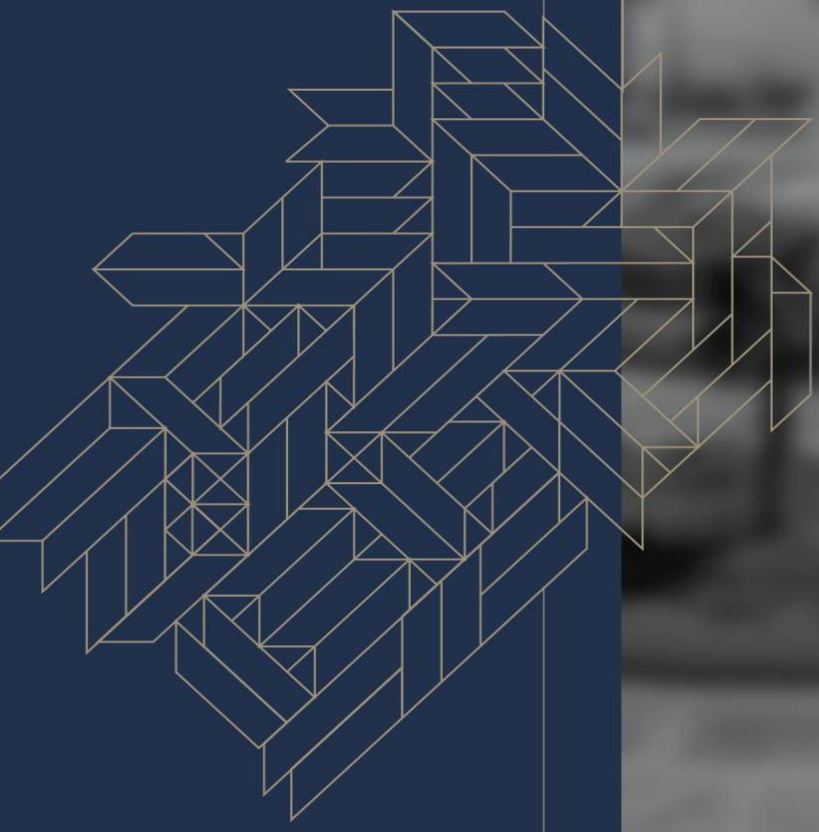
جامعة الإمام عبدالرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY




# SDG 15

# Life on Land

## Sustainable Development Report 2023-2024

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# 1. Forest Vegetation in IAU Campus

