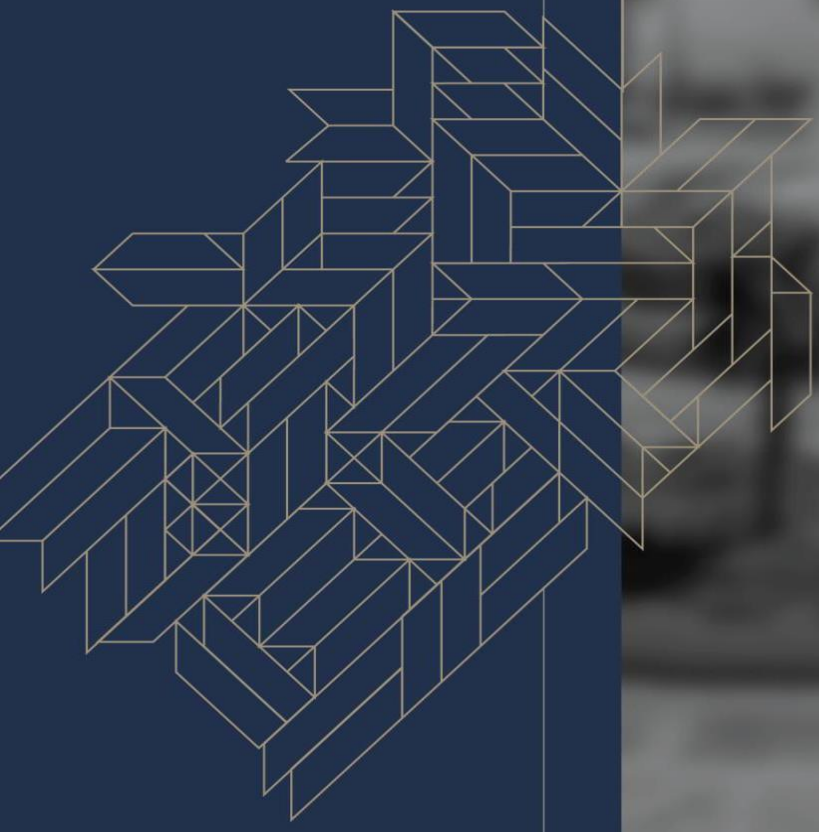
جامعة الإمام عبدالرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY



SDG 14

Life Below Water

Sustainable Development Report 2024-2025

Table of Contents

1. Imam Abdulrahman bin Faisal University (IAU) Participation in the fifth edition of the Water Research Community Initiative organized by the Saudi Water Authority.

Imam Abdulrahman bin Faisal University (IAU) Participation in the fifth edition of the Water Research Community Initiative organized by the Saudi Water Authority.

We are proud of the participation of the Mechanical and Energy Engineering Department in the fifth edition of the Water Research Community Initiative organized by the Saudi Water Authority, through the presentation of two research papers and the participation of the department head, Dr. Mosaed Al-Zahrani, as a speaker in one of the dialogue sessions.

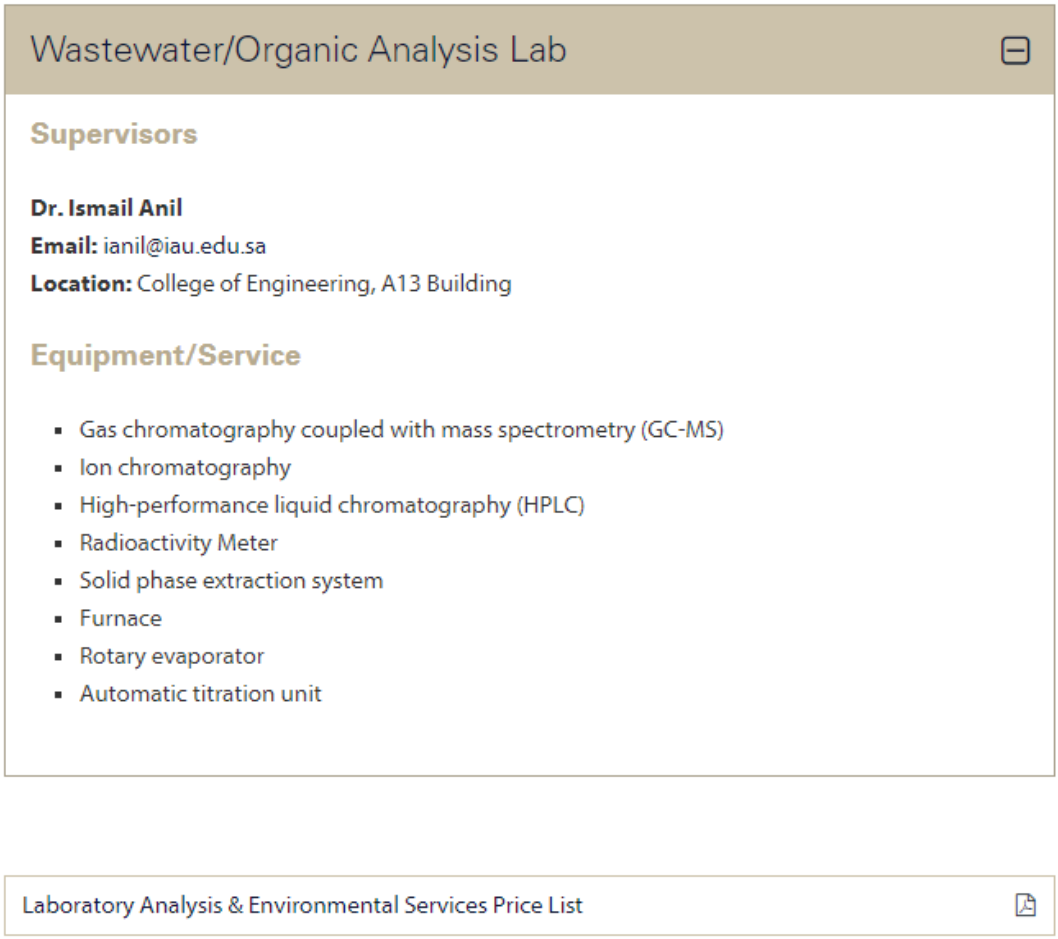
https://x.com/CE_IAU_SA/status/1968561503134437880

2 . Marine Engineering Students of IAU had a Field Visit to the Zamil Shipbuilding and Repair Company

The Department of Marine Engineering organized a field visit for the first cohort students to Zamil Shipbuilding and Repair Company, where the students were introduced to the various fields of work in the shipbuilding industry, as a step aimed at enhancing the practical aspect and preparing them for the job market.

https://x.com/CE_IAU_SA/status/1976558183708848151

3. Wastewater Analysis Lab at IAU



Wastewater/Organic Analysis Lab

Supervisors

Dr. Ismail Anil
Email: ianil@iau.edu.sa
Location: College of Engineering, A13 Building

