



Modules Catalogue | 2023-2024 | دليل المواد الدراسية



University Of Anbar  
Anbar University  
College of Applied  
Sciences - HIT  
Department of  
Environment

***First Cycle – Bachelor’s Degree (B.Sc.) – Sciences  
of Environment***

**بكالوريوس – علوم البيئة**

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## 1. Overview

This catalogue is about the courses (modules) given by the program of Electrical Engineering to gain the Bachelor of Science degree. The program delivers (xx) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

## 2. Undergraduate Courses 2023-2024

### 1. Module

Code	Course/Module Title	ECTS	Semester
ENVI-11001	Human Rights and Demorcy	3.00	ONE
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	-----	48	27
Description			

Human rights and democracy are among the topics of priority and importance at the local and international levels. Many conferences and seminars have been held regarding them, and dozens of treaties have been signed for them. This topic has also occupied the minds of men of thought, law, and politics, and they are still preoccupied with it, as their pens have been drawn to clarify it or demand it. with it. Due to its importance to various groups of human society in general, it has today become one of the basic curricula in educational institutions in many countries of the world, including Iraq. Perhaps resorting to teaching such topics, introducing their concepts, knowing their types and characteristics, clarifying the history of their development, and reviewing international charters, declarations, and agreements. The task related to this matter, and then the attempt to analyze its content, clarify its limits, and present its legal status, has today become one of the important and urgent matters entrusted to most humanitarian and scientific colleges, in order to deepen and consolidate the idea of human rights in the thought and conscience of students, and to deepen their awareness that these principles It is universal, and is not specific to a specific region. It has been emphasized in many documents and agreements, in addition to the necessity of defending it from the civilizational gains of human society.

## 2. Module

Code	Course/Module Title	ECTS	Semester
ENVI-11002	Mathematics	4	one
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	-----	48	52

### Description

The goal of mathematics is to empower the student in the fields of research, interpretation, and the ability to make sound decisions based on a solid foundation of measurement and forecasting, while calculating risks, and anticipating the probabilities of success and failure. Mathematics is considered a digital language and an art to express sizes and numbers accurately, and to express oneself and work. Mathematics aims to intertwine and overlap with all types of sciences and knowledge, and teachers of this subject aim to qualify learners to form relationships between all scientific fields so that no aspect can be studied in isolation from the other, and there must be a solid mathematical foundation to understand other theoretical and applied sciences. Mathematics aims to develop ways and methods of thinking and how to deal with various problems.

### 3. Module

Code	Course/Module Title	ECTS	Semester
ENVI-11003	Biology (Plant) احياء عام ( نبات )	7	One
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	96
Description			
<p>Plants are of great importance to various animals and humans. They are necessary for the continuation of life on Earth because they are the source of the air's supply of oxygen, in addition to being a food factory for other animals and humans. They make food from air, water, and elements absorbed from the soil. Plants appeared on Earth an ancient time ago, estimated by scientists at about one thousand seven hundred million years, in the form of single-celled organisms. Over time, plants increased in size and became distinguished by their shapes and specialization in organs. Ferns and mosses appeared, then gymnosperm plants, then angiosperms, which represent the largest group of plants, and among these plants are What appeared to be of benefit to man and his animals, so he took care of it, selected the best ones, and planted them. They were the source of his food, such as wheat, the sources of his clothing, such as cotton, the sources of his fuel and building, such as wooden trees, and the sources of his treatments, such as medicinal plants. And some of them were taken for decoration, enjoying the beauty of its flowers and the shade of its trees. The ancients collected wild plants, classified them, and studied their properties for the purpose of benefit only, but pure scientific study did not appear to them, and nutritional and medicinal benefit were the most important purposes.</p>			

