هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification
(Bachelor)

Course Title:	Principles of Ecotoxicology
Course Code:	EVS 1246
Program:	Bachelor of Science in Environmental Science
Department:	Biology
College:	Science
Institution:	Imam Mohammed Ibn Saud Islamic University
Version:	1
Last Revision Date:	-

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 (Lecture 2 + Lab 2)

2. Course type

A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		

3. Level/year at which this course is offered: (Level 4, 2nd Year)

4. Course General Description:

Ecotoxicology is an interdisciplinary field that draws from knowledge and techniques in the fields of ecology and toxicology to study the effects of toxic chemical or biological agents on biological organisms at the population, community or ecosystem level. Human activities significantly influence the natural environment, the BSc Environmental Resource Management will provide students with an in-depth understanding of what the implications of such activities on the environment are and what mitigation measures are needed to reduce such influences. Like any long-term strategy, understanding and safeguarding the environment requires a holistic perspective; since safeguarding one aspect today might have ripple effects on other factors eventually. The program is characterized by several modules that will allow students to develop technical solutions needed to solve, attenuate or control environmental issues. Specialized modules include Renewable Energy and Green Technologies, which aims to evaluate the technical, economic, and political aspects of renewable energy, as well as evaluate the successes and failures of implementing alternative energies at the local, national, and regional levels. Ecotoxicology aims to assess the effects of different classes of pollutants on individual organisms and species in food webs, enabling students to predict the negative implications on entire populations, ecosystems and on animals and human food resources.

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

EVS 1110

EVS 1111

6. Co-requisites for this course (if any):

None

7. Course Main Objective(s):

In general, the course aims to:

1. Describe the main aims of sampling, surveying and monitoring for different environmental systems.

2. Evaluate the different techniques used in environmental analysis.

3. Understand different analytical techniques in relationship to the various classes of pollutants.

4. Apply and appraise different in-situ and ex-situ techniques to collect environmental data.

5. Review different data analysis techniques used in the interpretation of field data.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	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**	30
3.	**Field**	0
4.	**Tutorial**	0
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	Discuss the background in natural resource management, environmental quality, and analysis.	K1	Three credits hours weekly lectures, lab and field	-Quizzes -Presentations -Assignments -written exams
1.2	Outline the computational tools for spatial analysis, together with data management, statistics and modelling which have become essential tools in the environmental field.	K2	Three credits hours weekly lectures, lab and field	Quizzes -Presentations -Assignments -written exams
1.3	Identify the research methods that help practitioners innovation	K2	Three credits hours weekly lectures, lab and field	Quizzes -Presentations -Assignments -written exams
1.4	Clarify the theoretical background that govern environmental, energy and sustainability issues.	K3	Three credits hours weekly lectures, lab and field	Quizzes -Presentations -Assignments -written exams
1.5	Explain how interactions between organisms and their environments drive the dynamics at different biological levels and how human activities can influence interactions.	K4	Three credits hours weekly lectures, lab and field	Quizzes -Presentations -Assignments -written exams

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.0	Skills			
2.1	Relate the basic principles of toxicology to the applicable lab methods	S1	Three credits hours weekly lectures, lab and field Tutorials	-Presentations -Assignments -written exams
2.2	Interpret the mechanisms underlying the uptake, metabolism, elimination and effects in humans and animals.	S1	- Three credits hours weekly lectures, lab and field -Tutorials	-Presentations -Assignments -written exams
2.3	Evaluate the toxicological impacts at the species, population, community and ecosystem levels.	S2	- Three credits hours weekly lectures, lab and field -Tutorials	-Presentations -Reports
2.4	Apply the ecotoxicological tests in different environmental scenarios.	S3	- Three credits hours weekly lectures, lab and field -Tutorials	-Presentations -Reports
2.5	Perform research work based on the general principles of environmental risk assessment of chemicals.	S4	- Three credits hours weekly lectures, lab and field -Tutorials	-Presentations -Reports
3.0	Values, autonomy, and responsibility			
3.1	Show the ability to perform the assigned work independently and collaborate with interdisciplinary teams to achieve common goals.	V1	Group discussions	-Presentations -Reports
3.2	Share in discussion of scientific issues professionally, and present research data effectively through different modes and for varied audiences.	V2	Group discussions	-Presentations -Reports

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.2	Demonstrate accountability and share positively in scientific discussions and decision-making processes.	V3	Group discussions	Presentations -Reports

C. Course Content

No	List of Topics	Contact Hours
1.	**Introduction, Syllabus.** **Introduction and basic concepts of ecotoxicology.**	**4**
2.	Integrating Ecology and Toxicology	**4**
3.	Individual Variation and Life History traits	**4**
4.	Population demographic models and theory	**2**
5.	Multiple stressors, trait based approaches to community ecotox	**4**
6.	Indirect effect case studies	**2**
7.	Macroecology and ecosystem approaches	**2**
8.	Contaminant-induced evolutionary change	**4**
9	Communication and Reporting Writing Research Reports Presenting Findings and Data Peer Review and field trips	**4**
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm 1	Around 4th - 5th week	15%
2.	Midterm 2	Around 7th - 8th week	15%
3.	Quizzes, Participation, Attendance	During the semester	10%
4.	Lab reports	During the semester	5%
5.	Lab Exam	15th week	15%
6.	Final Exam	16th week	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	1- Principles of Ecotoxicology, Third Edition by C. H. Walker, S. P. Hopkin, R. M. Sibly, D. B. Peakall, CRC Press Taylor & Francis Group, Boca Raton, FL, 2006, 33487–2742, ISBN 10:084933635X Fourth Edition.
Supportive References	
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

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

F. Assessment of Course Quality

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

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**Head of Biology Department**
REFERENCE NO.	
DATE	