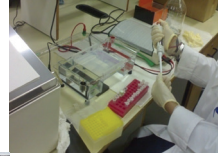




كلية الآداب والعلوم
College of Arts and Sciences
جامعة قطر QATAR UNIVERSITY



B.Sc. in Environmental Science

Department of Biological and Environmental Sciences



CHEMICAL
OCEANOGRAPHY

ENVIRONMENTAL
MANAGEMENT

MARINE
POLLUTION

WASTES

ECOLOGY

MARINE
BIOLOGY

ENVIRONMENTAL
LAW

MARINE
SCIENCES

ENVIRONMENT AND
POLLUTION

GIS & REMOTE
SENSING

MARINE SCIENCES

BIOTECHNOLOGY



Biological and Environmental Sciences Department

The Biological and Environmental Sciences Department offers a major in Environmental Science to fulfill the requirements for a B.Sc. degree offered by the College of Arts and Sciences in Qatar University.

Environmental Science Major:

The B.Sc. in Environmental Science is an accredited (CHES-UK) and the first program in Qatar. It is developed to address escalating issues and problems associated with the environment of Qatar, and the region, as well as imminent and consequential projected needs of stakeholders. It is an interdisciplinary program that incorporates courses from three different colleges; the College of Arts and Sciences, the College of Engineering and the College of Law, to provide students with a broad and comprehensive view of the discipline of Environmental Science.

The Environmental Science program has two different concentrations available for students to choose from: “Biotechnology” and “Marine Sciences”. These concentrations allow students to have a choice in the area they wish to pursue in their graduate studies or in the workplace.

Program Curriculum:

The Environmental Science program has an 8 semester curriculum (4 years of study). The curriculum consists of a set of compulsory, elective courses and optional “tracks” that students follow for specialization in their particular area of interest. The two current tracks presented in the curriculum are “Biotechnology” and “Marine Sciences”. A student, for example, could graduate with B.Sc. in Environmental Science-Biotechnology.

Objectives

The program of Environmental Science strives to:

- possess the fundamental knowledge of areas of environmental science.
- be proficient in the current techniques used in environmental research.
- carry out basic and applied research in environmental science.
- develop high levels of communication skills.
- be current with advances in environmental science.
- be prepared for professional practice and to work in ethical manner with professional teams and to show professional development in their career.

Learning Outcomes

Graduates of the Environmental Science major will be able to:

PLO1: define and explain basic principles and concepts in different environments and ecosystems.

PLO2: explain the underlying causes for environmental degradation and conversation.

PLO3: conduct experiments using modern laboratory techniques and analyze, evaluate and interpret data.

PLO4: employ scientific approaches in interdisciplinary research in a safe and ethical manner, and to be aware of risk assessment, health and safety regulations as well as environmental laws

PLO5: explain the human dimensions in their profession, including diverse social, cultural, economic, and international aspects.

PLO6: apply skilled delivery using verbal and written communication to convey environmental issues.

PLO7: explain contemporary and emerging environmental issues.

PLO8: use techniques, skills and modern environmental tools in integration with applying professional and ethical practice with multidisciplinary team in professional practice.

Admission requirements

Applicants must satisfy QU defined College and Program requirements including the minimum high school percentage requirement.

Detailed Undergraduate admission requirements are available at the following link:

http://www.qu.edu.qa/sites/en_US/students/admission/undergraduate

Declaring the major

Students must satisfy QU requirements for declaring a major including the need to declare the major before completing 36 UG credit hours. In addition, students declaring a major in Biological Sciences must have completed the BIOL 101 course and a minimum of 9 CH in the core curriculum program requirements with a minimum cumulative GPA of 2.00.

Opportunities

Graduates of the Environmental Science program are able to address the imminent and consequential projected needs of stakeholders in Qatar as well as in the global market. Graduates are presented with job opportunities in government agencies, non-governmental organization, industry and private sectors.

Employments Fields

The Environmental Science program allows its graduates to be able to be employed in a wide range of fields that include but are not limited to: Environmental Sustainability, Environmental Protection (Conservation Management), Environmental Control, Environmental Risk Management Urban and Environmental Planning, Marine Environmental Science, Environmental Chemistry, Environmental Technology, Marine Biology, Water Resource(s) (Management), Environmental Analysis and Monitoring and Research in either Biotechnology or Marine Sciences.

Employment Places

- Environmental Science Center
- Ministry of Municipality and Environment
- Industry (Qatar Petroleum, Ras Gas, Shell, and others)
- Ministry of Municipality and Environment
- Kahramaa
- Research Labs
- Qatar University
- Qatar Foundation
- Ministry of Public Health
- Teaching at both school and college/university levels

Degree Requirements

Major in Environmental Science

A minimum of 125 or 126 credit hours are required to complete the major in Environmental Science, depending on the selected concentration.