#### 4. Module

Code	Course/Module Title	ECTS	Semester
ENVI-11004	Arabic language	4	one
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	-----	63	73
Description			
<p>The course aims to develop the main linguistic skills of university students, including reading, writing, and speaking skills. Through it, students learn an appropriate amount of grammatical and functional rules and spelling controls, and master silent and aloud reading skills so that they are able to master listening skills and related mental skills, such as attention. , tracking ideas, and understanding; he develops appropriate thinking skills, such as accuracy of observation and organizing ideas, and thus his linguistic repertoire of vocabulary and structures grows and his ability to employ them in different situations, and the student identifies grammatical rules in different examples, and the student distinguishes the differences between grammatical and morphological structures, and the student speaks fluently. With standard Arabic language control. The student must participate effectively in the course applications, the student must master the self-learning skill of research and investigation into the course topics, and the student must master the principles of good conversation and effective dialogue and its advantages and disadvantages. To acquire linguistic skills to enrich their intellectual and cultural portfolio.</p>			

## 5. Module

Code	Course/Module Title	ECTS	Semester
ENVI-11005	Analytical chemistry كيمياء تحليلية	5	one
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	46
Description			
<p>It is one of the branches of chemistry, which fully describes a chemical sample by identifying the type of elements and substances present in it and the methods of separating them. This is known as descriptive analysis, as well as determining the components of the sample quantitatively, and this is known as quantitative analysis. Qualitative analytical chemistry is classified into 1. Descriptive analytical chemistry, which considers descriptive chemistry a branch of chemistry and investigates how to separate elements or substances from mixtures and identify them through separation, as well as identifying the acidic and basic bases present in one compound. This is done through the use of senses and the use of chemicals. 2 Analytical Chemistry Quantitative analytical chemistry means that branch of chemistry that is concerned with the quantitative estimation of the elements, acidic and basic radicals, or compounds present in a sample. Quantitative analysis describes: 1- Gravimetric analysis methods: The substance to be quantitatively estimated is deposited in the form of a single element or derivative with a known chemical composition. 2 - Volumetric conversion methods: The quantity of a substance is estimated by measuring the volume of its solution, which is equivalent to a certain volume of a standard solution containing a certain number of equivalent grams of the standard substance in a liter of its solution. The importance of analytical chemistry: - It can address many problems related to the branches of chemistry and other sciences, and analytical chemistry systems are an important means in other scientific fields such as agricultural, engineering, natural, and other fields. Examples of solving analytical chemical problems in daily life</p>			

## 6. Module

Code	Course/Module Title	ECTS	Semester
ENVI-11006	Geology علم الأرض	6.00	one
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	86
Description			
<p>Earth science is a subject to introduce the rock cycle and geomorphological characteristics. And identifying the types of rocks and minerals that were identified in the different stages of the rock cycle to clarify the geomorphological formation processes, which include (mountains, watersheds, streams, volcanoes, ocean basins) described within the plate tectonic framework, while the main formation factors such as areas of cracks, faults, and separation zones are identified. Environmental and climate trends and impacts. The geological time scale is taken into account and tectonic events are placed in a time frame. Finally, an introduction is made through the study of erosion and earthquakes. Also a brief introduction to the geology of Iraq and the geological time scale.</p>			

## 7. Module

Code	Course/Module Title	ECTS	Semester
ENVI-12007	Fundamental of Ecology اساسيات بيئة	4.00	two
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	71
Description			
<p>In this part, we study some of the environmental factors that affect the shape of societies by studying weather and climate factors by studying some of the devices available to measure the amounts of rainfall, relative humidity, and temperatures of the soil and air, determining some of the physical and chemical characteristics of the soil, such as the water content of the soil, the amount of organic matter, humus, and the number Soil pH, and the content of dissolved salts in the soil. Study of vegetation, determining some quantitative characteristics to determine the type of cover prevailing in the community under study (density, frequency, and abundance), field case study on environmental dangers.</p>			