Equipment/Service

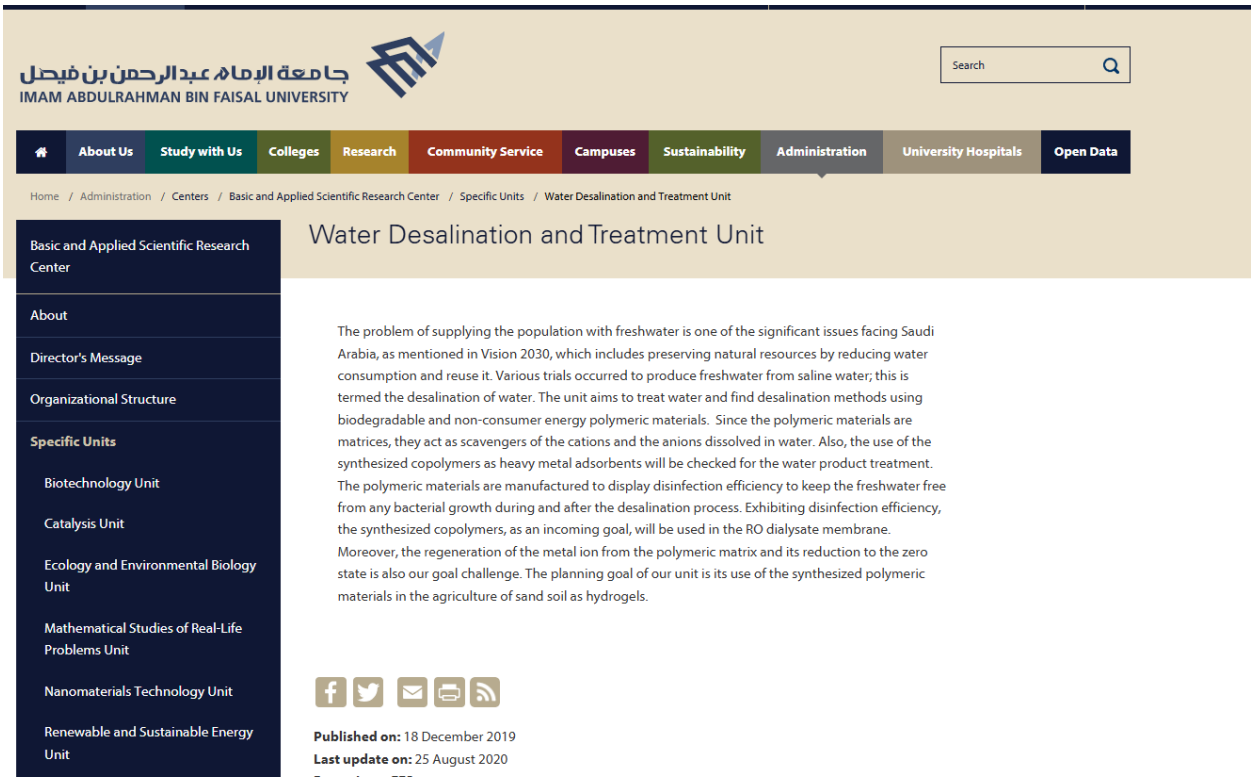
- Gas chromatography coupled with mass spectrometry (GC-MS)
- Ion chromatography
- High-performance liquid chromatography (HPLC)
- Radioactivity Meter
- Solid phase extraction system
- Furnace
- Rotary evaporator
- Automatic titration unit

Laboratory Analysis & Environmental Services Price List

Wastewater / Organic Analysis Lab at IAU

https://www.iau.edu.sa/en/colleges/college-of-engineering/labs-and-equipment/environmental-engineering-laboratories

4 . Water Desalination and Treatment Unit at IAU

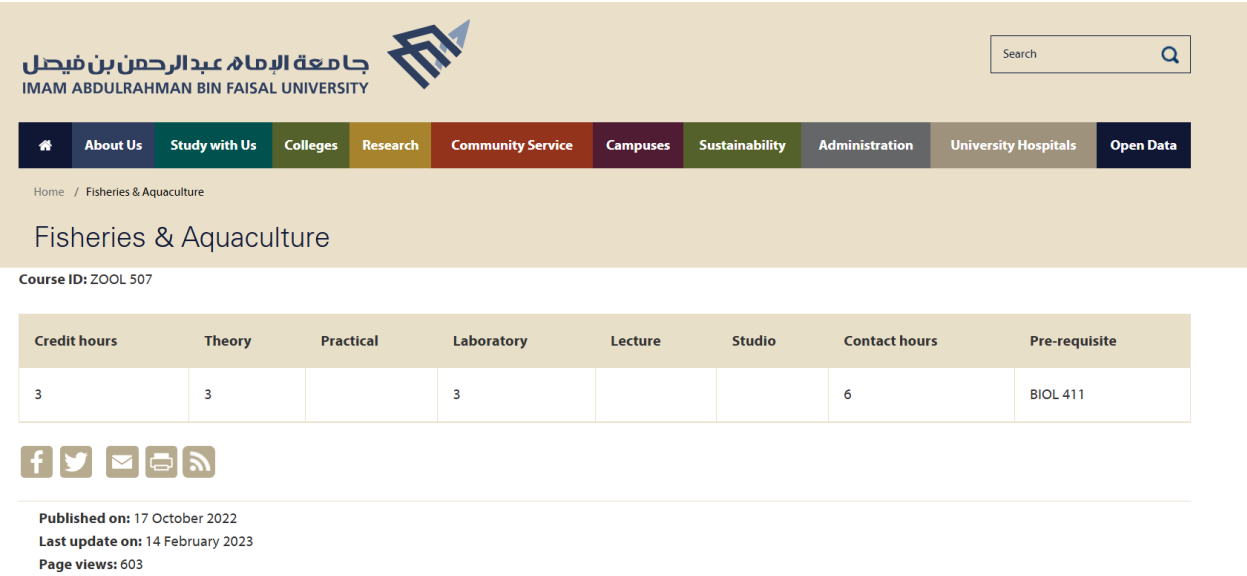


https://www.iau.edu.sa/en/administration/centers/basic-and-applied-scientific-research-center/specific-units/water-desalination-and-treatment-unit

5 . Fisheries & Aquaculture

Course Description

This course will introduce students to the knowledge and practices essential for fisheries management and aquaculture. Further, this course will provide the basic technique of aquaculture design, maintenance and management. Further, students will understand the concept of aquaculture and the patterns, methods, and stages of fish production in cultured environments, as well as the economic benefits of aquaculture.

