Program Specification

(Bachelor)

Program:	**Technology of Environmental Protection**
Program Code (as per Saudi university ranking):	0**52101**
Qualification Level:	**Diploma**
Department:	Biology
College:	Applied College /Applied Science
Institution:	Umm Al-Qura University
Program Specification:	New ☒ updated* ☐
Last Review Date:	

*Attach the previous version of the Program Specification.

Table of Contents

A. Program Identification and General Information

1. Program's Main Location :

Main campus / Makkah-Alabedyah-Male Students
Main campus / Makkah-Alzaher-Female Students

2. Branches Offering the Program (if any):

3. Partnerships with other parties (if any) and the nature of each:

4. Professions/jobs for which students are qualified

Recent events and current issues have raised major concerns related to the preservation of the environment. KSA government has begun to recognize the importance of conservation, recycling and environmental awareness.
The Techology Environmnetal Protection program at Faculty of Applied Science, Umm Al-Qura University gives students an understanding of these issues, the skills needed to function as an environmental specialist and the necessary undergraduate education to pursue a graduate program in technology of environmental protection science. Biologists, ecologists, chemists and physicists participate in the instruction of the core and concentration requirements for this major.

Technology of environmental protection graduates can work in two general areas:

- Environmental protection, which targets air, water and land quality and often has a human and environmental health and safety perspective.
- Conservation and protection of natural resources, which deal both with park, fisheries and wildlife management and the operation of resource-based industries such as oil, mining and agriculture.

The program's advisory committee acts to maintain and modify the the program plan to assure its quality and suitability to get the graduates well prepared for the jobs. This advisory committee nust include different employers from the government, private and industry sectors, in addition to their own business. Graduates could work as consultants for environment related entitties; municipality, slaughterhouses, public health dministrations; environmental admin/ chief technicinian in industrial sector. The graduates will be equipped with qualified level of experince in the environmental fields since the the courses and lab training provide knowledge that can applied in multiple positions such as skills of sample collection from soil, air and water, quality evalution for waste & water systems, public education; emergency and disaster management and inverstigation; laboratorial skills analysis; laboratories of quality assurance. different environmental examanations; environmental ethics and law and waste recycling and management. **Participation in crowd management such as Alhajj season**

5. Relevant occupational/ Professional sectors:

6. Major Tracks/Pathways (if any):

Major track/pathway	Credit hours (For each track)	Professions/jobs (For each track)
1. Technology of Environmental Protection	96	Water auality analyzer -Environmental Specialist -Air and noise pollution specialist- environmental ethics and regulations investigator - environmental coordinator - environmental consultant - environmental auditor - environmental monitor - environmental scientist - environmental specialist - Natural conservation specia list -Environmental observer

7. Exit Points/Awarded Degree (if any):

exit points/awarded degree	Credit hours
1. None	None
2.	
3.	

8. Total credit hours: 96 + (8 + 8 field training)

B. Mission, Objectives, and Program Learning Outcomes

1. Program Mission:

The mission of the Diploma of Science in Technology of Environmental Protection program is to provide the society with graduates for meaningful employment in the environmental field. This multidisciplinary program integrates biology, chemistry, physics and other related sciences so as to enable students to understand general environmental issues and solutions.

2. Program Goals:

The Technology of Environmental Protection program aims to:

- Provide students with an integrated knowledge of contemporary principles and applications of technology of environmental protection that will prepare them for diploma degree and careers in industry and ministries such as Ministry of Environment, Water and Agriculture of Saudi Arabia. Labratoris of quality and assesments.
- Provide a laboratory-rich skill environment where students will learn proper laboratory protocols, plan and conduct experiments, practice the scientific method.
- Provide students with adequate background in the basic natural sciences, which will form the basis for their technology of environmental protection and management .
- Present students with opportunities for awareness of environmental issues within a global context.
- Provide opportunities to develop employability skills and career and personal development planning, including opportunities for careers in environmental fields.
- Equip the graduates with full envirnmetal management skills in term of law, disasters, contamanations, consultation ,etc….