## 8. Module

Code	Course/Module Title	ECTS	Semester
ENVI-12008	general physics الفيزياء العامة	7	two
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	96
Description			
<p>This course presents the basic concepts of the principles of classical mechanics in general, and focuses on measurement, vectors, types of motion, the three laws of motion (Newton) and their applications, flame and energy, the laws of conservation of energy, momentum, and the law of universal gravitation, using mathematical concepts in solving related problems. At the end of the course, the student is expected to be able to: deal with systems of physical units, distinguish between physical quantities, analyze vectors and their applications. The use of linear motion relationships, Newton's laws of motion, and the theory of flame-energy and its transformations in various applications. Determine the center of mass of a system of objects and calculate its speed and acceleration. Distinguishing between types of collisions. Distinguishing between linear, circular and rotational movements, and between moments of inertia and torques of coupling. Applying the laws of conservation of energy and linear and angular momentum. Distinguishing between moments of inertia and moments of coupling, and calculating the moments of inertia for rigid bodies containing common shapes.</p>			



### 9. Module

Code	Course/Module Title	ECTS	Semester
ENVI-12009	Biostatistics إحصاء حيائي	4	two
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2		48	52
Description			
<p>The course discusses the two main aspects of statistics, which are descriptive statistics and inferential statistics. During the first stage, the course addresses methods of arranging and organizing data in tables and graphics, as well as summarizing them through measures of central tendency, measures of dispersion, and measures of position... Then it is exposed to probabilities and their rules. And its applications in various medical and biological fields, in addition to the famous probability distributions, especially the normal distribution. Finally, the course discusses confidence intervals and tests of various hypotheses that form the basis of the scientific research process in general and medical and biological research in particular.</p>			

### 10. Module

Code	Course/Module Title	ECTS	Semester
ENVI-12010	Computer حاسوب	4	two
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	34	64
Description			
<p>Teaching the student to be familiar with the basic rules for dealing with and managing computers to help him complete projects, print matters, prepare statistics and graphs, create presentations, design engineering plans, etc. With the emergence of the Internet as a means of communication available to everyone, it has become very necessary for the student to learn to use the computer due to the role of the Internet in many fields. Including education, scientific research, trade, and marketing through electronic correspondence, web pages, and electronic speech.</p> <p>This course provides basic information about computers and information technology. The ideal way to use the computer and deal with application</p>			

programs. The main parts of the computer and its functions, more details on the topic of computer software, and this includes: operating systems, translators, application programs (such as word processors, spreadsheets, slideshows), as well as the concept of networks, and World Wide Web application programs. Practical application for six hours per week. The student undertakes By learning parallel theory and application on Windows software and Internet services.

#### 11. Module

Code	Course/Module Title	ECTS	Semester
ENVI-12011	English Language اللغة الانكليزية	4	two
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2		48	52
Description			
<p>The “English Language” major is known to focus on providing students with the skills of analysis, criticism, thinking, writing, reading, and listening, in addition to producing texts in the English language. The English major aims for students to become fluent speakers and creative speakers of the language. The English language skill is considered one of the most important skills that students must acquire, as employment priority is given to those who are proficient in basic language skills. The content of the specialization itself may not be considered a matter of the future, but speaking the English language has become one of the basics of obtaining a job, both now and in the future.</p>			

#### 12. Module

Code	Course/Module Title	ECTS	Semester
ENVI-12012	Organic chemistry كيمياء عضوية	5	two
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	46
Description			
<p>Introducing students to the chemistry of hydrocarbons, especially alpha-organic substances and their derivatives such as alcohols, aldehydes, ketones, carboxylic acids, amines, etc. The course also gives an overview of the importance of each of these classes, their reactions, properties, methods of preparation, and their industrial or biological importance.</p>			

### 13. Module

Code	Course/Module Title	ECTS	Semester
ENVI-23013	Plant taxonomy تصنيف نبات	5.00	Three
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	46
Description			
<p>Definition of plant taxonomy and its relationship to other sciences, study of the vegetative structures of plants, and study of reproductive structures. The course aims to diagnose and attribute plant species to different plant families. The student must understand what is meant by taxonomy, clarifying its objectives and the importance of studying this course. The student should conclude the developments that occurred in the science of classification during the different eras up to the present. The student should connect the theoretical part, and the student should deduce the developments that occurred in taxonomy during the different eras up to the present time, and the student should store the distinctive characteristics and be able to describe any plant using a microscope.</p>			

