



Course Specifications (Postgraduate Degree)

Course Title:	Biodiversity and Climate change
Course Code:	BIOD 516
Program:	M. Sc. Biodiversity
Department:	Biology
College:	Science
Institution:	University of Tabuk

Table of Contents

A. Course Identification.....	3
B. Course Objectives and Learning Outcomes.....	3
1. Course Description.....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes.....	4
C. Course Content.....	4
D. Teaching and Assessment.....	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	5
2. Assessment Tasks for Students.....	6
E. Student Academic Counseling and Support.....	6
F. Learning Resources and Facilities.....	6
1. Learning Resources.....	6
2. Educational and research Facilities and Equipment Required.....	7
G. Course Quality Evaluation.....	7
H. Specification Approval Data.....	7



A. Course Identification

1. Credit hours: 3 Credit Hours (2 Theoretical + 1 Practical)
2. Course type <input type="checkbox"/> Required <input checked="" type="checkbox"/> Elective
3. Level/year at which this course is offered: Level 3/Second year
4. Pre-requisites for this course (if any): BIOD 501
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	4	100
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
1	Lecture	26
2	Laboratory/Studio	26
3	Seminars	
4	Others (specify)	
Total		52

B. Course Objectives and Learning Outcomes

1. Course Description

- The course describes a different component of climate and climate change. It also describes the impact of climate change on biodiversity at different organizational levels, distribution of living organisms, the strategies of biodiversity management, the significant application of these methods under climate change, and the adaptation of the living organism to such changes. It covers topics on the effectiveness of national and international laws that contribute to biodiversity conservation by decreasing the negative practices that lead to climate change. The course also provides case studies on the impact of climate change on biodiversity.

2. Course Main Objective

By the end of this course, the students should be able to:

- Identify the components of the climate.
- Describe the impact of climatic change on the biodiversity of organisms at different levels.
- Describe the effect of the climatic change on the existence, the evolutionary relationship as well as the distribution of organisms in different environments.
- Explain the impact of climate change on the structure and function of ecosystems and communities.
- Identify the mechanisms used by living organisms to adapt to climatic change.
- Identify management strategies of biodiversity under climate change.

- Describe the role of the stakeholders, local and international communities, and organizations in planning, supporting biodiversity conservation.
- Explain the significance of national, international laws, and convection that contributes positively to biodiversity conservation.
- Discuss factors that contribute to climate change.

3. Course Learning Outcomes

Course Learning Outcomes (CLOs)		Aligned PLOs*
1	Knowledge and Understanding:	
1.1	Describe climate change and the factors that influence such change.	K2
1.2	Outline management strategies of biodiversity through climate change.	K3
1.3	Recognize rules and agreements through UN conventions.	K4
1...		
2	Skills:	
2.1	Evaluate the impacts of climate change on the diversity of organisms at genetics, species, and population levels.	S4
2.2	Evaluate the impacts of climate change on the phenology, occurrence, and distribution of living organisms and different ecosystems.	S3
2.3	Recognize management strategies and adaptations of living organisms to climate change.	S3
2.4	Demonstrate case studies to understand the impact of climate change on biodiversity.	S2
2...		
3	Values:	
3.1	Examine the seasonal dynamics of species due to climate change and the melting of glacial and its role in the rising of sea level.	V2
3.2	Employ advanced modeling and statistical tools to predict the impact of climate change on different components related to the biological diversity of living organisms.	V2
3.3	Operate in a team to conduct group reports and activities.	V3
3...		

* Program Learning Outcomes

C. Course Content

No	List of Topics	Contact Hours
1	What is climate change?	2
2	Temperature spikes and global warming	2
3	Glacial retreat and sea-level rise	2
4	Impacts on biodiversity at the genes and species level	2
5	Impacts on phenology, distribution, and populations	2
6	Impacts on ecosystem structure and function	2
7	Climate change, and species extinction	2
8	Climate change and terrestrial ecosystem	2
9	Climate change and aquatic ecosystem	2
10	Management strategies for biodiversity under climate change	2
11	Adaptations to climate change	2
12	Case studies on climate change and biodiversity	2

