

Course Specification

— (Postgraduate Programs) عبدالمحسن بن عبدالعزيز آل سعود

Course Title: Applied Environmental Biotechnology

Course Code: BIO-6022

Program: Master of Science in Applied Biology (Biodiversity, Wildlife Conservation & Management)

Department: Biology عبدالمحسن بن عبدالعزيز آل سعود

College: Science

Institution: Imam Mohammad Ibn Saud Islamic University

Version: 1

Last Revision Date: Pick Revision Date.

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No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning		

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

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	-
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	Total	30

B. Course Learning Outcomes, Teaching Strategies, 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 basic of using biological techniques (microbiology, environmental biotechnology)	1.1	Two credits weekly lectures	-Quizzes -Presentations -Assignments -written exams
1.2	To knowledge environmental pollution and safety using biotechnology approach	1.2	Two credits weekly lectures	Quizzes -Presentations -Assignments -written exams
2.0	Skills			

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.1	Explain, summarize, compare, interpret and predict the different biological methods and their applications in various biological industries	2.1	-Two credits weekly lectures -Tutorials	-Presentations -Assignments -written exams
2.2	Summarize the conversion of environmental wastes into useful forms	2.2	-Two credits weekly lectures -Tutorials	-Presentations -Assignments -written exams
2.3	Demonstrate experiments of applied biotechnology (Fermentation, Vermicomposting, etc.), Experiment on applications of basic molecular biology, microbiology, genetics and genetic engineering	2.3	-Two credits weekly lectures -Tutorials	-Presentations -Reports
2.4	Learn how to collect and classify the required topics using methods operation of biological equipment's chemicals and other tools		Two credits weekly lectures -Tutorials	Presentations -Reports
3.0	Values, autonomy, and responsibility			
3.1	Effectively plan and prepare the scientific report related to applied biotechnology		Group discussions	-Presentations -Reports
3.2	Organized and data collection and presentation		Group discussions	-Presentations -Reports

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Biotechnology Definitions, Scope of biotechnology, Biotechnology in the world, Commercial application of biotechnology	3
2.	Environmental pollution (gene pollution) - Biotechnology tools for detection and monitoring of pollutants, control methods	3
3.	Waste water and sewage treatment Primary, Secondary and Tertiary treatment	3

4.	Land fill technologies and Composting – Vermicomposting, Environmental microbial ecology Biofertilizer	3
5.	Biological monitoring of environmental hazardous wastes	3
6.	Bioremediation of industrial, agricultural wastes Biofuels production	3
7.	Safety in environmental biotechnology Environmental sustainability, concepts of hazard and risk, problems of biologically active biotechnology products, bioterrorism, ethical considerations	2
Total		30

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D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam-1	5 th week	20%
2.	Midterm exam-2	10 th week	20%
3.	Assignments, presentations, attendance, data search, participation	Throughout the course duration	20%
4.	Final exam	16 th week	40%

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

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E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	- Environmental Biotechnology-A Biosystems Approach; 2nd Edition - September 11, 2015 Author: Daniel Vallero; ISBN: 9780124077768 - Textbook of Environmental Biotechnology Paperback February 5, 2007 by Pradipta Kumar Mohapatra; I.K. International Publishing House; 1st Ed. edition (February 5, 2007)
Supportive References	Environment Biotechnology; Author:S.K.Agarwal -APH Publishing, 1998; ISBN 8131302946,
Electronic Materials	https://link.springer.com/book/10.1007/978-1-60327-140-0
Other Learning Materials	Lectures material available in Black Board platform

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2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Projector, smart board
Other equipment (Depending on the nature of the specialty)	

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F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of students assessment	Faculty	Direct
Quality of learning resources	Faculty	Direct
The extent to which CLOs have been achieved	Faculty	Direct
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	BIOLOGY DEPARTMENT COUNCIL
REFERENCE NO.	23
DATE	23/8/1445

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