### 14. Module

Code	Course/Module Title	ECTS	Semester
ENVI-23014	Environmental geology جيولوجيا بيئية	5.00	Three
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>This course includes the concept of environmental geology and the basic principles related to it. Geological processes and their relationship to geological risks. Natural resources (energy, minerals and aggregates). Sources and types of environmental pollution. Forms of waste disposal. Engineering properties of soil and rocks and related engineering problems. Geological factors affecting civil works.</p>			

### 15. Module

Code	Course/Module Title	ECTS	Semester
ENVI-23015	اساسيات تلوث Essential Pollution	7.00	Three
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	96
Description			
<p>The student's knowledge of the concept of pollution, its causes, types and risks, how to reduce pollution, knowledge of the negative effects of pollutants on the environment and on human health, identification of the harms of pesticides, fertilizers, oil, and others, identification of solid waste, its types, harms, and methods of disposal, identification of the types of radiation and radioactive pollution, its sources and biological damage, and identification of the concept of the system. The environment and its components, and clarifying the dangers and consequences of environmental pollution</p>			

### 16. Module

Code	Course/Module Title	ECTS	Semester
ENVI-23016	كيمياء البيئة chemicals Environment	5.00	Three
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>Environmental chemistry studies the behavior of chemicals in the environment, the definition of the ecosystem, the main pollutants, the water distribution cycle on the surface of the planet, the nature of the chemical components of water, water purification, environmental monitoring and renewable energy. Learn about the components of the atmosphere and the ecosystem. And identify the impact of chemical pollutants on the components of the ecosystem. Such as water, air, soil, sediments and fertilizers, and learning about the principles of different analysis methods, theoretical foundations and their practical applications in treatment processes. And learn about the uses of renewable energy such as sun energy, wind energy, waves...etc.</p>			

### 17. Module

Code	Course/Module Title	ECTS	Semester
ENVI-23017	Societies Movement	3.00	Three
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
		48	27
Description			
<p>The subject "Societies Movement" is a course aimed at understanding and analyzing the movement and development of societies. Concepts such as social and cultural change, and the impact of economic, political and technological factors on societies are addressed. Issues such as immigration, multiculturalism and class are addressed, as well as social movements and struggles for equality and social justice. The course also includes a detailed study of social theories related to the movement of societies, including social individualism and collectivism. Lessons are systematically organized to provide an analytical framework for a deep understanding of social transformations affecting different societies.</p>			

### 18. Module

Code	Course/Module Title	ECTS	Semester
ENVI-23018	Microbiological environment بيئة احياء مجهرية	5.00	Three
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
		64	61
Description			
<p>Study of environmental components and microbial interactions in soil, water and air. To learn about the types of microbes in the soil and water environment, to study the types of microbes used as microbial indicators of water and food contamination and those that transmit diseases, to study the types of microbes used as microbial indicators of water and food contamination and to transmit diseases, and to study microbial activities in soil and water.</p>			

### 19. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24019	Climatology علم المناخ	3.00	Four
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2		63	12
Description			
<p>1. Studying meteorology, climate elements, climate change and its effects on the planet Earth, and enabling the student to understand and know the components of the Earth's climate system.</p> <p>2. Enabling the student to understand and know the interaction relationship between the components of the living and non-living environment and climate elements.</p> <p>3. Enabling the student to understand and know the relationship The interaction between living and non-living environment components and climate elements. Enabling the student to know, understand and monitor the impact of climate changes on the rest of the globe.</p>			

