



Course Specifications (Postgraduate Degree)

Course Title:	Assessment and Monitoring of Biodiversity
Course Code:	BIOD 510
Program:	M. Sc. Biodiversity
Department:	Biology
College:	Science
Institution:	University of Tabuk

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A. Course Identification

1. Credit hours: 3 Credit Hours (2 Theoretical + 1 Practical)
2. Course type <input checked="" type="checkbox"/> Required <input 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, BIOD 502
5. Co-requisites for this course (if any):

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:

- This course describes the need, importance, and methods of biodiversity assessment and monitoring. It also identifies the Environmental Impact Assessment (EIA) and modeling of biodiversity. Besides, it describes the modern tools and techniques used for data collection and its statistical analysis, applications of Remote sensing (RS), and Geographical information systems (GIS), Global Positioning System (GPS), Radio collaring, Radio telemetry, camera trapping, a molecular technique like DNA fingerprinting and DNA barcoding, and the use of indicators and instruments. Further, it provides an overview of approaches and challenges in biodiversity assessment and monitoring and some case studies on biodiversity assessment and monitoring.

2. Course Main Objective

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

- Identify and describe the need, importance, and methods of biodiversity assessment and monitoring.
- Identify the role of EIA, and modeling in biodiversity assessment.
- Distinguish statistical methods of biodiversity assessment.
- Identify applications of RS, GIS, GPS in biodiversity assessment, and monitoring.
- Describe the Radio collaring, radio telemetry, and camera trapping.
- Describe the molecular techniques.
- Recognize approaches and challenges in biodiversity assessment and monitoring.

3. Course Learning Outcomes

Course Learning Outcomes (CLOs)		Aligned PLOs*
1	Knowledge and Understanding:	
1.1	Describe biodiversity assessment and monitoring.	K1
1.2	Define Environmental Impact Assessment (EIA) and modeling of biodiversity.	K2
1.3	Outline the modern tools and techniques used for data collection and its statistical analysis.	K3
1...		
2	Skills:	
2.1	Explain tools and techniques in Biodiversity assessment and monitoring.	S1
2.2	Recognize different parameters of biodiversity assessment.	S2
2.3	Illustrate the applications of RS, GIS, GPS, Radio collaring, radio telemetry, and camera trapping, and molecular techniques.	S3
2...		
3	Values:	
3.1	Examine the significance of biodiversity assessment and monitoring	V2
3.2	Perform researches and projects to understand biodiversity assessment and monitoring.	V2
3.3	Illustrate the approaches and challenges of biodiversity assessment.	V1
3...	.	

* Program Learning Outcomes

C. Course Content

No	List of Topics	Contact Hours
1	Biodiversity assessment and monitoring: An overview	2
2	Environmental Impact Assessment (EIA)	2
3	Modeling of biodiversity	2
4	Census, sampling techniques, biodiversity indices	2
5	Statistical methods for data analysis	2
6	Remote sensing (RS)	2
7	Geographical information system (GIS) and Global Positioning System (GPS)	2
8	Radio collaring, radio telemetry, and camera trapping	2
9	The molecular technique (DNA fingerprinting, DNA barcoding)	2
10	Indicators for the biodiversity	2
11	Instruments for Laboratory and field studies	2
12	Approaches and challenges	2
13	Case studies on Biodiversity Assessment and Monitoring.	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 biodiversity assessment and monitoring.	<ul style="list-style-type: none"> - Lectures. - Group discussions. - Brainstorming. - The use of educational techniques (Videos). - Student's seminars. - Individual presentation. - Lab. demonstrations. - Field study. 	<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	Define Environmental Impact Assessment (EIA) and modeling of biodiversity.		
1.3	Outline the modern tools and techniques used for data collection and its statistical analysis.		
1...			
2.0	Skills:		
2.1	Explain tools and techniques in Biodiversity assessment and monitoring.	<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 study. 	<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	Recognize different parameters of biodiversity assessment.		
2.3	Illustrate the applications of RS, GIS, GPS, Radio collaring, radio telemetry, and camera trapping and molecular techniques.		
2...			
3.0	Values:		
3.1	Examine the significance of biodiversity assessment and monitoring	<ul style="list-style-type: none"> - Research activities. - Oral presentations. - An internet search, assignments, and essays. - Group discussion. - Case studies. - Individual, and group presentations. 	<ul style="list-style-type: none"> - Student's essays and assignments. - Group reports. - Group presentations. - Discussion in lectures. - Student's written participation. - Analytical reports. - Lab. reports. - Case studies. - Posters.
3.2	Perform researches and projects to understand biodiversity assessment and monitoring.		
3.3	Illustrate the approaches and challenges of biodiversity assessment.		
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"> - Ansari, A. A., Gill, S. S., Abbas, Z. K. and Naeem, M. (2017). Plant Biodiversity: Monitoring, Assessment and Conservation, CAB International Publications, UK, pp 640. ISBN: 9781780646947. - Hegazy A., Lovett-Doust-J (2016) Plant Ecology in the Middle East. Oxford scholarship online. ISBN-13: 9780199660810, DOI:10.1093/acprof:oso/9780199660810.001.0001. - Trivedi, P. C. (2008). Biodiversity Impact and Assessment, ISBN: 9788171325801, 343 pages, Pointer Publishers. - Wheater, C. P. (2005). Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring. ISBN-13: 978-0521823685, Pages 588. Cambridge University Press.
Essential Reference Materials	<ul style="list-style-type: none"> - <i>Journal of Biodiversity</i>. - <i>Journal of Biodiversity Assessment and Conservation</i>.
Electronic Materials	<ul style="list-style-type: none"> - Saudi Digital Library. - UNESDOC 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 biology 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	