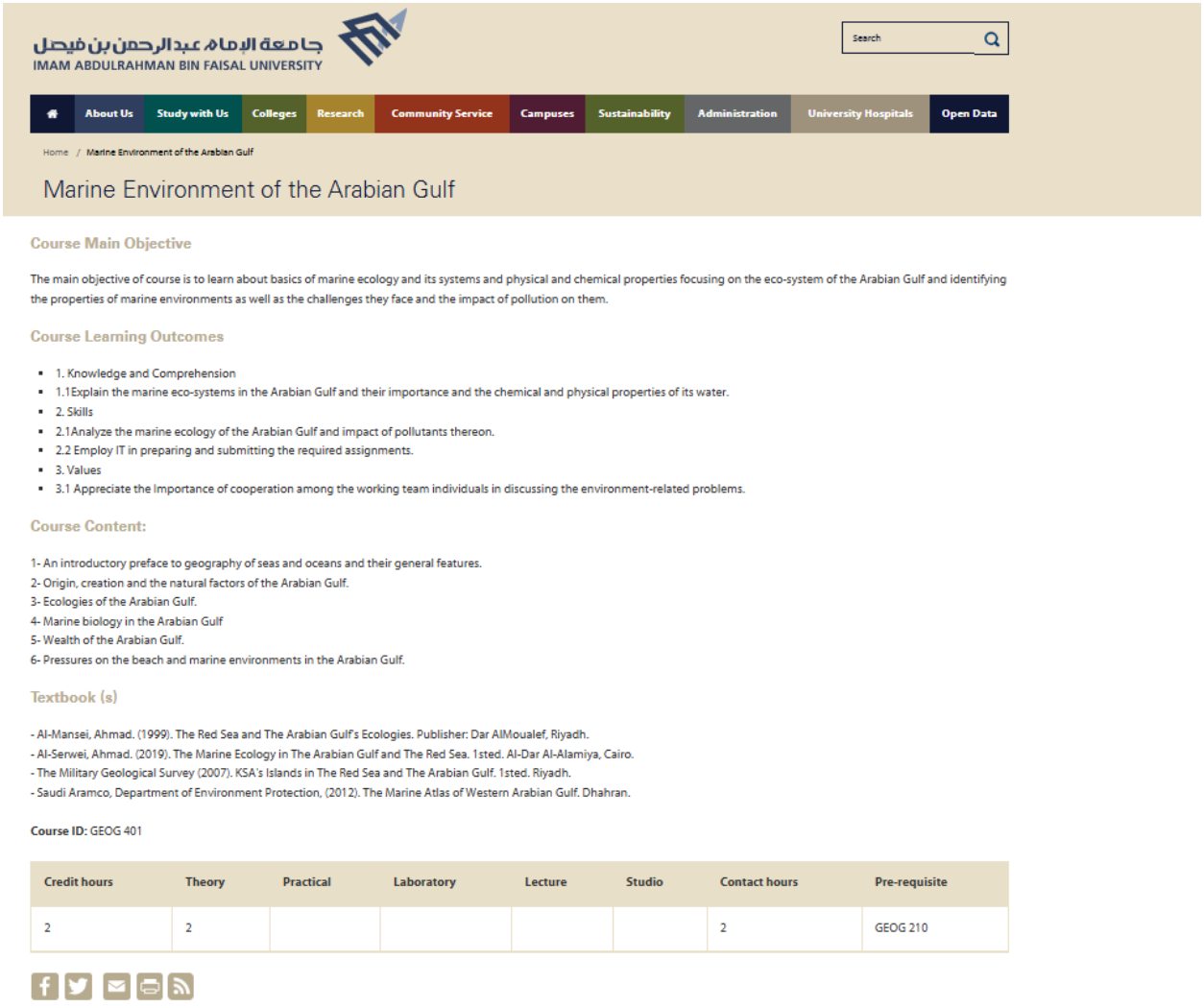


https://www.iau.edu.sa/en/courses/fisheries-aquaculture-0

6. Marine Environment of the Arabian Gulf

Course Main Objective

The main objective of course is to learn about basics of marine ecology and its systems and physical and chemical properties focusing on the eco-system of the Arabian Gulf and identifying the properties of marine environments as well as the challenges they face and the impact of pollution on them.



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Marine Environment of the Arabian Gulf

Course Main Objective

The main objective of course is to learn about basics of marine ecology and its systems and physical and chemical properties focusing on the eco-system of the Arabian Gulf and identifying the properties of marine environments as well as the challenges they face and the impact of pollution on them.

Course Learning Outcomes

- 1. Knowledge and Comprehension
- 1.1Explain the marine eco-systems in the Arabian Gulf and their importance and the chemical and physical properties of its water.
- 2. Skills
- 2.1Analyze the marine ecology of the Arabian Gulf and impact of pollutants thereon.
- 2.2 Employ IT in preparing and submitting the required assignments.
- 3. Values
- 3.1 Appreciate the Importance of cooperation among the working team individuals in discussing the environment-related problems.

Course Content:

1- An introductory preface to geography of seas and oceans and their general features.
2- Origin, creation and the natural factors of the Arabian Gulf.
3- Ecologies of the Arabian Gulf.
4- Marine biology in the Arabian Gulf
5- Wealth of the Arabian Gulf.
6- Pressures on the beach and marine environments in the Arabian Gulf.

Textbook (s)

- Al-Mansei, Ahmad. (1999). The Red Sea and The Arabian Gulf's Ecologies. Publisher: Dar AlMoualef, Riyadh.
- Al-Serwei, Ahmad. (2019). The Marine Ecology in The Arabian Gulf and The Red Sea. 1sted. Al-Dar Al-Alamiya, Cairo.
- The Military Geological Survey (2007). KSA's Islands in The Red Sea and The Arabian Gulf. 1sted. Riyadh.
- Saudi Aramco, Department of Environment Protection, (2012). The Marine Atlas of Western Arabian Gulf. Dhahran.

Course ID: GEOG 401

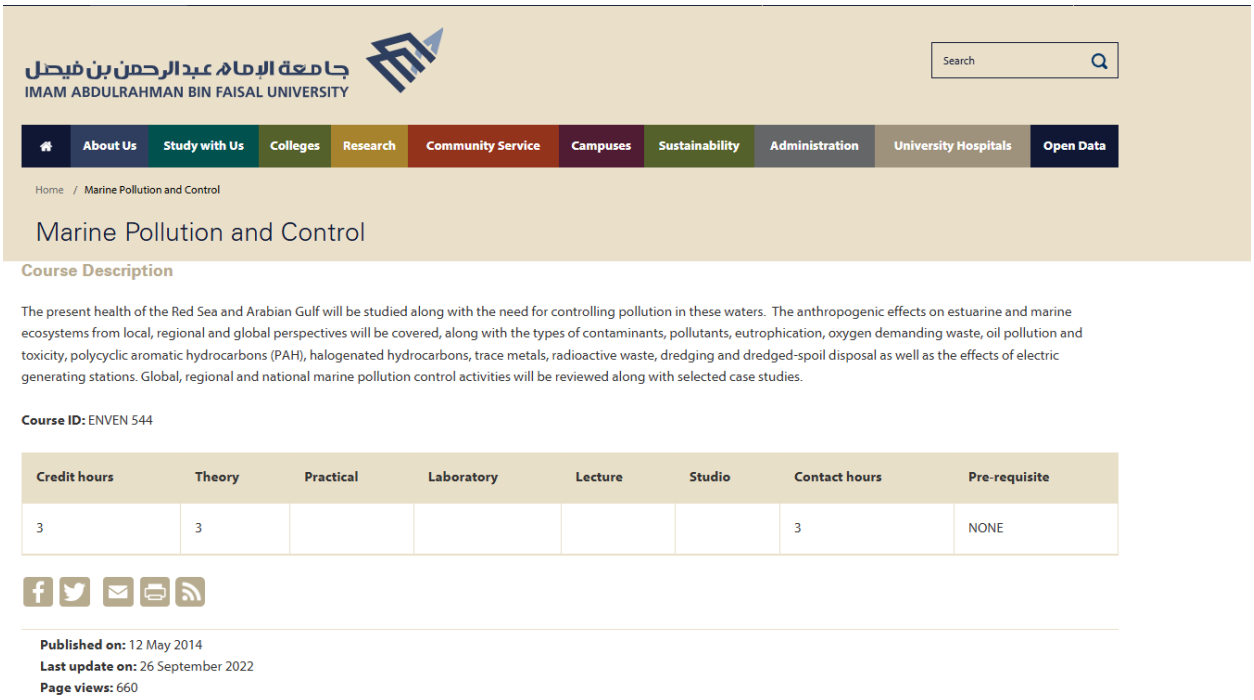
Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
2	2					2	GEOG 210

https://www.iau.edu.sa/en/courses/marine-environment-of-the-arabian-gulf

7 . Marine Pollution and Control

Course Description

The present health of the Red Sea and Arabian Gulf will be studied along with the need for controlling pollution in these waters. The anthropogenic effects on estuarine and marine ecosystems from local, regional and global perspectives will be covered, along with the types of contaminants, pollutants, eutrophication, oxygen demanding waste, oil pollution and toxicity, polycyclic aromatic hydrocarbons (PAH), halogenated hydrocarbons, trace metals, radioactive waste, dredging and dredged-spoil disposal as well as the effects of electric generating stations. Global, regional and national marine pollution control activities will be reviewed along with selected case studies.