### 20. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24020	Plant Environmental بيئة نبات	5.00	Four
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>Introducing students to the plant environment in particular and its types after they knew the meaning of the environment in general in the general environment course. The student distinguishes between plant species and plant communities that inhabit different plant environments. The student understands how living organisms, including plants, coexist with changes that occur within natural environments</p>			

## 21. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24021	Animal taxonomy تصنيف حيوان	5.00	Four
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>It is concerned with the general foundations of animal classification. A1 - Research is done by dividing the environment of diseases into the environment of fungi, bacteria, viruses, nematodes (and agricultural pests), insects and animals, and studying the damages resulting from them in affecting plants and their productivity during the stages of production, transportation and storage.</p>			

## 22. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24022	Biochemistry كيمياء حيائية	5.00	Four
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	46
Description			
<p>The graduate learns the synthesis of biomolecules in the body of living organisms, detecting them, measuring their level in the body and the diseases associated with their imbalance. The student is introduced to clinical biotechnology and how to deal with analysis models conducted in medical laboratories.</p>			

### 23. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24023	Primary production انتاجية أولية	6.00	Four
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	86
Description			
<p>The Primary Productivity course in the Department of Environment aims to provide a deep understanding of the basic productivity process in environmental systems. The course examines how solar energy is converted into organic materials used in food chains and the process of forming oxygen in the marine and terrestrial environment. Emphasis is placed on concepts such as the general picture of the biological production process and its control factors, types of primary producers and factors affecting their productivity. The course also includes the practical study of measuring and evaluating primary productivity in different ecosystems, analyzing data and interpreting the results. The subject aims to provide students with the knowledge necessary to understand the importance of basic productivity in the balance of ecosystems and its impact on life on Earth.</p>			

### 24. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24024	Biology (Animal) احياء عام (حيوان)	6.00	Four
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	86
Description			
<p>This course aims to introduce the student to the basics of biology and will address the history of biology, its importance and branches, as well as the characteristics and features of the living organism, knowledge of the living cell, its types, shapes, organelles, living and non-living components, and the metabolic processes carried out by the cell.</p>			



## 25. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24025	Air pollution	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	71
Description			
<p>Educating the student about air pollution, its sources, and its danger to the environment and human health. The student's knowledge of methods and technologies for controlling air pollutants, methods for sampling and analyzing air pollutants, and standard standards for air quality. The student learned how to design chimneys and calculate the concentration of air pollutants coming out of the chimney, as well as methods for calculating the efficiency of air pollutant collection equipment. He also learned. The student how to monitor and monitor atmospheric air quality inside and outside closed buildings</p>			

## 26. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24026	Aquatic Environmental	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	71
Description			
<p>This course was designed in a way that suits the second-year student in the Department of Environment in order to achieve the desired goal of studying this course, which is to identify marine plankton and its types, familiarize students with the presence of algae and biological evidence of water pollution, as well as measure the pH of water, turbidity, temperature, organic materials, and dissolved oxygen in water, and familiarize students with methods Measuring the relationship of oxygen to water pollution, as well as how to take samples from water sources and then identify biological pollution of the aquatic environment and its relationship to physical and chemical pollution.</p>			

**27. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24027	Animal Environmental	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	71
Description			
Identify the structure of the ecosystem. And knowing the type of relationships between living organisms. Knowing and understanding the relationships that occur in nature between living organisms. And understand some examples that occur in nature among living organisms.			

**28. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24028	Biodiversity	4	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This course was designed in a way that suits the third-year student in the Department of Environment in order to achieve the desired goal of studying this course, which is to learn about biodiversity and its environmental and economic importance, as well as the factors influencing biotic and abiotic biodiversity, as well as knowledge of aquatic and terrestrial environmental habitats, and introducing the student to predation and means of avoiding prey. The difference between parasitism and predation, introducing students to the destruction of environments, areas and animals threatened with extinction, and introducing students to biodiversity and its relationship to climate change.			