3. Program Learning Outcomes*

Knowledge and Understanding	
K1	To recognize and to assess the current and potential environmental scenarios to use the up-to-date ecological regulations and measures.
K2	Understand the technical, knowledge and administrative solutions related to term of ecosystem

K3	The graduate will have knowledge of the fundamentals of environmental modeling, environmental monitoring techniques and risk assessment. Environmental law and management.
Skills	
S1	Apply principles and concepts in various contexts related to environmental field.
S2	Use and adapt processes, laboratory techniques, tools, instruments, and/or materials that are advanced in analysis of environmental problems.
S3	Select and use standard and specialized digital technology relating to an area of environmental sciences.
S4	To apply different qualified of solution and remediation models, to know and estimate scientifically a widespread average of international and national environmental issues.
S5	To apply the knowledge and technological skills to evaluate the acquired result, to assess the consistency of equipment needed to mentation the environment in lab and real environments.
S6	To define and measure the level of environment contamination and hazards, descript the best measures for environmental protection to minimize these risks, to plan to the effective green technological solution, to promote of decision-maker manner, and to support the preservation of native environmental resources. to
Values, Autonomy, and Responsibility	
V1	Work collaboratively and effectively in teams with responsibility
V2	To implement the innovative knowledge and technology to the values of green environment and link the skills with ethics and law of business and management.
V3	To present and reflect scientific research in environmental technology on the program students and learning outcome
V4	To participate in shaping the strategy of environmental protection in any level

* Add a table for each track or exit Point (if any)

C. Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	7	16	14.3%
	Elective			
College Requirements	Required	4	15	13.4%
	Elective			
Program Requirements	Required	24	65	58%
	Elective			
Capstone Course/Project				
Field Training/ Internship	Required	2	16	14.3%
Residency year				
Others				
Total		37	112	100%

* Add a separate table for each track (if any).

2. Program Courses

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1		Work Environment	Required		2	Institution
		Intensive English	Required		4	Institution
	APEP1601	General Biology	Required		4	College
	APEP1602	General Chemistry	Required		4	College
	APEP1603	Principles of Ecology	Required		3	Biology
Level 2	ICC2202	Islamic Culture (1)	Required		2	Institution
	APEP1604	Principles of analytical chemistry	Required	General Chemistry	3	Chemistry
	APEP1605	General Physics	Required		4	College
	APEP1611	Biostatistics	Required		3	Math
	APEP1606	Natural environments in Saudi Arabia	Required	Principles of Ecology	2	Biology
	APEP1607	Fundamentals of Microbiology	Required	General Biology	3	Biology
Level 3		Technology	Required		2	Institution
	APEP1608	Fundamental of organic chemistry	Required	Principles of analytical chemistry	3	Chemistry

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	APEP1609	Applied Environmental Microbiology	Required	Fundamentals of Microbiology	3	Biology
	APEP1610	Environmental Physics	Required	General Physics	3	Physics
	APEP2622	Desertification: Problems and Solutions	Required	Natural environments in Saudi Arabia	2	Biology
	APEP2615	Environmental Pollution and Risk	Required	Principles of Ecology	3	Biology
Level 4	ARS1601	Arabic Writing and Editing	Required		2	Institution
		Marine Environment	Required	Principle of Ecology & Natural environments in Saudi Arabia	3	Biology
	APEP2613	Wildlife Ecology & Protection	Required	Principle of Ecology & Natural environments in Saudi Arabia	3	Biology
	APEP2621	Environmental Toxicology	Required	Applied Environmental Microbiology	2	Biology
	APEP2614	Environmental Epidemiology	Required	Applied Environmental Microbiology	3	Biology
	APEP2616	Climate change and its environmental impacts	Required	Principle of Ecology & Environmental Physics	3	Physics
Level 5		Enerpreneurship	Required		2	Institution
	APEP2617	Drinking Water Quality Assessment	Required	Environmental Epidemiology	3	Biology
	APEP2618	Wastewater treatment	Required	Applied Environmental Microbiology	3	Biology
	APEP2619	Biodiversity in Saudi Arabia	Required	Wildlife Ecology & Protection	3	Biology

