



Course Specification

(Bachelor)

Course Title: Environment Protection and Pollution control

Course Code: APEP3601

Program: Diploma -Technology of Environmental Protection

Department: Biology Department

College: Science

Institution: Umm Al-Qura University

Version: 2

Last Revision Date: 12 / 2024



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A. General information about the course:

1. Course Identification

1. Credit hours:

3 Credits (2 theoretical + 1 Practical)

2. Course type

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

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

4. Course General Description:

This course provides students an introduction to issues related to environmental pollution, with emphasis on causes, pathways, risks, mitigation, and prevention. Also, it deals with major problems of pollution of marine the land surface and the food chain. It covers processes responsible for the occurrence and release of pollutants in the environment, dispersion mechanisms, the hazards associated with different types of contaminants, problems of accumulation of toxic substances, and procedures for reducing emissions and remediation of contaminated environments.

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

Principle in Ecology

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

7. Course Main Objective(s):

By the end of the course, students will have a broad, integrated understanding of the major problems associated with pollution of the marine and the land surface and the food chain. Students will be expected to be familiar with and have an understanding of:

- How pollution is caused by nuclear fuel production, processing of spent fuel, and disposal of radioactive wastes;
- Problems of pollution of the food chain by potentially toxic elements and persistent organic pollutions;
- Procedures and prospects for reducing unwanted emissions to the environment and remediation of already polluted systems.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		80%
2	E-learning		20%





No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30h
2.	Laboratory/Studio	14h
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	To understand the importance of using nonpolluting sources of energy for the environment.	K1	-In-class lecturing -Homework assignments	•Homework and Quizzes. •Midterm and final written exams •Evaluation of reports •Oral presentation
1.2	To apply fundamental principles to develop conceptual models of pollutant mobility and fate in the receiving environment.	K3	-Discussions (connecting what they learn in the class.	
1.3	To learns soil contaminants.	K1	-Handout of lecture notes for each topic .	
1.4	To provide students with knowledge on the types of environmental pollutants and industrial and natural sources.	K1	-Small group discussions.	
2.0	Skills			





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.1	Be able to analyze, synthesize, and evaluate evidence to understand problems and accordingly select control measures and techniques concerning atmospheric, water, or terrestrial challenges.	S1	<ul style="list-style-type: none">• Application of essential scientific techniques through lectures and essays.• Small group discussion• Ask the students to make small search projects during the semester• Class discussions (Engage students in interaction with questions and answers).• Homework assignments	<ul style="list-style-type: none">-Evaluation of the topics prepared by students.-Midterm and final exams-Checking the homework assignments
2.2	Gained awareness of current forms of environmental pollution and an overview of their causes and consequences on natural, economic, and social systems.	S3		
2.3	Have been exposed to learning examples of good practice of technologies and options used to remediate /eliminate pollution of the environment,	S2		
3.0	Values, autonomy, and responsibility			
3.1	Analyze and evaluate time management, discipline, and also to ethical behavioral, respect from different points of view.	V1	<ul style="list-style-type: none">• Class discussions (Engage students in interaction with questions and answers).• Homework assignments	<ul style="list-style-type: none">• Assignments (Individual and group)• Presentation (Individual and group) assessments.• Research assignments
3.2	Learn continuously through self-reflection and or experience to recognize the value of learning.	V2		
3.3	Perform effective communication and positive relation with others and work as an influential team member.	V3		



C. Course Content

No	List of Topics	Contact Hours
1.	-Definition of environment -Environmental risk management strategies: prevention, mitigation, and emergency response.	2
2.	-Definition of environmental protection -Environmental protection methods	2
3.	-Definition of pollution; pollutants; classification of pollutants; solubility of impurities (hydrophilic and lipophilic pollutants), transfer of pollutants within different mediums, role of chelating agents in transferring contaminants.	2
4.	-Natural Resources -Natural Resources Management	2
5.	Midterm exam	
6.	Soil pollution, definition, causes of land pollution, anthropogenic causes of soil pollution, Excess use of fertilizers and pesticides. Effects of soil pollution	2
7.	Noise pollution: What is Noise? Sources of Noise Pollution - Effects on Humans - Damaging Levels of Sound Effects on Humans. Effects on Wildlife	2
8.	Air pollution, Sources of air pollution, Major air pollutants, Effects of air pollution on health, Air pollution and climate change,	2
9.	Marine Pollution, various causes of ocean pollution, Sewage Primary treatment, secondary treatment and advanced treatment, Toxic chemicals from industries, Large scale oil spills, Ocean mining, Devastating effects of ocean pollution	2
10.	Food pollution, Causes of food pollution, Food pollutants (Pesticides, Perchlorate ClO ₄ , Organic compounds of mercury, Benzene), Food pollution risks, Pollution affect a food web, Common food pollution diseases	4
11.	<ul style="list-style-type: none"> • Radioactive Contamination: external and internal contamination • Fugitive dusts and resuspension • Noble Gases • Fallout/Fission products 	2
12.	Pharmaceutical pollutants, cosmetics, personal hygiene, and its impact on the environment and ways of safe disposal Medical and pathological wastes, the proper way of getting rid	2
13.	-Recycling waste - Environmental specifications and standards	2
14.	-Future challenges in dealing with pollution -International cooperation for environmental protection	2
Total		

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz 1 (Theory)	3	5%
2.	Midterm examination (Theory)	6	15%
3.	Midterm examination (practical)	7	10%
4.	Group project	9-10	10%
5.	Final examination (practical)	15	20%
6.	Final examination (Theory)	16	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	<ul style="list-style-type: none"> - The following book will be the key course reference book: - M.K. Hill. Understanding Environmental Pollution. Cambridge University Press, 3rd Edition, 2010. - C. Baird and M. Cann. Environmental Chemistry. W.H. Freeman, 4th Edition, 2008. - C.V.A. Duke and C.D. Williams, Chemistry for Environmental and Earth Sciences. Cambridge University Press, 2008.
Supportive References	
Electronic Materials	Websites on the internet that are relevant to the topics of the course.
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> • Lecture room • Library.
Technology equipment (projector, smart board, software)	<ul style="list-style-type: none"> • Computers and internet connection. • Active Board • Data show is required in every room
Other equipment (depending on the nature of the specialty)	



F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty	Course report
Effectiveness of Students assessment	Students	Course Evaluation Template
Quality of learning resources	Program leader / Head of the Department Quality Committee	Annual program report
The extent to which CLOs have been achieved		

Evaluation areas (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)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190635
DATE	22/11/1446