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Marine Pollution and Control

Course Description

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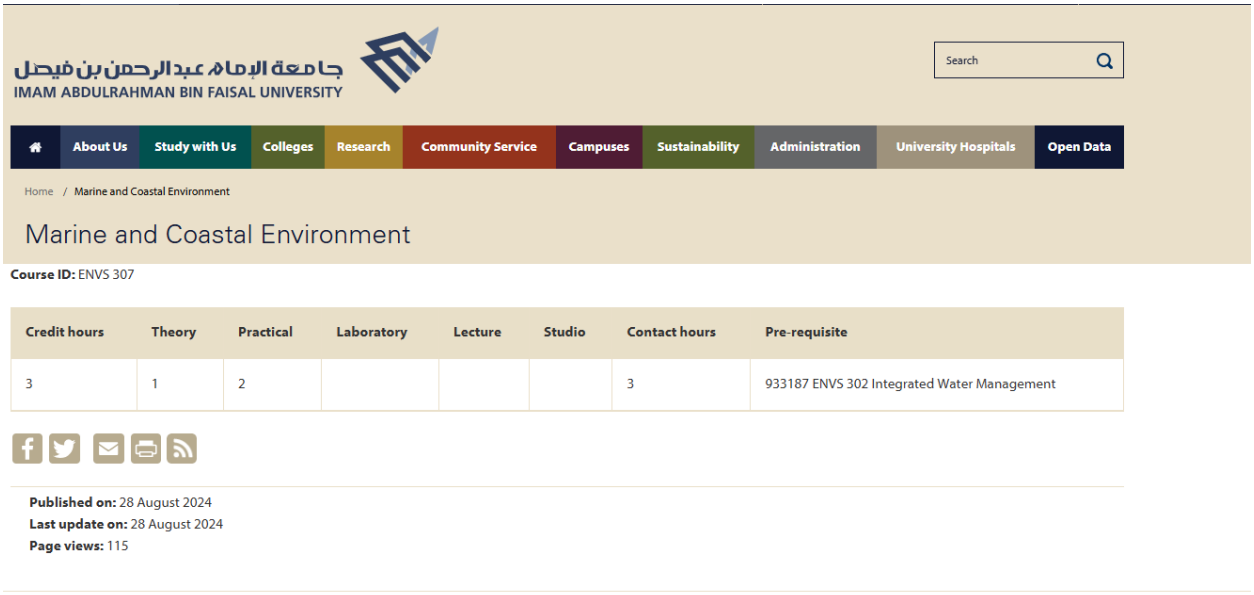
Course ID: ENVEN 544

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
3	3					3	NONE

Published on: 12 May 2014
Last update on: 26 September 2022
Page views: 660

https://www.iau.edu.sa/en/courses/marine-pollution-and-control

8 . Marine and Coastal Environment



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Home / Marine and Coastal Environment

Marine and Coastal Environment

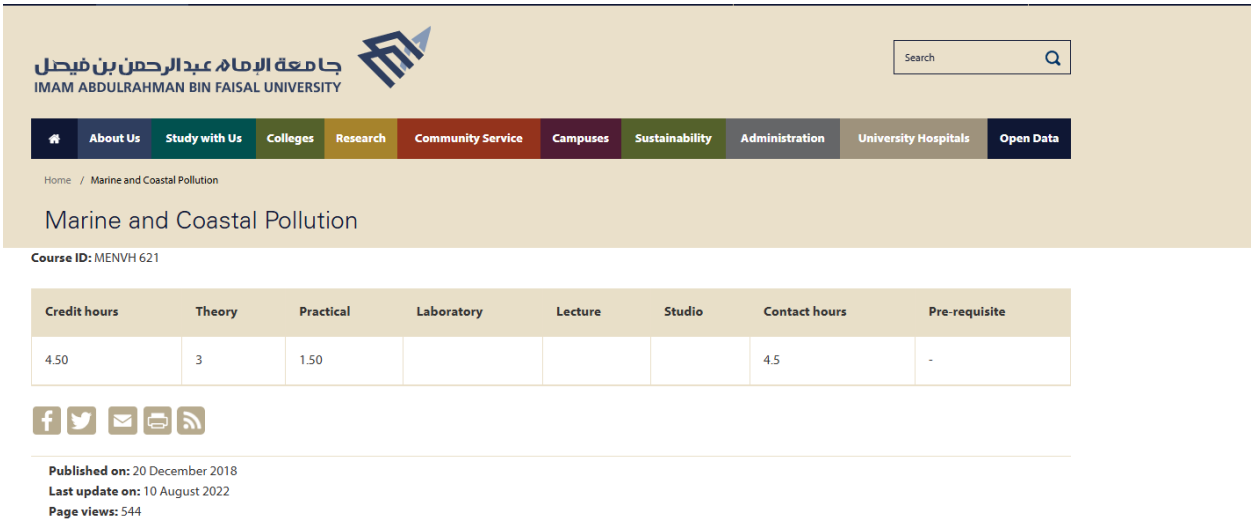
Course ID: ENVS 307

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
3	1	2				3	933187 ENVS 302 Integrated Water Management

Published on: 28 August 2024
Last update on: 28 August 2024
Page views: 115

https://www.iau.edu.sa/en/courses/marine-and-coastal-environment

9 . Marine and Coastal Pollution



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Marine and Coastal Pollution

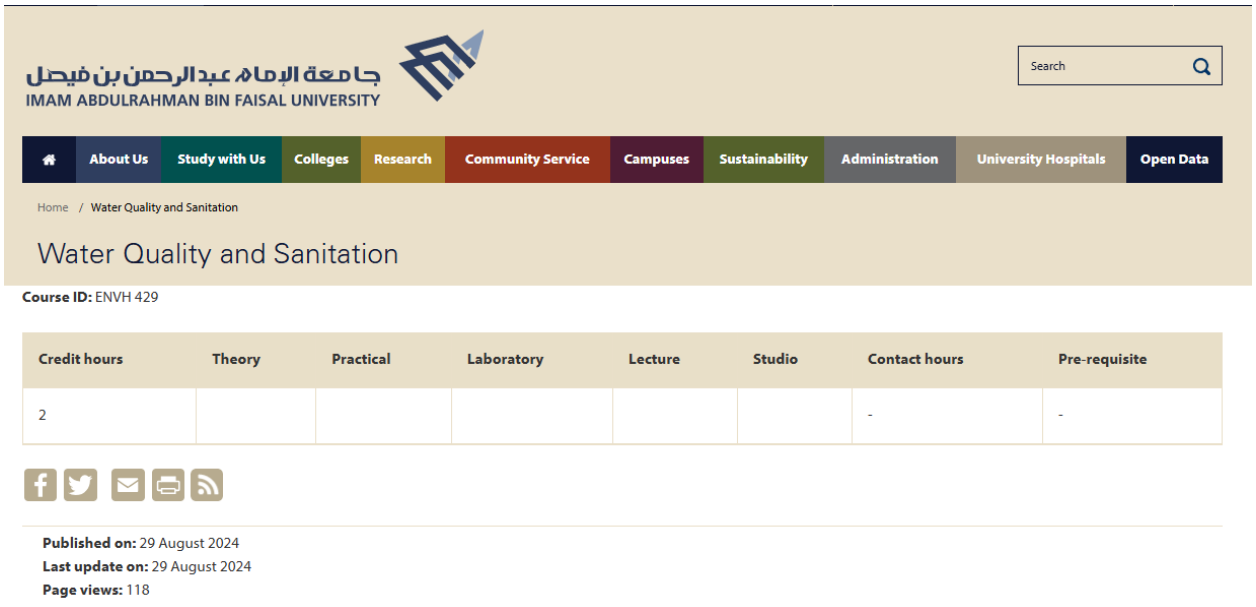
Course ID: MENVH 621

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
4.50	3	1.50				4.5	-

Published on: 20 December 2018
Last update on: 10 August 2022
Page views: 544

https://www.iau.edu.sa/en/courses/marine-and-coastal-pollution

10 . Water Quality & Sanitation



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Water Quality and Sanitation