A minimum of 126 credit hours are required to complete the major in Environmental Science with concentration in Biotechnology. A minimum of 125 credit hours are required to complete the major in Environmental Science with concentration in Marine Sciences.

The degree requirements for the major include the following:

- A minimum of 33 credit hours in Core Curriculum requirements
- A minimum of 54 credit hours in Major Requirements
- A minimum of 9 credit hours in Major electives
- A minimum of 15 credit hours in major supporting requirements
- A minimum of 14 or 15 CH in concentration requirements: A minimum of 15 CH for the concentration in Biotechnology and a minimum of 14 CH for the concentration in Marine Sciences.

Study Plan - Biotechnology Concentration (126 CH)

Four-year Study Plan for the BSc. in Environmental Science with a concentration in Biotechnology.

Total Credit Hours is 126 distributed as follows:

Core Curriculum Compulsory	24 CH.
Core Curriculum Elective	9 CH.
Supporting Courses	15 CH.
Major Compulsory	54 CH.
Major Elective	9 CH.
Area of Concentration	15 CH.

FRESHMEN YEAR

Semester 1 (Fall) 16 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	ARAB 100	Arabic Language 1	3	-
2	ENGL 202	English Language 1 (Post Foundation)	3	-
3	SOCI 200	Sustainable Development (E)	3	-
4	CHEM 101	General Chemistry I	3	-
5	CHEM 103	Experimental General Chemistry I	1	CHEM 101
6	BIOL 101	Biology I	3	-

Semester 2 (Spring) 16 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	ARAB 200	Arabic Language 2	3	ARAB 100
2	ENGL 203	English Language 2 (Post Foundation)	3	ENGL 202
3	CHEM 102	General Chemistry II	3	CHEM 101
4	CHEM 104	Experimental General Chemistry II	1	CHEM 102 & CHEM 103
5	BIOL 102	Biology II	3	BIOL 101
6	MATH 101	Calculus I	3	-
7	BIOL 103	Freshman Seminar – Environmental Science	P/F	Not Credited

SOPHOMORE YEAR

Semester 3 (Fall) 16 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	BIOL 221	Basic Ecology	3	BIOL 102
2	MARS 101	Introduction to Marine Sciences	3	BIOL 101
3	PHYS 110	General Physics for Biology	3	-
4	PHYS 111	Practical Physics for Biology	1	PHYS 110
5	DAWA 111	Islamic Culture	3	-
6	GEOG 442	Environment and Pollution (E)	3	-

Semester 4 (Spring) 18 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	STAT 151	Introduction to Applied Statistics	3	-
2	GENG 107	Engineering Skills and Ethics	3	-
3	BIOL 241	Microbiology	3	BIOL 101
4	MARS 251	Marine Biology	3	MARS 101
5	CHEM 275	Principles of Environmental Chemistry	3	CHEM 101 & CHEM 103
6		Core Curriculum Elective	3	-

JUNIOR YEAR

Semester 5 (Fall) 15 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1		Major Elective	3	-
2		Core Curriculum Elective	3	-
3	BIOL 322	Desert Biology	3	BIOL 221
4	BIOL 310	Molecular Cell Biology	3	BIOL 241
5	HIST 121	History of Qatar	3	-

Semester 6 (Spring) 18 Credit Hours [CH]

	Course Code	Course Name	CH	Pre-Requisite
1	BIOL 443	Biotechnology and Bioremediation	3	BIOL 310
2	CVEN 352	Waste Management	3	GEOG 442
3		Major Elective	3	
4		Core Curriculum Elective	3	-
5	LAWC 449	Environmental Law & Regulations	3	-
6	MARS 459	Environment Impact Assessment	3	MARS 251

SUMMER: INTERNSHIP

	Course Code	Course Name	CH	Pre-Requisite
1	BIOL 399	Internship with Stakeholder	P/F	Departmental Approval

SENIOR YEAR




Semester 7 (Fall) 12 Credit Hours [CH]

	Course Code	Course Name	CH	Pre-Requisite
1	CVEN 342	Water Resources and Management	3	GEOG 442
2	CHME361	Petroleum and Gas Technologies	3	CHEM 275
3	BIOL 345	Health, Safety and Environment	3	-
4	BIOL 422	Environmental Management and Conservation	3	BIOL 221
5	BIOL 496	Senior Project	-	Departmental Approval

Semester 8 (Spring) 15 Credit Hours [CH]

	Course Code	Course Name	CH	Pre-Requisite
1	BIOL 452	Molecular Analytical Techniques	3	BIOL 310
2	BIOL 433	Monitoring and Toxicology	3	BIOL 310
3	BIOL 451	Cell Tissue Culture	3	(BIOL 351+BIOL 362) OR BIOL 310
4		Major Elective	3	
5	BIOL 496	Senior Project continued	3	