**29. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24029	Research method	2	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	33	17
Description			
<p>Introducing the student to the nature of the scientific method and the characteristics of scientific thinking, and clarifying the basic concepts in educational research and its fields. Providing the student with the skill of identifying the steps of educational research, its methods, and tools for gathering information. The student is introduced to how to use data collection tools in preparing a proposed plan for educational research.</p>			

**30. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24030	Algal Environmental	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	71
Description			
<p>Study the basics of classifying algae into different groups. Introducing the student to the different types of algae, their life cycles and environments, and clarifying the evolutionary relationship between the species. He is good at collecting aquatic algae samples from different places. The microscope is efficiently used to examine algae. He is good at classifying different types of algae. Efficiently prepares permanent strips of aquatic algae samples.</p>			

**31. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24031	Water pollution	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	46
Description			
<p>The student should be familiar with the most important concepts related to water science and how to preserve it because it is the secret of life. Water is the cheapest available and the most expensive is lost, as they say. The student gets to know several concepts including the water budget, the hydrological cycle, and the precipitation and evaporation it includes. The student also learns about the importance of river water basins and how to Calculating water discharge in rivers and streams and flood risks, and finally identifying the most important water characteristics that must be preserved.</p> <p>The course aims to deepen the concept of biological and chemical pollution of water and soil, its types and sources, degrees of pollution and its movement in soil and water, methods of treating it, accompanying and monitoring soil and water pollutants, methods of reducing water pollution, and knowing local and international standards for drinking water and irrigation water specifications.</p>			

**32. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24032	Molecular biology	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>This course includes the study of the molecular structure of genetic material and the biological processes associated with DNA, such as replication, transcription, translation, and gene expression. This course also covers the various techniques related to molecular biology and aims to study the understanding of the principles of biology at the molecular level. Developing the student's awareness by giving him an idea of modern trends in molecular biology and identifying modern applications of molecular genetics in various fields of life.</p>			

**33. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24033	Invertebrate environment	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>This course aims to give the student basic information and knowledge in invertebrate science, as it deals with the study of invertebrate animals with their groups, their various taxonomic, structural and biological characteristics, and their diverse and different environments depending on the group. The course is also interested in giving an overview of the life cycles of examples of invertebrate animals and their interaction with their environment. This course is also concerned with the laboratory study of invertebrate organisms in a way that complements and supports theoretical information.</p>			

**34. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24034	Soil pollution	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>One of the goals of teaching soil pollution, the theoretical part, is for the student to be aware of the most important problems that our environment suffers from, especially the soil environment, as a result of the addition of many pollutants that occurred as a result of women's activity. These pollutants included organic and inorganic materials, and to learn about very small nanomaterials and their role in improving Soil, in addition to what radionuclides are present in the soil, learns about the most important pesticides and their effects on the soil and the microorganisms and plants it contains, and learns about the effects of petroleum derivatives on the soil.</p>			

**35. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24035	Ecological physiology	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
<p>The student must pass this course knowing what physiology is, its importance, its branches, its relationship with other sciences, and its role in the modern era. The student will describe the structure and functions of the various parts of the body (cells, tissues, organs and systems, cavities, membranes and body fluids).</p>			

**36. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24036	Toxicology	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	61
Description			
<p>The student is introduced to microbial toxins, toxins of algae and fungi, toxic plants, animal toxins, toxic gases and air pollutants, toxicity of heavy metals and radioactive materials, toxicity of pesticides, toxicity of detergents, toxicity of compounds, study of a selection of compounds of a toxic nature, mechanisms of division and classification of toxic substances, methods of controlling pollution with toxic compounds, and mechanisms used in treatments. Environmental toxins and their types</p>			

**37. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24037	Community health	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	86
Description			
<p>The contribution of social sciences to health education and health promotion, knowledge of the social determinants of health, the theory of general susceptibility to disease and health, culture and group dynamics and facilitating the work of groups, leadership, social normalization, social changes, social support.</p>			