**Trees at IAU Campus**

**Saplings planted across the Campus**

**Conservation of Plants and Trees at IAU campus**

**Plant Vegetations at IAU Building**

**Green Campus at IAU**

**Trees across the Campus**

**Saplings and flowering plants planted across the Campus**

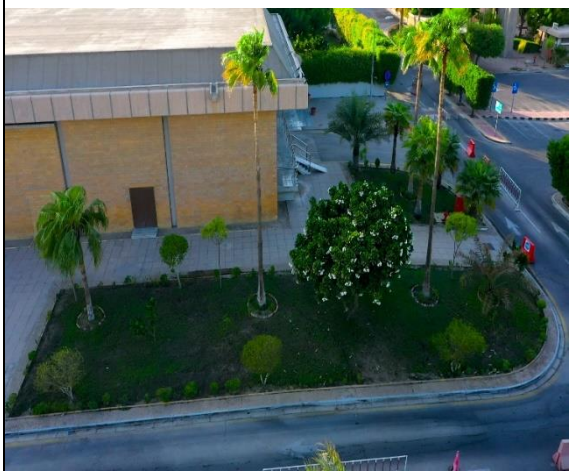
**Saplings are planted in Dry lands**

**Trees maintained and frequently at IAU Campus**

**Lush environment at IAU**

Treated water used in Water Fountains

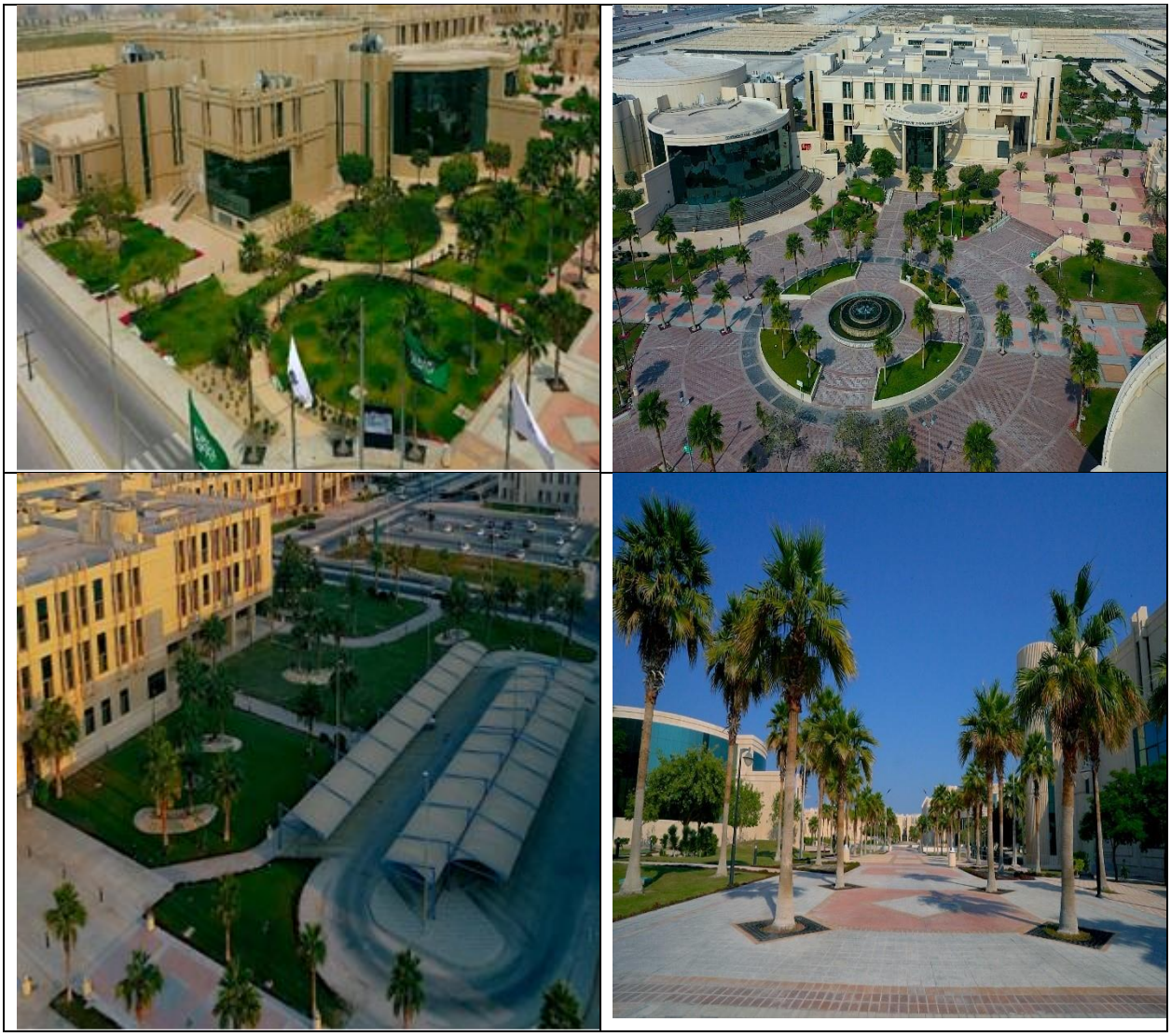
Plant beds and trees consuming treated water



