list-style-type: none"> <li>- Lectures.</li> <li>- Seminars.</li> <li>- Class discussion.</li> <li>- Problem-solving classes.</li> <li>- Self-learning.</li> <li>- Case studies.</li> <li>- Individual and group presentations.</li> <li>- Assignments.</li> <li>- Essays.</li> </ul>	<ul style="list-style-type: none"> <li>- Written exams (Midterm and Final exams).</li> <li>- Quizzes.</li> <li>- Class discussions.</li> <li>- Individual and group presentations.</li> <li>- Assignments.</li> <li>- Essays.</li> </ul>
2.2	Develop conservation strategies to address the impacts of human activities on biodiversity, using case studies.	<b>S4</b>	<ul style="list-style-type: none"> <li>- Lectures.</li> <li>- Seminars.</li> <li>- Class discussions.</li> <li>- Problem-solving classes.</li> <li>- Self-learning.</li> <li>- Case studies.</li> <li>- Individual and group presentations.</li> <li>- Assignments.</li> <li>- Essays.</li> </ul>	<ul style="list-style-type: none"> <li>- Written exams (Midterm and Final exams).</li> <li>- Quizzes.</li> <li>- Class discussions.</li> <li>- Individual and group presentations.</li> <li>- Assignments.</li> <li>- Essays.</li> </ul>
2.3	Communicate key information on the threats to biodiversity, including habitat loss, climate change, and pollution, to diverse audiences effectively.	<b>S5</b>	<ul style="list-style-type: none"> <li>- Lectures.</li> <li>- Seminars.</li> <li>- Class discussions.</li> <li>- Problem-solving classes.</li> <li>- Self-learning.</li> <li>- Case studies.</li> <li>- Individual and</li> </ul>	<ul style="list-style-type: none"> <li>- Written exams (Midterm and Final exams).</li> <li>- Quizzes.</li> <li>- Class discussions.</li> <li>- Individual and group presentations.</li> </ul>





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			group presentations. - Assignments. - Essays.	- Assignments. - Essays.
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Illustrate ethical and responsible knowledge in addressing threats to biodiversity.	<b>V1</b>	- Class discussions. - Individual and group presentations. - Assignments. - Essays.	- Class discussions. - Individual and group presentations. - Assignments. - Essays.

### C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction, Tree of life, Origin of the Life, Mechanisms of microbial evolution.	3
2.	Taxonomy, Phylogeny, and Molecular Chronometer.	3
3.	Analysis of Microbial Diversity.	3
4.	Introduction to microbial communities and metagenomics.	3
5.	Microbial diversity of terrestrial ecosystems (soil, forests, desert, sediment, tundra).	3
6.	Microbial diversity of aquatic ecosystems (Freshwater and Marine).	3
7.	Microbes in extreme environments.	3
8.	Prokaryotic Microbial diversity.	3
9.	Animal virus, and Plant virus diversity.	3
10.	Eukaryotic Microbes in Nature Fungi, Algae, and Protozoa Diversity.	3
11.	Microbial interactions: Symbioses, allelopathy, syntrophy, quorum sensing, Enzyme discovery through meta-omics (Part I).	3
12.	Microbial interactions: Symbioses, allelopathy, syntrophy, quorum sensing, Enzyme discovery through meta-omics (Part II).	3
13.	Methods of characterizing microbial communities: Cultivation and PCR.	3
14.	Methods of characterizing microbial communities: Genomics, Metagenomics, and Microbial Bioinformatics (Part I).	3
15.	Methods of characterizing microbial communities: Genomics, Metagenomics, and Microbial Bioinformatics (Part II).	3
<b>Total</b>		<b>45</b>



## D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes, Class discussions	Distributed over 14 weeks	10
2.	Assignments, Essays	Distributed over 14 weeks	15
3.	Individual or group presentation	Distributed over 14 weeks	10
4.	Midterm Exam	9	25
5.	Final Exam	17	40
	<b>Total</b>		<b>100</b>

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

## E. Learning Resources and Facilities:

### 1. References and Learning Resources:

<b>Essential References</b>	<ul style="list-style-type: none"> <li>- Ponmurugan, P. and Kumar, J. S. (2020). Microbial Biodiversity, pp. 220. Cambridge Scholars Publishing. ISBN: 9781527548596.</li> <li>- James, W. and Brown, J. W. (2014). Principles of Microbial Diversity, 1<sup>st</sup> edition, pp. 406. ASM Press. ISBN-13: 978-1555814427.</li> <li>- Bull, A. T. (2004). Microbial Diversity and Bioprospecting, ASM Press.</li> </ul>
<b>Supportive References</b>	<ul style="list-style-type: none"> <li>- <i>Journal American Society of Microbiology.</i></li> <li>- <i>The Journal of Microbiology.</i></li> </ul>
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>- Saudi Digital Library.</li> <li>- UNSEDOC Digital Library.</li> <li>- <a href="http://www.sciencedirect.com">www.sciencedirect.com</a></li> </ul>
<b>Other Learning Materials</b>	<ul style="list-style-type: none"> <li>- None.</li> </ul>

### 2. Educational and Research Facilities and Equipment Required:

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> <li>- A sufficient number of classrooms are available to accommodate up to 25 students.</li> <li>- Library.</li> </ul>
<b>Technology equipment</b> (Projector, smart board, software)	<ul style="list-style-type: none"> <li>- Data show projectors and a wireless internet connection are available for students and</li> </ul>



Items	Resources
	faculties. - Smart blackboard. - Computer Portable PowerPoint presentations.
<b>Other equipment</b> (Depending on the nature of the specialty)	- None

#### F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	- Students.	- Direct & Indirect,
Effectiveness of students' assessment	- Course instructors & Course coordinator (Teachers).	- Direct.
Quality of learning resources	- Students.	- Indirect,
The extent to which CLOs have been achieved	- Course instructors. - Course coordinator. - Quality Committee,	- Direct & Indirect.
Other	- None.	- NA.

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

#### G. Specification Approval Data:

<b>COUNCIL /COMMITTEE</b>	Department of Biology Council
<b>REFERENCE NO.</b>	Department Council NO (26)
<b>DATE</b>	26/11/1444 H

