ماجستير العلوم في العلوم البيئيه والتنميه الصناعية

Master of Science in Environmental Science and Industrial Development

ماجيستير الدراسات البيئيه والتنميه الصناعيه هو برنامج يتكون من محتويات دراسيه متعدده ومختلفه بالاضافه الى بحث متخصص فى احدى مجالات البيئه. الماجيستير يقوم على التناغم بين العلوم البيئيه المختلفه لتخدم الدراسين فى تقديم حلول مبتكرة لمشاكل البيئه وعلاقتها بالمجتمع, الصناعه, الاقتصاد والتنميه الشامله .

الأهداف ومخرجات التعلم المقصودة:

1. إمداد الباحث بمعرفه متخصصه فى مجالات البيئه
2. تجهيز الباحثين بالمهارات البحثيه والتطبيقيه والتحليليه المختلفه لإجراء البحوث فى مجالات البيئه
3. جذب المتخصصين فى مجالات البيئه الى تقديم أبحاث نافعه للمجتمع
4. تقديم رسالات بحثيه عاليه الجوده من خلال اشراف دقيق وعملى على أعلى المستويات
5. خدمة المجتمعات الصناعية خاصه و الحضريه وغيرها من خلال تقديم حلول للمشاكل اللتى تضر البيئه بها
6. خدمة المجتمعات والحكومات والجهات المختلفه بالمشاركه فى تحقيق التنميه الشامله
7. جذب أصحاب التخصصات المختلفه الى تنميه المعرفة.

تكون الدراسة علي مرحلتين

المرحله الاولي: دراسة نظرية لمده عام أكاديمي Pre-master courses

المرحله الثانية: تسجيل النقطة البحثية و إجراء الأبحاث المعملية و نشر بحث دولي واحد علي الأقل و كتابة الرسالة العلمية. و تمنح الدرجة بعد تحكيم الرسالة.

Pre-master Courses

1. Compulsory Courses:

First Semester							
Course code	Course title		Total Credit Hours	Lecture Credit Hours	Lab Credit Hours	Exam Duration (hour)	Final grades out of
	English	Arabic					
EN601	Principles of Environmental Risk Management	أساسيات ادارة المخاطر البيئية	2	2	0	2	100
EN602	Environmental law and legislatives	القوانين والتشريعات البيئية	1	1	0	1	50
EN603	Fundamentals of Air Pollution Control	أساسيات التحكم فى تلوث الهواء	2	2	0	2	100
EN604	Ecology	علم البيئة	2	2	0	2	100
EN605	Instrumental Analysis	التحليل الآلى	1	1	0	1	50
EN606	Environmental civil engineering	الهندسة المدنية البيئية	2	2	0	2	100
GC601	Scientific thinking and writing	التفكير والكتابة العلمية	1	1	0	1	50
Second Semester							
Course code	Course title		Total Credit Hours	Lecture Credit Hours	Lab Credit Hours	Exam Duration (hour)	Final grades out of
	English	Arabic					
EN611	Monitoring and operation of wastewater treatment	رصد وتشغيل عملية معالجة مياه الصرف	1	1	0	1	50
EN612	Cement and Environmental effect	الاسمنت والتأثير البيئى	2	2	0	2	100
EN613	Fundamentals of Oilfield Processing	أساسيات تجهيز حقول البترول	2	2	0	2	100
EN614	Environmental Chemical Analysis	التحليل الكيميائى البيئى	1	1	0	1	50
EN615	Environmental management system	نظام الادارة البيئية	1	1	0	1	50
EN616	Industrial biotechnology	علم التقنيه الحيويه الصناعية	2	2	0	2	100

EN617	Solids and hazardous waste management	ادارة المخلفات الصلبة والخطرة	2	2	0	2	100

2. Elective courses:

Elective Courses							
Course code	**Course title**		**Total Credit Hours**	**Lecture Credit Hours**	**Lab Credit Hours**	**Exam Duration (hour)**	**Final grades out of**
	English	**Arabic**					
EN608	Membrane science and technology	علوم وتكنولوجيا الاغشية	2	2	0	2	100
EN609	Basic hydraulic	الهيدروليكا الاساسية	2	2	0	2	100
EN610	Petroleum Processing	تكرير البترول	2	2	0	2	100
EN618	Fundamental of Nano science	أساسيات علم النانو	2	2	0	2	100
EN619	Environmental statistics	الاحصاءات البيئية	2	2	0	2	100
EN620	Energy conservation management	ادارة الحفاظ على الطاقة	2	2	0	2	100
EN621	Process instrumentation and control	الاجهزة العملية و التحكم	2	2	0	2	100

To complete the pre-requisite courses (pre-master courses) you should finish total credit hours = 26

[Compulsory Courses (22 credit hours) + Elective Courses (4 credit hours)]

Course Specifications

EN601 Principles of Environmental Risk Management

Concepts and principles underpinning Environmental Risk Assessment and Management, including aspects such as Hazard, Harm, Risk, Pollution, etc., in the context of the principles of Sustainability.-Understanding what 'a risk-averse and cautious approach' entails-Tools and Guidelines for Risk Assessment-Multi-Criteria Decision Making and Risk Management Planning-Practical Case Study – Risk Assessment for Mine Closure-Risk assessment provides a systematic procedure for predicting potential risks to human health or the environment. The aim of a chemical risk assessment is to investigate if a chemical is being used or can be used as intended without causing detrimental effects to human health.

EN602 Environmental law and legislative

Civil liability resulting from environmental damage: an international and comparative law overview- Technical and scientific co-operation. National substantive law: overview of the principal judicial means for obtaining reparation for damage resulting from environmental pollution in common law and in civil law. The conflict of laws in the field of environmental liability- Legislative cooperation. The environmental disaster: a mass tort litigation.