**38. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24038	Environmental legislation and laws	5	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	47
Description			
<p>Defining the concept of the environment, the environment, and increasing the student's awareness of the necessity of developing interest in the environment, avoiding manifestations of damage to the environment, knowing the rules of protecting the environment and national and international rules, knowing the means of protecting the environment, and what are the procedures resulting from damage to the environment.</p>			

### 39. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24039	renewable energy & Sustainable	4	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
<p>And also introducing the student to renewable energy. Introducing the student to renewable energy, which is energy derived from natural resources that are inexhaustible and constantly renewed, such as wind, water, and sun, which are available in most countries of the world, and which can be produced from the movement of waves, tides, or from geothermal energy and other innovations. It is fundamentally different from... Fossil fuels include oil, coal, and natural gas, so they do not originate from energy</p>			

### 40. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24040	Epidemiology	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	86
Description			
<p>This course aims to introduce the basics of epidemiology through the investigation of infectious and chronic diseases that affect the general health of humans. The student will learn about examples of health problems and how to be able to describe and investigate them, and the ideal methods for administering medications that help get rid of these diseases, as well as the distribution and determinants of diseases among Individuals</p>			

### 41. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24041	Elective 1	5	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
<p>This section includes a description of the module, 100-150 words</p>			



42. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24042	Graduation project	4	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
	4	77	23
Description			
<p>This course aims to apply and implement the knowledge and skills that the student acquired during his study of the specialized courses preceding the graduation project, in implementing an archaeological project with an innovative, creative idea within a work team, until the project is completed in its final form.</p>			

43. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24043	Elective 2	5	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	46
Description			
<p>This section includes a description of the module, 100-150 words</p>			

44. Module

Code	Course/Module Title	ECTS	Semester
ENVI-24044	Environmental impact assessment	5	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
<p>The course aims to introduce the student to the basic concepts of evaluating the environmental impacts of development projects and the importance of this in achieving their continuity, and to gain the ability to participate in this type of studies and the ability to review them. It includes the following topics: establishing the environmental impact assessment process, methodology for conducting environmental impact assessment studies for projects, stages of environmental impact assessment, problems facing environmental impact assessment, roles of beneficiaries in the environmental impact assessment process, environmental impact assessment reports and their most important contents, review process for reports, And after the reports are approved.</p>			

**45. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24045	Environmental engineering	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	94	56
Description			
<p>Environmental engineering is one of the specializations that is concerned with studying environmental problems, analyzing and interpreting them in a logical, scientific way, and working to find appropriate solutions to them and mitigate their negative effects on the environment by following engineering and mathematical methods.</p>			

**46. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24046	Planning and Environmental Management	5	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
<p>Study of the economy and its role in the environment and its problems, the main basics of planning, the technical components of planning, procedures for preparing the plan, environmental planning and its elements and levels, elements of environmental planning, spatial levels of environmental planning, and the strategic goals of environmental planning.</p>			

**47. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24047	Remote sensing	4	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
<p>Study of the remote sensing model and its physical basis, remote sensing devices and their applications, principles of color photography, types of data (space, aerial, terrestrial), methods of digital data interpretation and visual interpretation, types of satellites, American, French and Indian satellites, advantages of information collected from remote sensing devices. Portable on board satellites, radar, methods for improving space data, methods for data classification, applications of remote sensing in agriculture, applications of remote sensing in forests, spectral reflectivity properties of all types of soil, spectral reflectivity properties of plants, applications of remote sensing in the field of soil maps, reflectivity properties Water spectroscopy, remote sensing applications in the field of water resources.</p>			

**48. Module**

Code	Course/Module Title	ECTS	Semester
ENVI-24048	radioactive pollution	5	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	77
Description			
<p>Sources of radioactive pollution, natural sources of radioactive elements in the environment, industrial sources of radioactive elements in the environment, main sources of human exposure to radioactive pollution, diseases and birth defects resulting from radioactive pollution, the effect of radioactivity on the environment of plants.</p>			

**Contact**

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