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	APEP2620	Bioremediation and Biodegradation of hazardous waste	Required	Applied Environmental Microbiology	3	Biology
	APEP2627	Disaster and Risk Management	Required	Environmental Epidemiology	2	Biology
Level 6	ICC2202	Islamic culture (2)	Required	Islamic culture (1)	2	Institution
	APEP2623	Environmental Impact Assessment	Required	Wildlife Ecology & Protection	2	Biology
		Environmental GIS applications	Required	Natural environments in Saudi Arabia	3	Geography
	APEP2625	Environmental Biotechnology	Required	Bioremediation and Biodegradation of hazardous waste	3	Biology
	APEP2626	Environmental chemistry	Required	Principles of Analytical Chemistry	3	Chemistry
	APEP2628	Environmental laws and regulations	Required	Disaster and Risk Management	2	Biology
Level 7	APEP2901	Field Training	Required		8	College
Level 8	APEP2902	Field Training	Required		8	College

* Include additional levels (for three semesters option or if needed).
** Add a table for the courses of each track (if any)

3. Course Specifications:

Insert hyperlink for all course specifications using NCAAA template (T-104)

توصيف المقررات

4. Program learning Outcomes Mapping Matrix:

Align the program learning outcomes with program courses' according to the following desired performance levels *(I = Introduced & P = Practiced & M = Mastered).*

Course code & No.	Program Learning Outcomes										
	Knowledge and understanding				Skills				Values, Autonomy, and Responsibility		
	K1	K2	K3	K4	S1	S2	S3	S4	V1	V2	V3
General Biology	I			I						I	
General Chemistry	I	I		I	I						
Natural environments in Saudi Arabia	I	I	I	I						I	
Principles of analytical chemistry	I	I			I	I					
Biostatistic	P				P	P				P	
General physics	I			I						I	
Fundamentals of Microbiology	I			I						I	
Fundamentals of Organic chemistry	I	I		I	I	I			I	I	
Environmental physics	I	I		I						I	
Principles in Ecology	P		P		P	P		P	P	P	P
Environmental pollution and risk	P		P		P	P			P	P	P
Bioremediation and biodegradation of hazardous waste	I	I	M	P	P		P		M	P	P
Desertification	I	I	P	P	P		P			P	P
Environmental impact and assessment	P	M		M		M			M	M	
Environmental laws and regulations	P	P	P	P		P				P	P
Field training											
Environmental Toxicology	P	M		M		M			M	M	
Climate change and its environmental impacts	P	P		P			P	P			
Biodiversity in Saudi Arabia	P	M		M		M			M	M	
Environmental GPS applications	I	I	I			I	I			P	

Course code & No.	Program Learning Outcomes										
	Knowledge and understanding				Skills				Values, Autonomy, and Responsibility		
	K1	K2	K3	K4	S1	S2	S3	S4	V1	V2	V3
Environmental Biotechnology	M	M		I		M				I	M
Applied Environmental Microbiology	I			I						I	
Wastewater Treatment	P	I	P		P		I		I	I	
Marine Environment	I	I			P	P	P		P	P	P
Wildlife ecology and protection	P	P	P		P	P	P		P	P	P
Environmental Chemistry	I	I		I						I	
Environmental epidemiology	I	P		I	M	P	P			I	
Drinking water quality assessment	P	P	P		P		I		P	P	
Disaster and risk managment	P	M		M		M			M	M	

* Add a separate table for each track (if any).

5. Teaching and learning strategies applied to achieve program learning outcomes.

Describe teaching and learning strategies and curricular and extra-curricular activities adopted to achieve the Program's learning outcomes in all areas.