EN603 Fundamentals of Air Pollution Control

Air pollutants. - Effects on human's beings and environ. Sources of air pollutants-Pollutant concentration and emission –measurements- Chemistry in the atmosphere. Dispersion of pollutants in the atmosphere- Regulations and laws- General Ideas in Air Pollution Control- A better process design- After-treatment processes- Alternative approaches- Control mechanisms. Size Distributions -Wall collection devices- Dividing collection devices- Gas control – Incineration- Regional and Global Issues- Global

warming- Stratospheric ozone depletion. Acid rain. - Long-range transport- Hazardous air pollution- Urban smog- Indoor air pollution.

EN604 Ecology

This module introduces graduates to the field of environmental microbiology, parasitology and epidemiology, and provides a foundation for further studies and applications in water & wastewater treatment, environmental health and environmental management. Graduates will also be taught selected topics on human biology and food-borne diseases.

EN605 Instrumental Analysis

Introduction to Instrumental analysis-Radiation and Bioradiation-IR, UV, NMR, MS, and electronic microscope (Scanning and transmittance) –electrophoresis –spectrophotometer and HPLC devices.

EN606 Environmental Civil Engineering

Structural: Bridges roads towers power pylons -Transportation: Roads traffic control airports -Water: Dams pipelines purification works reservoirs -Geotechnical: Foundations excavations and fills-Urban: Municipal services development and maintenance of towns - recreational facilities -Construction: Construction management-Environmental: Impact studies social and natural environments harmonising affected elements and resources.

GC601 Scientific Thinking and Writing

Scientific Planning – How to use a research engine - How to write a proposal – How to write a paper – Research ethics – Publication – social media.

EN608 Membrane Science and Technology

This module aims to equip graduates with fundamental knowledge of membrane science and membrane applications in environmental engineering. Topics covered in this module

include the types of membranes and membrane modules, the basic principles of membrane fabrication, general theory of membrane transport, membrane separation process, membrane fouling, liquid membranes, and facilitated transport. Membrane applications in water reclamation recycling and reuse will also be covered.

EN609 Basic Hydraulic

Graduates will examine the basic hydraulic principles and fundamental concepts that are essential for the study of water and wastewater technologies. Topics covered include the properties of fluid, manometry, hydrostatics and fundamental principles of fluid flow. Head loss in pipeline, design of pipeline, flow measurements and pipe network analysis will also be covered. Graduates will also learn about open channel flow and the design of surface water drainage system.

EN610 Petroleum Processing

Formation of petroleum. Exploration and identification of petroleum-bearing structures and their evaluation. Drilling operations and their control. Design, operation and control of production wells. Technologies for enhancing oil production from existing wells. Testing and evaluation of reservoirs. Reservoir management.

EN611 Monitoring and Operation of Wastewater Treatment

Wastewater treatment techniques, monitoring and operation of wastewater treatment systems, and the code of practice relevant to sewerage and sewage treatment. The design of sewer collection systems will also be covered in detail. Emerging technologies in water reclamation and water recycling will be emphasized in this module

EN612 Cement and Environmental Effect

Description of the cement industry- Pressures on the environment- Resource use- Emissions to air- Discharges to water- Waste production and management- Transport- Pollution incidents and prosecutions- Noise, vibration, odor and aesthetics- Standards of

environmental management- Environmental Impacts.

EN613 Fundamentals of Oilfield Processing

Introduction to Oilfield Processing. Measurement. Instrumentation. Relief systems. Storage. Multiphase flow calculations in pipe lines. Separator design and sizing of flow lines. Pumps and Hydraulic Turbines. Hydrate formation and remedial options. Prime mover for mechanical derive. Hydrocarbon Recovery. Utilities in upstream processing. Dehydration and hydrocarbon treating. Compressors, Expanders and Refrigerators. Utilities in upstream processing. Dehydration and hydrocarbon treating.

EN614 Environmental Chemical Analysis

This course introduces graduates to the field of environmental chemistry and provides a foundation for applications in pollution control and water & wastewater technology. Graduates will study the practical aspects of environmental chemistry, quantitative measurements and analysis of air, water and wastewater. Principles of measurement, instrumentation and analysis are emphasized using an application-oriented approach.

EN615 Environmental Management System

In this course, graduates will learn the application of concepts and principles in environmental management. Topics covered include the fundamentals of environmental impact assessment (EIA), environmental baseline studies (EBS), risk assessment, environmental management systems (EMS), ISO 14001, OSHA 18001 and environmental auditing.

EN616 Industrial Biotechnology

The influence and application of biotechnology in aspects relating to the environment. Graduates will study five major areas: treatment of waste, treatment of already polluted sites and waterways, prevention of pollution, monitoring of pollution, and

biotechnological innovations in environmental management.

EN618 Basics of Nanoscience

Introduction to nanoscience – definition of nanomaterials and nanoscale – preparation methods – characterization and application

EN619 Environmental Statistics

Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data. Proper sampling design and collection, analysis, and presentation of environmental data will lead to defensible interpretation and conclusions for any environmentally-based problem.

EN620 Energy Conservation Management

Energy consumption is at an all-time high, and it is uncertain how high energy costs will go. This module will teach graduates energy conservation efforts and innovative programs to help people, including businesses, get in the habit of using energy more efficiently, thereby saving money, energy and the environment.

EN621 Process Instrumentation and Control

Graduates will study the principles and applications of process instruments and the fundamentals of automatic process control systems, which include the basic concepts of analogue and digital control, principles of feedback and loop stability. The module includes a site visit to a control plant to enhance student learning.