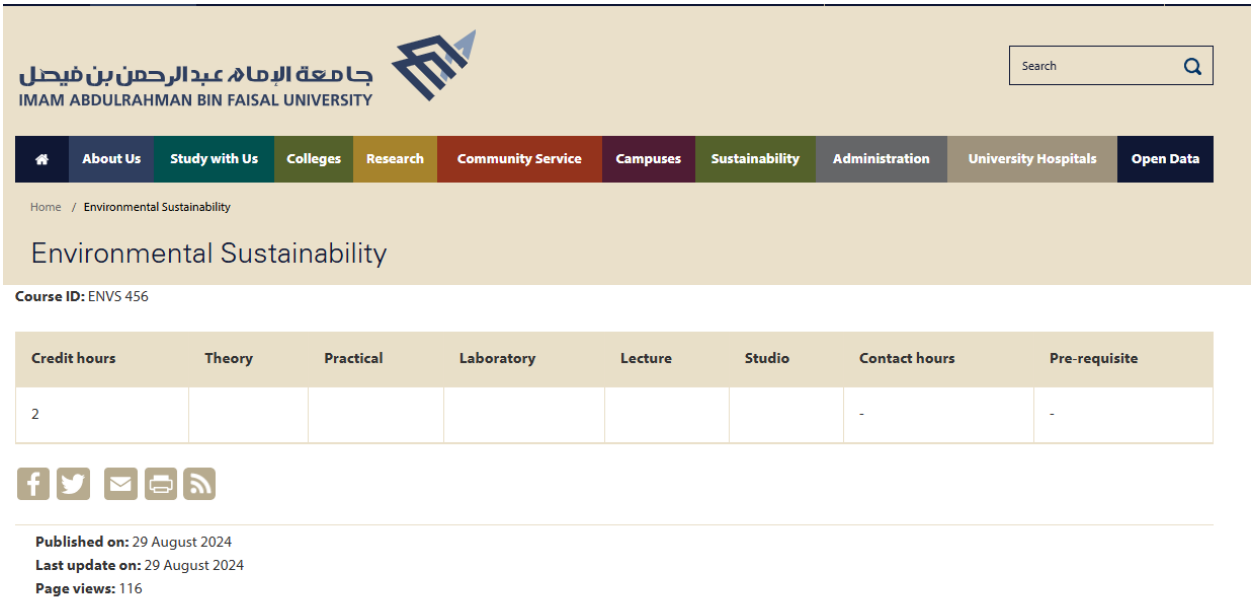
Course ID: ENVH 429

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
2						-	-

Published on: 29 August 2024
Last update on: 29 August 2024
Page views: 118

https://www.iau.edu.sa/en/courses/water-quality-and-sanitation

11 . Environmental Sustainability



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Environmental Sustainability