- **Lectures:** supporting lectures in specialist topics delivered by the faculty.
- **Scientific discussion:** conducted in small groups to disseminate lectures and student materials.
- **Library visits onsit or e-resources:** where the subject tutors will guide students in their development of learning methods other than the detailed appreciation of the use of sources of information towards a clearly determined objective are seen as important outcomes resulting from student centered learning.
- **Individual and Group Presentations –** which enables students to work independently and as a team member and enhance their communication skills.

- **Laboratories:** this enables students to work independently and as a team member and enhance their communication or practical skills.
- **Research project.**
- **Field training.**

6. Assessment Methods for program learning outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure the achievement of program learning outcomes in all areas.

The Program should devise a plan for assessing Program Learning Outcomes (all learning outcomes should be assessed at least twice in the bachelor program's cycle and once in other degrees).

Assessment strategies in the Technology of Environmental Protection program reflect the learning outcomes of the program and make a positive contribution to the student's learning experience.
Assessment is both:

- Formative (in which the goal is usually to enhance student learning by providing ongoing feedback)
- Summative (in which the goal is normally to evaluate student learning at the end of a learning process by making an academic judgment against a standard).

Feedback on all assessment activities is essential for student development and progression. Methods of assessment reflect progression within the study plan, focusing on both knowledge and skills and enabling students to demonstrate their level of attainment of knowledge, skills and values.
The use of diverse assessment strategies meets the varied needs of students and provides the opportunity to incorporate innovative and original approaches.
The assessment strategies adopted include individual and group work approaches, including:

- Examinations

Written and practical quizzes

- Active participation of students within their group
- Project production
- Discussion sessions
- Report and research
- Answers through discussion in Blackboard
- Achievement file
- Peer/Self-assessment

- Students will submit laboratory and field reports where they have engaged in the various processes of environment science demonstrating these qualities, along with comments/grades from their instructor.
- Students will submit answers to exam questions or papers demonstrating their knowledge of major environment theories.

D. Student Admission and Support:

1. Student Admission Requirements

Admission to the Environment Diploma Program:

- The admissions system at Umm Al-Qura University is made once before the beginning of the academic year, directly after the secondary school results are published, according to the period specified and announced on the website.
- Apply via the Unified Admission Portal at Umm Al-Qura University website.
- Preference is given to applicants who meet the stated conditions and standards and according to the capacity of the colleges of the university.

Admission Requirements to the Environment Diploma Program:

- The applicant should be a Saudi citizen or born to a Saudi mother (non-Saudis may apply for scholarship programs).
- The applicant must hold a secondary school certificate (or an equivalent) from the Saudi Kingdom or abroad.
- The student must pass the required admission tests (General Aptitude Test [GAT] and the Summative Assessment), organized by the National Center for Assessment if required by the desired department.

2. Guidance and Orientation Programs for New Students

(Include only the exceptional needs offered to the students of the Program that differ from those provided at the institutional level).

Students get complete guidance and advice through the university website

- Under the patronage of His Excellency the UQU President, the Deanship of Student Affairs invites students to attend the New Students Forum for the Academic Year. The forum has been held in King Saud Hall in Al-Abediayah.
- Faculty members are assigned advisors to help students understand the program requirements and registration process. The guidance and orientation system are connected to the faculty members' blackboard account.

Hard copy of the program and student manual is prepared to be given to each student.

Posted file of the program and student manual is prepared to be given to each student. It will be to be posted into the websience.

3. Student Counseling Services

(Academic, professional, psychological, and social)
(Include only the exceptional needs offered to the students of the Program that differ from those provided at the institutional level).

- Students get complete counseling services through the new online system of the UQU university
- Faculty members are assigned advisors to help students understand the program requirements and registration process, and the counseling services system is connected to the blackboard account of the faculty members.
- Each faculty member posts 6 office hours for students' guidance on their door.

Psychology Guidance Unit:

- It aims to present specialized psychological programs and consultations for students to help them overcome the problems they face and raise the level of psychological health in accordance with their personalities and capabilities. Additionally, it offers social guidance to students who face the same issues.

