هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TPG-153

Course Specification
(Postgraduate)

Course Title:	Plant and Animal Genetic Resources
Course Code:	BIOD503
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

Table of Contents

A. General information about the course:

1. Course Identificationn:

1. Credit hours: 3 Credit Hours (2 Theoretical + 1 Practical)				
2. Course type				
A.	☐University	☐College	☒ Department	☐Track
B.	☒ Required		☐Elective	
3. Level/year at which this course is offered: (Level 1/First Semester)				
4. Course General Description:				
This course offers a review of key biodiversity problems in natural and agricultural habitats, genetic population structure, molecular markers of genetic diversity, and economic values of biodiversity. It describes the plant and animal genetic resources, their collection, exploration, ex-situ, and in-situ conservation, and utilization of genetic resources in plant breeding. This course will cover the status of genetic remedies. Further, it describes the genetic resources of aquatic, rhizospheric airborne microorganisms.				
5. Pre-requirements for this course (if any)**:**				
None.				
6. Pre-requirements for this course (if any)**:**				
None.				
7. Course Main Objective(s):				
- Describe the restoration and conservation of plant and animal genetic resources. - Document the agro-biodiversity and biodiversity of plant and animal genetic resources. - Describe strategies used in-situ and ex-situ conservation of genetic resources. - Justify the reason for conserving the genetic resources of plants and animals. - Determine the microbial genetic resources**.**				

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	20
3.	**Field**	10
4.	**Tutorial**	
5.	**Others (specify)……**	
	Total	60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Recognize the importance and utilization of plant and animal genetic resources.	**K1**	- Lectures. - Seminars. - Class discussions. - Problem-solving classes. - Self-learning.	- Written exams (Midterm and Final exams). - Quizzes. - Class discussions.
1.2	Describe the role of microorganisms in different ecosystems, their interaction between plants & animals, and biogeochemical cycling.	**K2**	- Lectures. - Seminars. - Class discussions. - Problem-solving classes. - Self-learning.	- Written exams (Midterm and Final exams). - Quizzes. - Class discussions.
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2.0	**Skills**			
2.1	Analyze various methods for assessing and conserving plant, animal, and microbial genetic resources.	**S2**	- Lectures. - Practical sessions. - Field works. - Seminars. - Class discussions. - Problem-solving classes. - Self-learning. - Individual and group	- Written exams (Midterm and Final exams). - Quizzes. - Laboratory reports. - Field reports. - Class discussions. - Individual and group

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			presentations. - Assignments.	presentations. - Assignments.
2.2	Evaluate, the present scientific studies of genetic and functional microbial diversity in different ecosystems.	**S3**	- Lectures. - Practical sessions. - Field works. - Seminars. - Class discussions. - Problem-solving classes. - Self-learning. - Individual and group presentations. - Assignments.	- Written exams (Midterm and Final exams). - Quizzes. - Laboratory reports. - Field reopts. - Class discussions. - Individual and group presentations. - Assignments.
2.3	Design strategies for assessing and conserving plant, animal, and microbial genetic resources.	**S4**	- Lectures. - Practical sessions. - Field works. - Seminars. - Class discussions. - Problem-solving classes. - Self-learning. - Individual and group presentations. Assignments.	- Written exams (Midterm and Final exams). - Quizzes. - Laboratory reports. - Field reopts. - Class discussions. - Individual and group presentations. - Assignments..
2…				
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate responsibility and ethical use of databases in the analysis and conservation of genetic resource diversity.	**V1**	- Class discussions. - Individual and group presentations. - Practical sessions. - Field works. - Assignments.	- Class discussions. - Individual and group presentations. - Laboratory reports. - Field reports. - Assignments.
3.2				

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction and aspects of diversification.	2
2.	Genetic resource and principles of its conservation.	2
3.	Plant genetic resources for food and agriculture.	2
4.	Wild plant population and population genetics.	2
5.	Agricultural and horticultural genetic resources.	2
6.	Plant breeding- commercial crops and wild food plants.	2
7.	Forest genetic resources – DNA banking (Germplasm).	2
8.	Animal genetic diversity - Animal gene bank (Germplasm).	2
9.	Developing a patent indicator for plant and animal genetic resources - species richness, dominant and rare species (Part I).	2
10.	Developing a patent indicator for plant and animal genetic resources - species richness, dominant and rare species (Part II).	2
11.	Farming of plant and animal resources- Key technologies in animal breeding.	2
12.	Diversity of microbial resources (aquatic, rhizospheric, and airborne).	2
13.	Genetic erosion- case studies of endemic, endangered, and extinct species.	2
14.	In situ conservation (Global biodiversity – Agrobiodiversity).	2
15.	Ex-situ conservation - Rationalization of ex-situ conservation.	2
	Total	30

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes, class discussions, Assignments.	Distributed over 14 weeks	10
2.	Individual or group presentation	Distributed over 14 weeks	10
3.	Laboratory Reports, Field Reports	Distributed over 14 weeks	10
4.	Midterm Exam	9	20
5.	Practical Exam	16	10
6.	Final Exam	18	40
	Total		**100**

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

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	- Payne, W. J. A. and Willson, R.T. (1999). An introduction to animal husbandry in the tropics. Longman, New York, USA. - Ten Kate, K. and Laird, S. A. (1999). The commercial use of biodiversity: Access to genetic resources and benefit-sharing. Earthscan Publications Ltd, London, UK. - Van Zonneveld, M., Dawson, I., Thomas, E., Scheldeman, X., van Etten, J., Loo, J. and Hormaza, J. H. (2014). Genomics of Plant Genetic Resources. Publisher: Springer. - -Frison, C., Lopez F. and Alcazar, F. T. E. (2011). Plant Genetic Resources and Food Security. ISBN: 978-1-84971-205-7.
Supportive References	- *Journal of Genetic Resource.* - *Journal of Animal Genetic Resources.* - *Journal of Conservation.* - NCBI GenBank overview.
Electronic Materials	- Saudi Digital Library. - UNSEDOC Digital Library. - www.sciencedirect.com.
Other Learning Materials	- None.

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	- A sufficient number of classrooms and well-equipped laboratories are available to accommodate up to 25 students. - Library.
Technology equipment (Projector, smart board, software)	- Data show projectors and a wireless internet connection are available for students and faculties. - Smart blackboard. - Computer Portable PowerPoint presentations.
Other equipment (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 student's 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		

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

Assessment *Methods* (Direct, Indirect)

G. Specification Approval Data:

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