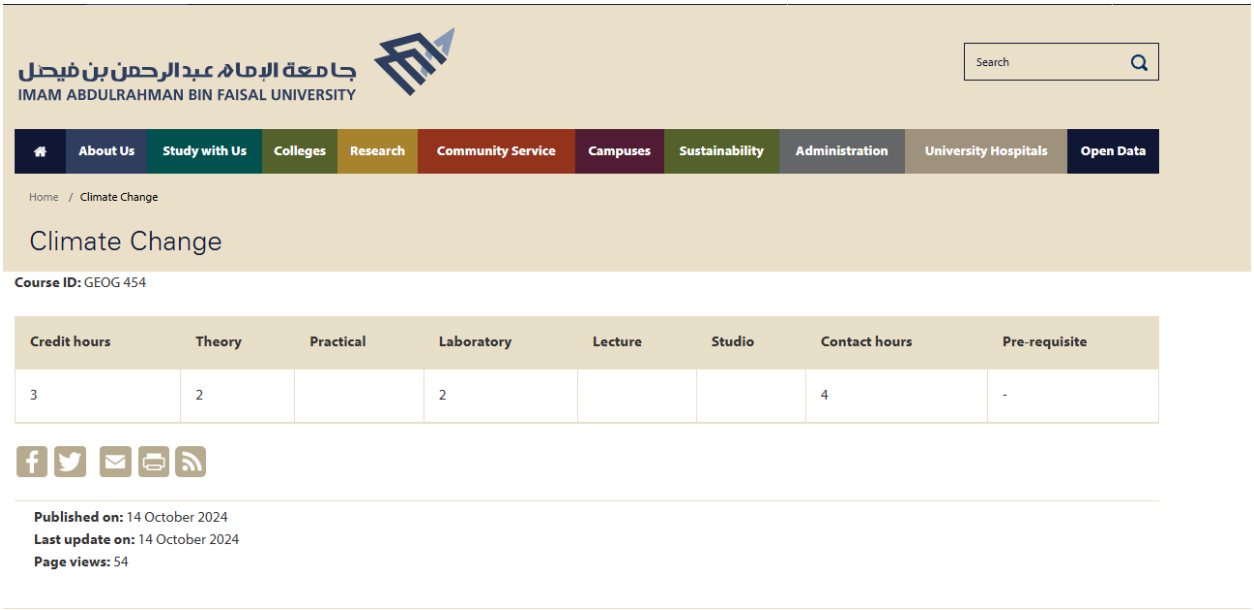
Course ID: ENVS 456

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
2						-	-

Published on: 29 August 2024
Last update on: 29 August 2024
Page views: 116

https://www.iau.edu.sa/en/courses/environmental-sustainability-0

12 . Climate Change



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Home / Climate Change

Climate Change

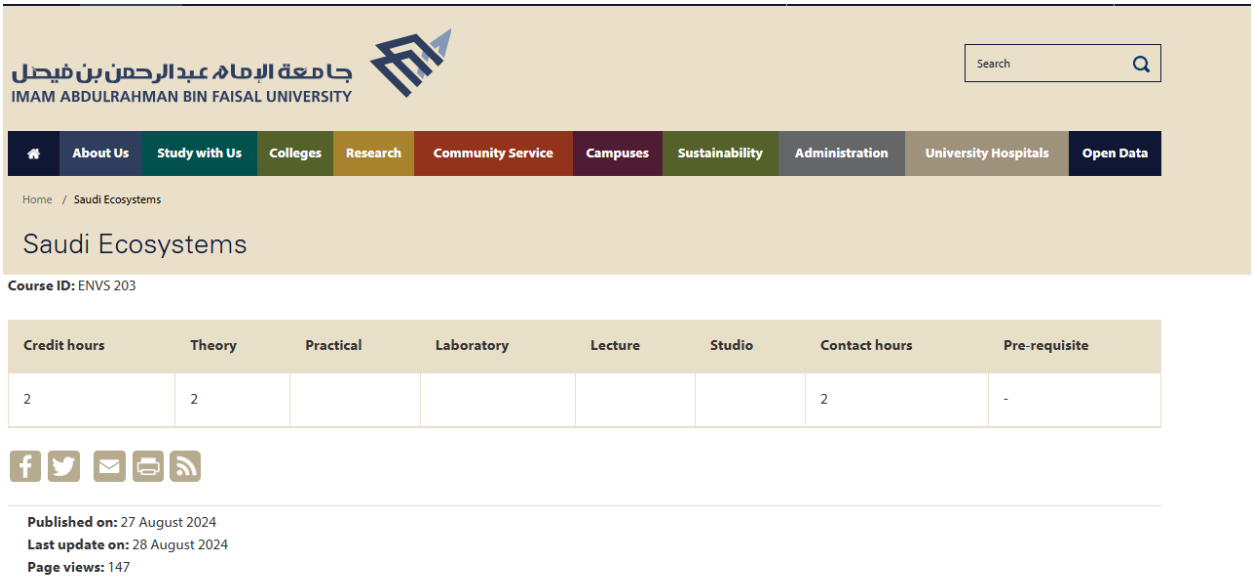
Course ID: GEOG 454

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
3	2		2			4	-

Published on: 14 October 2024
Last update on: 14 October 2024
Page views: 54

https://www.iau.edu.sa/en/courses/climate-change-0

13 . Saudi Ecosystems



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Home / Saudi Ecosystems

Saudi Ecosystems

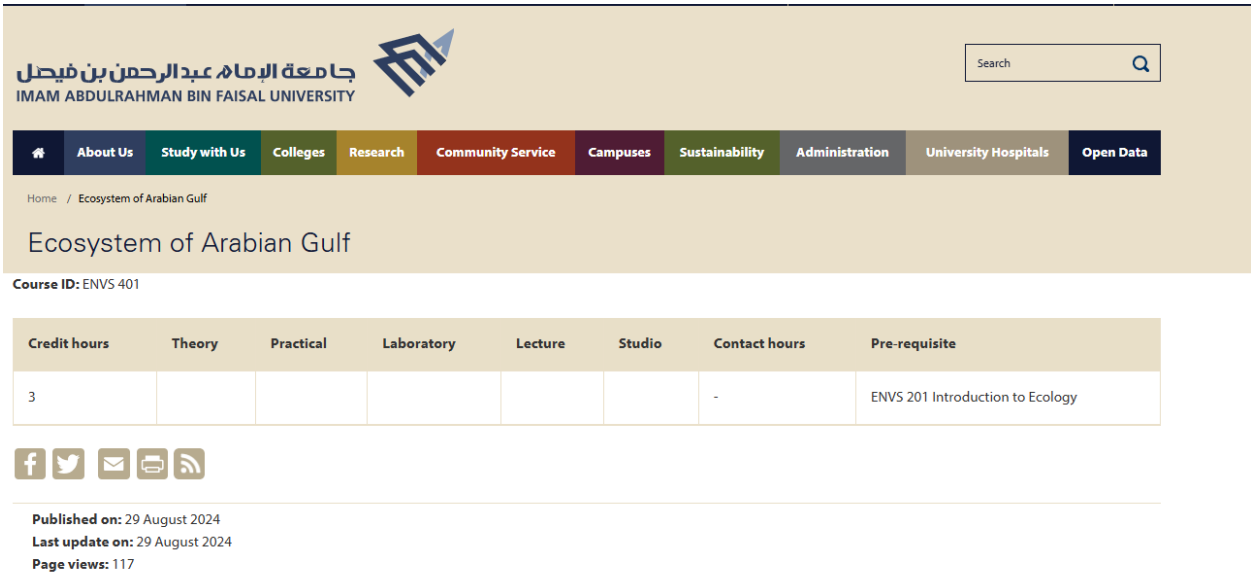
Course ID: ENVS 203

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
2	2					2	-

Published on: 27 August 2024
Last update on: 28 August 2024
Page views: 147

https://www.iau.edu.sa/en/courses/saudi-ecosystems

14 . Ecosystem of Arabian Gulf



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Ecosystem of Arabian Gulf

Course ID: ENVS 401

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
3						-	ENVS 201 Introduction to Ecology

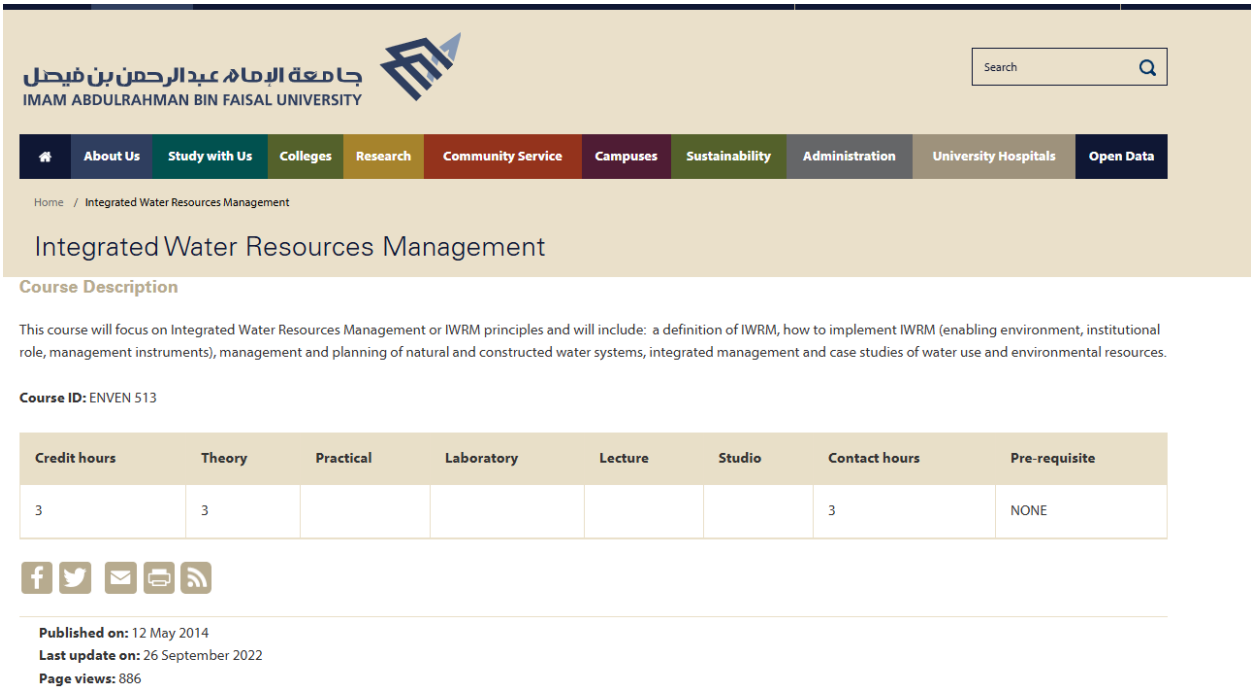
Published on: 29 August 2024
Last update on: 29 August 2024
Page views: 117

https://www.iau.edu.sa/en/courses/ecosystem-of-arabian-gulf

15 . Integrated Water Resources Management

Course Description

This course will focus on Integrated Water Resources Management or IWRM principles and will include: a definition of IWRM, how to implement IWRM (enabling environment, institutional role, management instruments), management and planning of natural and constructed water systems, integrated management and case studies of water use and environmental resources.



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Integrated Water Resources Management

Course Description

This course will focus on Integrated Water Resources Management or IWRM principles and will include: a definition of IWRM, how to implement IWRM (enabling environment, institutional role, management instruments), management and planning of natural and constructed water systems, integrated management and case studies of water use and environmental resources.