Social Guidance Unit:

- It aims to offer specialized social programs and consultations, and guidance courses to students to help them overcome the social issues they may face, achieve social compatibility, and improve their social skills.

4. Special Support

(Low achievers, disabled, gifted, and talented students).

People with Special Needs Unit in UQU is concerned with providing a number of services for this category of students ,including ;

- Issuing care entry licenses.
- Allotting seats for them in the transportation means of the students.
- Allotting toilets for them at all buildings of the university
- Allotting seats and tables for them in all study halls
- Allotting lounges for them in all colleges. Such lounges must fit their needs and include chairs, tables, and drinking water;
- Giving care to their study schedules and taking into consideration the closeness of the classrooms in this regard

- Introducing the student's clubs to them along with the student's activities and preparing them in such a manner that fits their special needs.
- To engage them in the student's meetings by inviting them for such meetings and solicit their opinions on the quality of their services.
- To communicate with the centers and companies relevant to providing services for people with special needs to provide all their educational requirements, including equipment, books, technologies, audiovisuals, etc.
- To exempt them from paying fees of all student services and all purchases from shop services inside the university campus and to make agreement with the traders and investors in this regard.
- To invite them to participate in the summer centers organized by the university.
- To help them get jobs in the Hajj season with the companies, including Tawafa companies.
- Giving them priority in the self-employment programs.

E. Faculty and Administrative Staff:

1. Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professor	Zoology Botany Microbiology Chimestry Physics Molecular biology	Chimestry Physics Biotechnology Environment Mycology Bacteriology Statistics Law and ethics		2	2	4
Associate Professor						
Assistant Professor						
Lecturer						

Teaching Assistant						
Technicians and Laboratory Assistants	Microbiology Chimestry Physics biology			1	1	2
Administrative and Supportive Staff	Law and ethics			1	1	2
Others (specify)						

F. Learning Resources, Facilities, and Equipment:

1. Learning Resources

Learning resources required by the Program (textbooks, references, e-learning resources, web-based resources, etc.)

- Assigning textbooks through a committee after reviewing the appropriateness of the material by concerned faculty and approval in the departmental and higher academic councils.
- Library and e-resources
- Advanced/recent references in environment
- Scientific journal access,
- Microsoft Office, Computer labs, Internet access.
- Writing laboratory manuals and some other textbooks by faculty and reviewing them proficiently before approval
- Uploading courses on the web via the blackboard platform
- Writing the action plan of the course by course-coordinator
- The new book selected will be approved by departmental and higher academic councils in the university.

2. Facilities and Equipment

(Library, laboratories, classrooms, etc.)

- All the faculty members are asked through the heads of their departments to submit the learning resource requirements (books, soft-wares, lab equipment/instrument) required for optimum course delivery and their research.
- Curriculum development committees collect all pertinent requirements, while the committee for labs deals with lab equipment/reagents.

- The committee discussed and approved the specifications and recommended them to the college council.
- The laboratory and classroom resources are forwarded to the university's purchasing department.
- Are environmental samples valid for collection and analysis? With their equipments ?

3. Procedures to ensure a healthy and safe learning environment

(According to the nature of the Program)

G. Program Quality Assurance:

1. Program Quality Assurance System

Provide a link to the quality assurance manual.

1. Program management implements an effective system for quality assurance and management consistent with the institutional quality system
2. The faculty, staff and students participate in planning, quality assurance and decision-making processes
3. Program management adopts key performance indicators that measure program performance accurately and in coordination to provide regular data about her
4. The program analyzes the evaluation data annually (such as: data for performance indicators and benchmarking Student progress, program completion rates, student assessments of the program, courses, services, and opinions
5. Graduates and employers (to be used in planning, development and decision-making processes
6. The program conducts a comprehensive periodic evaluation (every three / five years) and prepares reports on the general level
7. For quality control, identifying strengths and weaknesses, developing plans for improvement and following up on their implementation.
8. https://uqu.edu.sa/quality (Deanship of development and quality)