Major Elective Options (9 CH required)			
Course Code	Course Name	CH	Semester Offered
GEOG 204	General Economic Geography	3	
GEOG 242	Weather and Climate	3	
GEOG 243	Introduction to Remote Sensing	3	S
GEOG 346	Introduction to GIS	3	F
GEOG 441	Geography of Qatar	2	
GEOG 448	Hydrogeography	3	
BIOM 324	Medical Virology	2	F
BIOM 402	Special Topics	2	F
BIOL 212	Genetics	3	S
BIOL 312	Animal Histology	3	S
BIOL 344	General Parasitology	3	F
BIOL 346	Environmental Health	3	S
BIOL 351	Plant Anatomy and Physiology	3	S
BIOL 362	Animal Anatomy and Physiology	3	F
BIOL 421	Ecophysiology	3	F
BIOL 444	Immunology	3	S
BIOL 493	Special Topics	3	S

	Sophomore Courses
	Junior Courses
	Senior Courses

Study Plan – Marine Sciences Concentration (125 CH)

Four-year Study Plan for the BSc. in Environmental Science with a concentration in Marine Sciences.

Total Credit Hours is 125 distributed as follows:

Core Curriculum Compulsory	24 CH.
Core Curriculum Elective	9 CH.
Supporting Courses	15 CH.
Major Compulsory	54 CH.
Major Elective	9 CH.
Area of Concentration	14 CH.

FRESHMEN YEAR

Semester 1 (Fall) 16 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	ARAB 100	Arabic Language 1	3	-
2	ENGL 202	English Language 1 (Post Foundation)	3	-
3	SOCI 200	Sustainable Development (E)	3	-
4	CHEM 101	General Chemistry I	3	-
5	CHEM 103	Experimental General Chemistry I	1	CHEM 101
6	BIOL 101	Biology I	3	-

Semester 2 (Spring) 16 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	ARAB 200	Arabic Language 2	3	ARAB 100
2	ENGL 203	English Language 2 (Post Foundation)	3	ENGL 202
3	CHEM 102	General Chemistry II	3	CHEM 101
4	CHEM 104	Experimental General Chemistry II	1	CHEM 102 & CHEM 103
5	BIOL 102	Biology II	3	BIOL 101
6	MATH 101	Calculus I	3	-
7	BIOL 103	Freshman Seminar – Environmental Science	P/F	Not Credited

SOPHOMORE YEAR

Semester 3 (Fall) 16 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	BIOL 221	Basic Ecology	3	BIOL 102
2	MARS 101	Introduction to Marine Sciences	3	BIOL 101
3	PHYS 110	General Physics for Biology	3	-
4	PHYS 111	Practical Physics for Biology	1	PHYS 110
5	CHEM 275	Principles of Environmental Chemistry	3	CHEM 101 & CHEM 103
6	GEOG 442	Environment and Pollution (E)	3	-

Semester 4 (Spring) 18 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1	STAT 151	Introduction to Applied Statistics	3	-
2	GENG 107	Engineering Skills and Ethics	3	-
3	BIOL 241	Microbiology	3	BIOL 101
4	MARS 251	Marine Biology	3	MARS 101
5	MARS 222	Chemical Oceanography	3	MARS 101 & CHEM 275
6		Core Curriculum Elective	3	-

JUNIOR YEAR

Semester 5 (Fall) 18 Credit Hours [CH]				
	Course Code	Course Name	CH	Pre-Requisite
1		Major Elective	3	-
2		Core Curriculum Elective	3	-
3	DAWA 111	Islamic Culture	3	-
4	BIOL 322	Desert Biology	3	BIOL 221
5	MARS 327	Plankton and Productivity	3	MARS 215
6	HIST 121	History of Qatar	3	-

Semester 6 (Spring) 17 Credit Hours [CH]

	Course Code	Course Name	CH	Pre-Requisite
1	MARS 455	Marine Ecology	3	MARS 251
2	CVEN 352	Waste Management	3	GEOG 442
3	MARS 325	Marine Pollution	2	MARS 222
4	LAWC449	Environmental Law & Regulations	3	-
5	MARS 459	Environment Impact Assessment	3	MARS 251
6		Core Curriculum Elective	3	-

SUMMER: INTERNSHIP

	Course Code	Course Name	CH	Pre-Requisite
1	BIOL 399	Internship with Stakeholder	P/F	Departmental Approval

SENIOR YEAR




Semester 7 (Fall) 12 Credit Hours [CH]