13	UN conventions on climate change and biodiversity	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	Describe climate change and the factors that influence such change.	<ul style="list-style-type: none"> - Lectures. - Group discussions. - Brainstorming. - The use of educational techniques (Videos). - Student's seminars. - Individual presentation. - Lab. demonstrations. - Field studies. 	<ul style="list-style-type: none"> - Oral discussions. - Long and short essays. - Exams (Mid and Final) - Homework. - Quizzes. - Demonstrations. - Lab. reports. - Field reports.
1.2	Outline management strategies of biodiversity through climate change.		
1.3	Recognize rules and agreements through UN conventions.		
1...			
2.0	Skills		
2.1	Evaluate the impacts of climate change on the diversity of organisms at genetics, species, and population levels.	<ul style="list-style-type: none"> - Lectures. - Group discussions. - Brainstorming. - Simulation. - Research paper-based learning. - The use of interactive video. - Lab. demonstrations. - Individual presentation. - Field studies. 	<ul style="list-style-type: none"> - Peer assessment. - Self-evaluation. - Oral discussion. - Exams (Mid and Final) - Quizzes. - Individual and group presentations. - Lab. reports. - Field reports.
2.2	Evaluate the impacts of climate change on the phenology, occurrence, and distribution of living organisms and different ecosystems.		
2.3	Recognize management strategies and adaptations of living organisms to climate change.		
2.4	Demonstrate case studies to understand the impact of climate change on biodiversity.		
2...			
3.0	Values		
3.1	Examine the seasonal dynamics of species due to climate change and the melting of glacial and its role in the rising of sea level.	<ul style="list-style-type: none"> - Research activities. - Oral presentations. - An internet search, assignments, and essays. - Group discussion. - Case studies. 	<ul style="list-style-type: none"> - Student's essays and assignments. - Group reports. - Group presentations. - Discussion in lectures. - Student's written participation.
3.2	Employ advanced modeling and statistical tools to predict the impact of climate change on different components related to the biological diversity of living organisms.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.3	Operate in a team to conduct group reports and activities.	- Individual, and group presentations.	- Analytical reports. - Lab. reports. - Case studies. - Posters.
3...		-	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Activities and Short Quizzes	Distributed over 8 weeks	10
2	Pre-Final Practical Exam	8	10
3	Pre-Final Theoretical Exam	8	25
4	Final Practical Exam	15	15
5	Final Theory Exam	16	40
6			
7			
8			
9			
	Total		100

*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:

- Eight office hours per week per faculty member.
- Academic advising sessions 1hr/ week per faculty member.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> - Rathoure, A. K. and Chauhan, P. B. (2019). Current State and Future Impacts of Climate Change on Biodiversity, pp. 313. IGI Global Publishers. ISBN13: 9781799812265. - Root, T. L., Hall, K. R., Herzog, M. P. and Howell, C. A. (2015). Biodiversity in a Changing Climate: Linking Science and Management in Conservation. 1st edition. University of California Press. ISBN: 9780520961807. - Maes, F., Cliquet, A., du Plessis, W. and McLeod-Kilmurray, H. (2015). Biodiversity and Climate Change: Linkages at International, National and Local Levels, pp. 488. Edward Elgar Publishing. ISBN: 9781782547051.
Essential Reference Materials	<ul style="list-style-type: none"> - <i>Journal of Ecosystem Health and Sustainability.</i> - <i>American Journal of Climatic Change.</i> - <i>Journal of Biodiversity.</i> - <i>Journal of Applied and Natural Science.</i>

Electronic Materials	<ul style="list-style-type: none"> - Saudi Digital Library. - UNSEDOC Digital Library. - www.sciencedirect.com
Other Learning Materials	<ul style="list-style-type: none"> - Multimedia that is associated with the textbook and the relevant websites.

2. Educational and Research Facilities and Equipment Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> - A sufficient number of classrooms, well equipped practical laboratories are available to accommodate 30-40 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> - Data show projectors and wireless internet connection available for students and faculties. - Smart blackboard. - Computer Portable PowerPoint presentations.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> - Lecture slides. - Reference Book. - A Note Book for writing notes. - Well-equipped laboratory.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
<ul style="list-style-type: none"> - Effectiveness of teaching and assessment. 	<ul style="list-style-type: none"> - Students. 	<ul style="list-style-type: none"> • Indirect - Questionnaires.
<ul style="list-style-type: none"> - Quality of learning resources. 	<ul style="list-style-type: none"> - Program committee. - Staff members. - Students. 	<ul style="list-style-type: none"> • Direct - Questionnaires. - Reports. - Meetings.
<ul style="list-style-type: none"> - The extent of achieving the course learning outcomes. 	<ul style="list-style-type: none"> - Program leaders. - Peer Reviewer. 	<ul style="list-style-type: none"> • Direct & Indirect - Questionnaires. - Reports. - Meetings.

Evaluation Areas/Issues (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 Members who constructed the program
Reference No.	Committee members – The academic year 1441/1442
Date	