2. Procedures to Monitor Quality of Courses Taught by other Departments

3. Procedures Used to Ensure the Consistency between Main Campus and Branches (including male and female sections).

Through the consolidation of the annual report of the program

4. Assessment Plan for Program Learning Outcomes (PLOs),

Course Reports:

At the end of each semester in which a course is taught, the instructor should prepare and submit a specific template of NCAAA for course report to the program coordinator. This should be attached to a copy of the course specification, included in a subject file or portfolio, and used for consideration in the program review

Annual Program Reports:

A program report should be prepared at the end of each year after consideration of course reports and other information about the delivery of the program. The report should be based on the program specification and describes what happened in the program compared with that was intended to happen, reports on its quality, difficuties or challenges, and indicates any changes that should be made for future delivery because of experience in the year concerned.

Course Evaluation Survey:

A Course Evaluation Survey is distributed to students at the end of the course. The survey includes questions about number of aspects of each course. It is intended to provide a summary question that can be used as a general quality indicator.

5. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Leadership: Department Head	Dean.	- Evaluation form.	End of the academic year.
Effectiveness of teaching	Students.	- Online survey at the end of the semester (Program survey, Experience survey &course evaluation) and graduates survey.	End of each semester.
Student Admission and support	Students	Feedback from students. - Online surveys (Program survey, Experience survey & course evaluation) and graduates survey.	End of each semester.

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Facilities and Equipment	Students and faculty members	Feedback from students and faculty members. - Online surveys (Program survey, Experience survey & course evaluation) and graduates survey.	Annual (Faculty) Students (End of each semester)
Quality of learning resources	Students and faculty members	- Feedback from students and faculty members. - Online surveys (Program survey, Experience survey & course evaluation) and graduates survey.	Annual (Faculty) Students (End of each semester)
Achievement of program learning outcomes.	Faculty members	- Program Learning Outcome Assessment Cycle with key performance indicators reported in the Annual Program Report	End of PLO's assessment cycle.
Effectiveness of teaching Strategies for learning outcomes.	Faculty members	- Comments of course instructors regarding evaluation of teaching strategies for learning outcomes mentioned in course report). - Results of ILOs evaluation	End of each semester. And End of PLO's assessment cycle.
Program mission, goals and objectives	Stakeholders	Stakeholder evaluation	End of the academic year.

Evaluation Areas/Aspects: e.g., leadership, effectiveness of teaching & assessment, learning resources, services, partnerships, etc.
Evaluation Sources: students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, etc.
Evaluation Methods: e.g., Surveys, interviews, visits, etc.
Evaluation Time: e.g., beginning of semesters, end of the academic year, etc.

6. Program KPIs*

The period to achieve the target (____) year(s).

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-P-01	Students' Evaluation of Quality of learning experience in the program	4.5	Surveys	Yearly
2	KPI-P-02	Students' evaluation of the quality of the courses	4.5	Surveys	Yearly
3	KPI-P-03	Completion rate	60%	Analysis of official statistics	Yearly
4	KPI-P-04	First-year students' retention rate	95%	Analysis of official statistics	Yearly
5	KPI-P-05	Students' performance in the professional and/or national examinations	65%	Exit exam, national exams	Yearly
6	KPI-P-06	Graduates' employability and enrolment in postgraduate programs	60%	Graduates Surveys	Yearly
7	KPI-P-07	Employers' evaluation of the program graduates' proficiency	4	Graduates Surveys	Yearly
8	KPI-P-8	Ratio of students to teaching staf	1/30	Analysis of official statistics	Yearly

9	KPI-P-9	Percentage of publications of faculty members	75%	Analysis of annual publications	Yearly
10	KPI-P-10	Rate of published research per faculty member	0.35	Analysis of annual publications	Yearly
11	KPI-P-11	Citations rate in refereed journals per faculty member	2	Analysis of annual publications	Yearly

* Including KPIs required by NCAAA

H. Specification Approval Data:

Council / Committee	**Umm Al-Qura University Council**
Reference No.	**851141114462/190635**
Date	**22/11/1446**