	Course Code	Course Name	CH	Pre-Requisite
1	CVEN 342	Water Resources and Management	3	GEOG 442
2	CHME 361	Petroleum and Gas Technologies	3	CHEM 275
3	BIOL 345	Health, Safety and Environment	3	-
4	BIOL 422	Environmental Management and Conservation	3	BIOL 221
5	BIOL 496	Senior Project	-	Departmental Approval

Semester 8 (Spring) 12 Credit Hours [CH]

	Course Code	Course Name	CH	Pre-Requisite
1	MARS 458	Fisheries and Aquaculture	3	MARS 251
2		Major Elective	3	
3		Major Elective	3	
4	BIOL 496	Senior Project continued	3	

Major Elective Options (9 CH required)			
Course Code	Course Name	CH	Semester Offered
GEOG 204	General Economic Geography	3	
GEOG 242	Weather and Climate	3	
GEOG 243	Introduction to Remote Sensing	3	S
GEOG 346	Introduction to GIS	3	F
GEOG 441	Geography of Qatar	2	
GEOG 448	Hydrogeography		
BIOM 324	Medical Virology	2	F
BIOL 212	Genetics	3	S
BIOL 312	Animal Histology	3	S
BIOL 344	General Parasitology	3	F
BIOL 346	Environmental Health	3	S
BIOL 351	Plant Anatomy and Physiology	3	S
BIOL 362	Animal Anatomy and Physiology	3	F
BIOL 421	Ecophysiology	3	F
BIOL 444	Immunology	3	S
BIOL 493	Special Topics	3	S

	Sophomore Courses
	Junior Courses
	Senior Courses

Core Curriculum Requirements (33 CH)

Students must complete a minimum of 33 credit hours in Core Curriculum requirements.

Common package (15 CH)

- ARAB 100 Arabic Language I
- ARAB 200 Arabic Language II
- ENGL 202 English Language I Post Foundation
- ENGL 203 English Language II Post Foundation
- DAWA 111 Islamic Culture

Social/Behavioral Sciences package (3 CH)

Courses in CCP defined Social/Behavioral Sciences Package

Natural Science/Mathematics package (3 CH)

- MATH 101 Calculus I

Humanities /Fine Arts package (3 CH)

Students must complete a minimum of 3 Credit Hours from courses listed in the Qatar and Gulf History Sub-package part of the Humanities/Fine Arts package.

Supplemental College / Program Core Requirements Package (3 CH)

- UNIV 100 First Year Seminar

General Knowledge package (3 CH)

SOCI 200 Sustainable Development

General Skills package (3 CH)

Courses in CCP-defined General Skills package

Major Requirements (54 CH)

Students must complete a minimum of 54 credit hours in Major required courses:

- BIOL 101 Biology I
- BIOL 102 Biology II
- BIOL 221 Basic Ecology
- BIOL 241 Microbiology
- BIOL 399 Internship
- BIOL 496 Research Project
- MARS 101 Introduction to Marine Sciences
- MARS 251 Marine Biology
- CHEM 275 Principles of Environmental Chemistry
- BIOL 322 Desert Biology
- BIOL 422 Environmental Management and Conservation
- BIOL 345 Health Safety and Environment
- CHME 361 Petroleum and Gas Technologies
- CVEN 342 Water Resources and Management
- CVEN 352 Waste Management
- GENG 107 Engineering Skills and ethics
- GEOG 442 Environment and Pollution
- LAWC 449 Environmental Law and Regulations
- MARS 459 Environmental Impact Assessment

Major Supporting Requirements (15 CH)

Students must complete a minimum of 15 CH in major supporting requirements:

- CHEM 101 General Chemistry I
- CHEM 103 Experimental General Chemistry I
- CHEM 102 General Chemistry II
- CHEM 104 Experimental General Chemistry II
- BIOL 103 Freshman Seminar
- STAT 151 Introduction to Applied Statistics
- PHYS 110 General Physics for Biology
- PHYS 111 Practical Physics for Biology

Concentration in Biotechnology (15 CH)

Students must complete a minimum of 15 CH in concentration requirements.

- BIOL 310 Molecular Cell Biology
- BIOL 433 Monitoring and Toxicology
- BIOL 443 Biotechnology and Bioremediation
- BIOL 451 Cell and Tissue Culture
- BIOL 452 Molecular Analytical Techniques

Concentration in Marine Sciences (14 CH)

Students must complete a minimum of 14 CH in concentration requirements.

- MARS 222 Chemical Oceanography
- MARS 325 Marine Pollution
- MARS 327 Plankton and Productivity
- MARS 455 Marine Ecology
- MARS 458 Fisheries and Aquaculture

Contact Information

College of Arts and Sciences

Department of Biological and Environmental Sciences

P.O. Box 2713 Doha, Qatar

Tel: (+974) 4403-4534 Fax: (+974) 4403-4531

Email: headdepbiological@qu.edu.qa