Course ID: ENVEN 513

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
3	3					3	NONE

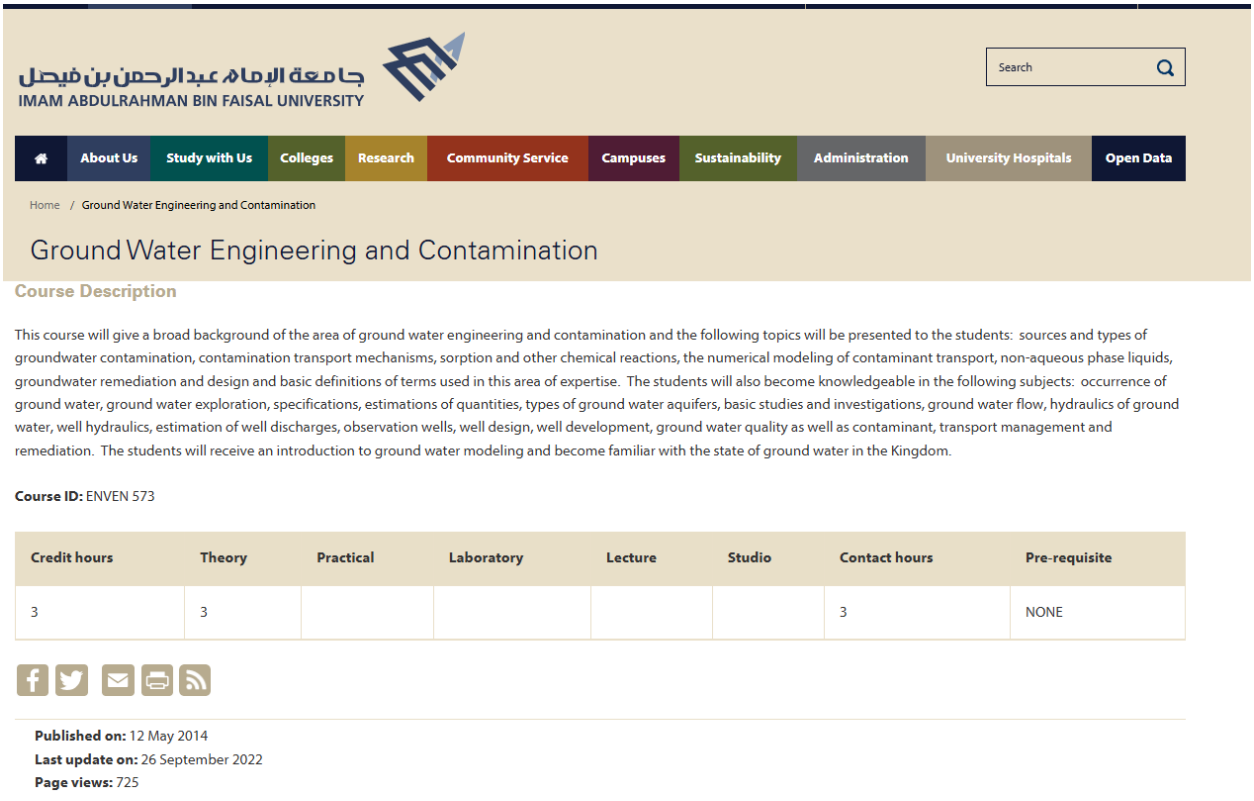
Published on: 12 May 2014
Last update on: 26 September 2022
Page views: 886

https://www.iau.edu.sa/en/courses/integrated-water-resources-management

16 . Ground Water Engineering and Contamination

Course Description

This course will give a broad background of the area of ground water engineering and contamination and the following topics will be presented to the students: sources and types of groundwater contamination, contamination transport mechanisms, sorption and other chemical reactions, the numerical modeling of contaminant transport, non-aqueous phase liquids, groundwater remediation and design and basic definitions of terms used in this area of expertise. The students will also become knowledgeable in the following subjects: occurrence of ground water, ground water exploration, specifications, estimations of quantities, types of ground water aquifers, basic studies and investigations, ground water flow, hydraulics of ground water, well hydraulics, estimation of well discharges, observation wells, well design, well development, ground water quality as well as contaminant, transport management and remediation. The students will receive an introduction to ground water modeling and become familiar with the state of ground water in the Kingdom.



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Home / Ground Water Engineering and Contamination

Ground Water Engineering and Contamination

Course Description

This course will give a broad background of the area of ground water engineering and contamination and the following topics will be presented to the students: sources and types of groundwater contamination, contamination transport mechanisms, sorption and other chemical reactions, the numerical modeling of contaminant transport, non-aqueous phase liquids, groundwater remediation and design and basic definitions of terms used in this area of expertise. The students will also become knowledgeable in the following subjects: occurrence of ground water, ground water exploration, specifications, estimations of quantities, types of ground water aquifers, basic studies and investigations, ground water flow, hydraulics of ground water, well hydraulics, estimation of well discharges, observation wells, well design, well development, ground water quality as well as contaminant, transport management and remediation. The students will receive an introduction to ground water modeling and become familiar with the state of ground water in the Kingdom.

Course ID: ENVEN 573

Credit hours	Theory	Practical	Laboratory	Lecture	Studio	Contact hours	Pre-requisite
3	3					3	NONE

Published on: 12 May 2014
Last update on: 26 September 2022
Page views: 725

https://www.iau.edu.sa/en/courses/ground-water-engineering-and-contamination

17 . IAU Students Field Visit to Marine Pollution Control Department at ARAMCO

Field Visit to the Marine Pollution Control Department at Aramco by IAU Faculty and Students

I had the honor of organizing a field visit to the Marine Pollution Control Department at Aramco - Tanura Opinion. Many thanks to Aramco for allowing the future engineers to have this unique experience and wonderful organization.

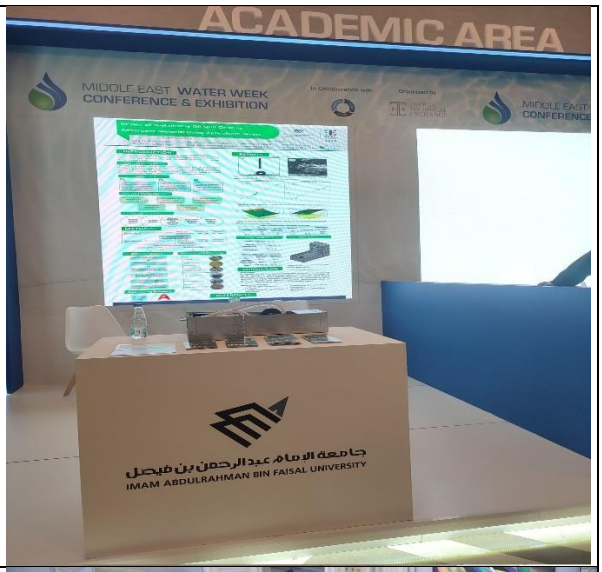
https://twitter.com/Omer2AGA/status/1755169090157637914

18 . IAU Active Participation in Sustainability related Events

Participation of IAU Engineering College Students in the EnviroSpill Conference and Exhibition at Bahrain

Part of the participation of College of Engineering students of IAU in the conference sessions specialized in combating pollution through the EnviroSpill Conference and Exhibition, which was held in the Kingdom of Bahrain to learn about the latest technologies in combating oil spills under the patronage and attendance of His Excellency the Minister of Oil and Environment in Bahrain.

https://twitter.com/IAU_KSA/status/1582358003483029504



IAU Participation in the Middle East Water Week Conference and Exhibition

The Environmental Engineering section of Faculty of Engineering Imam Abdulrahman Bin Faisal University participated in the Middle East Water Week Conference and Exhibition and presented a number of projects aimed at treating water.

https://twitter.com/CE_IAU_SA/status/1736717131863962024








Visit of the Delegation of the Saline Water Conversion Corporation to IAU

Part of the visit of the delegation of the Saline Water Conversion Corporation to Imam Abdulrahman Bin Faisal University, which included a tour of: 1) Research Center, Faculty of Science, 2) Faculty of Computer Science and Information Technology, 3) Faculty of Engineering

https://twitter.com/IAU_KSA/status/1604581022351368192

IAU in cooperation with the Saudi Water Academy for "Generations Summer Program"

The Continuing Education Center is pleased to #Imam_AbdulRahman_Bin_Faisal_University In cooperation with the Saudi Water Academy. The announcement of the launch of "Generations Summer Program". The Target group is Children from (7 years to 12 years).

https://twitter.com/IAU_KSA/status/1808112744589070344

IAU invitation for Environmental Week Exhibition

The College of Engineering, IAU invited public and students to attend Environment Week Exhibition under the slogan "Your Environment Knows You"

https://twitter.com/CE_IAU_SA/status/1637697377539612674

Environmental Week Exhibition by IAU

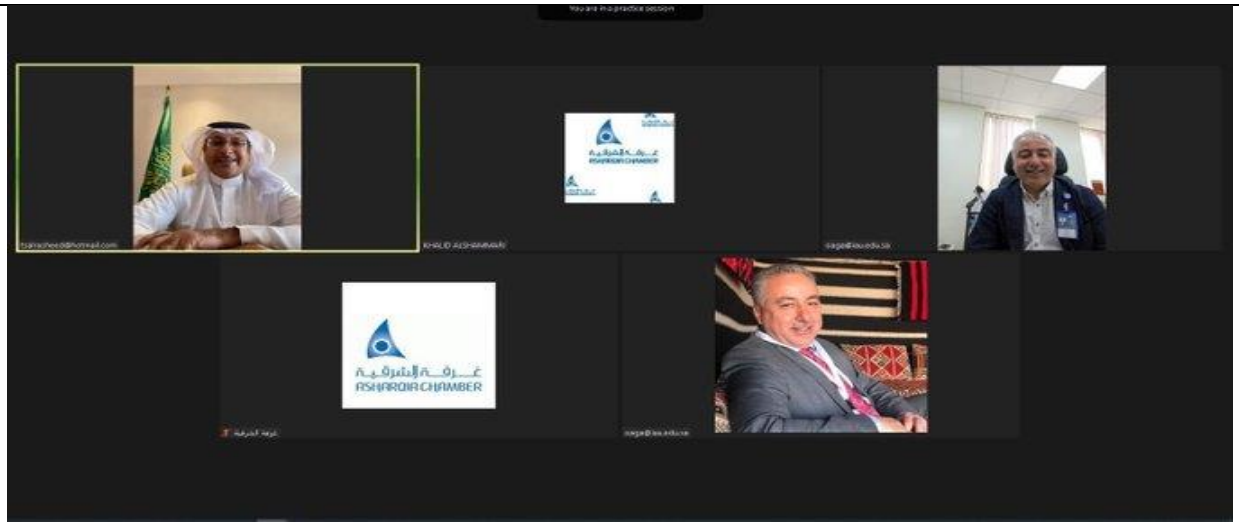
Part of the attendance of the Environment Week Exhibition held in the College of Engineering, IAU under the slogan "Your Environment Knows You"

https://twitter.com/CE_IAU_SA/status/1637777150844469248

IAU invitation for Environmentally Friendly Training Center

The Student Council of the College of Engineering, IAU invited students to attend Environmentally Friendly Training Center, Presentation and Selection of Courses that will be offered during the Semester.

https://twitter.com/IAU_ENG_SC/status/1645116132737658882



IAU Participation in the Meeting Organized by Environmental Committee at Eastern Chamber for Sustainability

The College of Engineering, IAU had participated in a meeting organized by the Environmental Committee at Eastern Chamber on Sustainable Opportunities and Solutions to Environmental Problems for Industries in the Eastern Province.

https://twitter.com/AsharqiaChamber/status/1706659305737638113
https://twitter.com/AsharqiaChamber/status/1704861814368932103

IAU Organized Workshop entitled Sustainable Kingdom

Under the patronage of His Excellency the President of Imam Abdulrahman Bin Faisal University and in the presence of the Vice President of the University for Development and Community Partnership, Dr. Nihad Al-Omair, #Community_Partnership_Department and the College of Engineering organized a workshop entitled: (Sustainable Kingdom) in cooperation with Saudi Aramco, at the College of Architecture and Planning.

https://twitter.com/IAU_KSA/status/1605518297738248192

https://twitter.com/IAU_DCP/status/1605483223714185218

19 . Research On Life Below Water

2022-2025

Research Title	DOI	Keywords
Evaluating the Influence of Reverse Osmosis on Lakes Using Water Quality Indices: A Case Study in Saudi Arabia	DOI 10.3390/w16101351	Water Quality
Synthesis and characterization of p-carboxy phenyl amino maleimide-g-cellulose acetate/ZrO2 nanocomposite membrane for water desalination	DOI 10.2166/wrd.2023.036	Water Desalination
Insight into ANN and RSM Models' Predictive Performance for Mechanistic Aspects of Cr(VI) Uptake by Layered Double Hydroxide Nanocomposites from Water	DOI 10.3390/w14101644	Water
Land Reclamation in a Coastal Metropolis of Saudi Arabia: Environmental Sustainability Implications	DOI 10.3390/w14162546	Coastal Metropolis
Understanding Household Water-Use Behavior and Consumption Patterns during COVID-19 Lockdown in Saudi Arabia	DOI 10.3390/w14030314	Water use
Unexplored Potential: Metabolite Screening of Local Lake Algae Isolated from Al-Asfar Lake in Saudi Arabia	DOI 10.3390/w15152757	Water
IoT-Based Solutions to Monitor Water Level, Leakage, and Motor Control for Smart Water Tanks	DOI 10.3390/w14030309	Water
Dual-Functional Nanostructures for Purification of Water in Severe Conditions from	DOI 10.3390/w14193010	Purification of Water

Heavy Metals and E. coli Bacteria		
Hybrid Approach for Streamflow Prediction: LASSO-Hampel Filter Integration with Support Vector Machines, Artificial Neural Networks, and Autoregressive Distributed Lag Models	DOI 10.1007/s11269-024-03858-0	Streamflow Prediction
Microbial Amelioration of Heavy Metal Toxicity in Plants for Agro-Environmental Sustainability	DOI 10.1007/s11270-024-07251-w	Agro-Environmental Sustainability
Radiological monitoring in some coastal regions of the Saudi Arabian Gulf close to the Iranian Bushehr nuclear plant	DOI 10.1016/j.marpolbul.2021.113146	Coastal Region
Biomonitoring coastal pollution on the Arabian Gulf and the Gulf of Aden using macroalgae: A review	DOI 10.1016/j.marpolbul.2021.113156	Coastal pollution
Species-specific ecotoxicity of platinum nanoparticles to two cyanobacteria	DOI 10.1016/j.marpolbul.2024.117054	Ecotoxicity

Article Title	Link	Research Area	Vol.
Mangrove forests as traps for marine litter	https://www.webofscience.com/api/gateway?GWVersion=2&SrcAuth=InCites&SrcApp=tsm_test&DestApp=WOS_CPL&DestLinkType=FullRecord&KeyUT=ISI:000460844800054	ENVIRONMENTAL SCIENCES	247
Biosynthesis of silver nanoparticles by using of the marine brown alga Padina pavonia and their characterization	https://www.webofscience.com/api/gateway?GWVersion=2&SrcAuth=InCites&SrcApp=tsm_test&DestApp=WOS_CPL&DestLinkType=FullRecord&KeyUT=ISI:000483366900017	BIOLOGY	26
Carbon stocks and accumulation rates in Red Sea seagrass meadows	https://www.webofscience.com/api/gateway?GWVersion=2&SrcAuth=InCites&SrcApp=tsm_test&DestApp=WOS_CPL&DestLinkType=FullRecord&KeyUT=ISI:000446803100001	MARINE & FRESHWATER BIOLOGY	8
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