**Consumption of treated water for various plants and trees**

**Trees of all sizes adorning IAU campus**

**Trees everywhere crowning IAU**



**Trees even reaching to two stories**


## Trees and Plants at IAU


Big Trees and plants: Family Medicine


Big Trees: On the pathway

Planted trees and plants: University Hospital

Natural Trees & plants at the entrance of IAU buildings


Big Trees Near Parking Slots

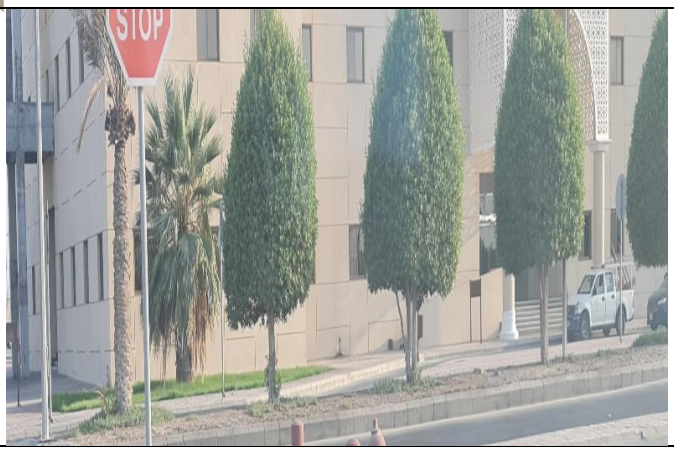
Big trees on the pathway outside IAU buildings


Big Trees at Orientation Studies - Medical Track

| | |
|---|---|
|  |  |
| Big Trees at entrance of IAU main gate | Natural Trees & Plants at Student Restaurant 1 |
|  |  |
| Building 110 - VIP | Natural Tree plantation in the Campus |

| | |
|---|---|
|  |  |
| Saplings ready to be planted | Trees all across the campus |
|  |  |
| Plantation at Orientation Studies - Medical Track | Plantation at College of Architecture &Planning |
|  |   |
| Grass at Sports Stadium | Planted Vegetation at Staff Housing |

| | |
|---|---|
|  |  |
| Student Housing trees and plants | College of Dentistry |
|  |  |
| Patches of Grass bed Infront and back of each building | Various trees adjacent to buildings, pathways, parking, on medians etc. |
|  |  |
| Green grass: Spread on various places in Campus | Planted vegetation |

| | |
|---|---|
|  |  |
| Trees: On the pathway | Trees and plants: Near parking slots |
|  |  |
| Trees and plants at the entrance of IAU buildings | Trees and plants: Building 200 |
|  |  |
| Trees and plants: University Hospital | Trees and plants: Family Medicine |

**Description:**

As it is evident from the above building pictures, that IAU administration is committed towards green campus, as evidence many natural plants and trees were maintained in addition various big trees and plants were planted. The description is as follows: -

Total main campus area ($m_2$) = **6,165,741 $m^2$**

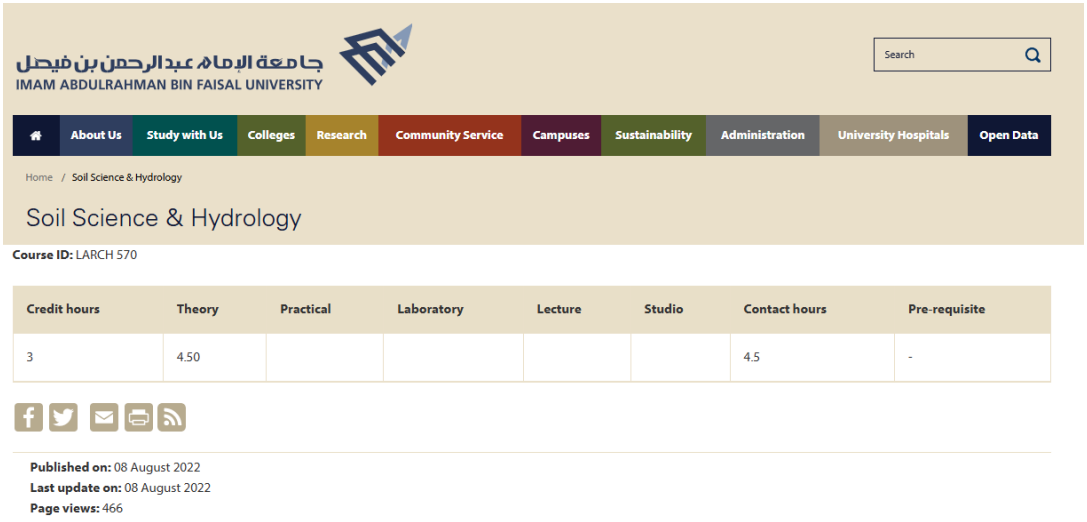
Total area on campus covered in forest vegetation ($m^2$) = **1,389,422$m^2$**

The percentage of the area on campus covered in forest vegetation excluding to the total campus area

**= 23%**

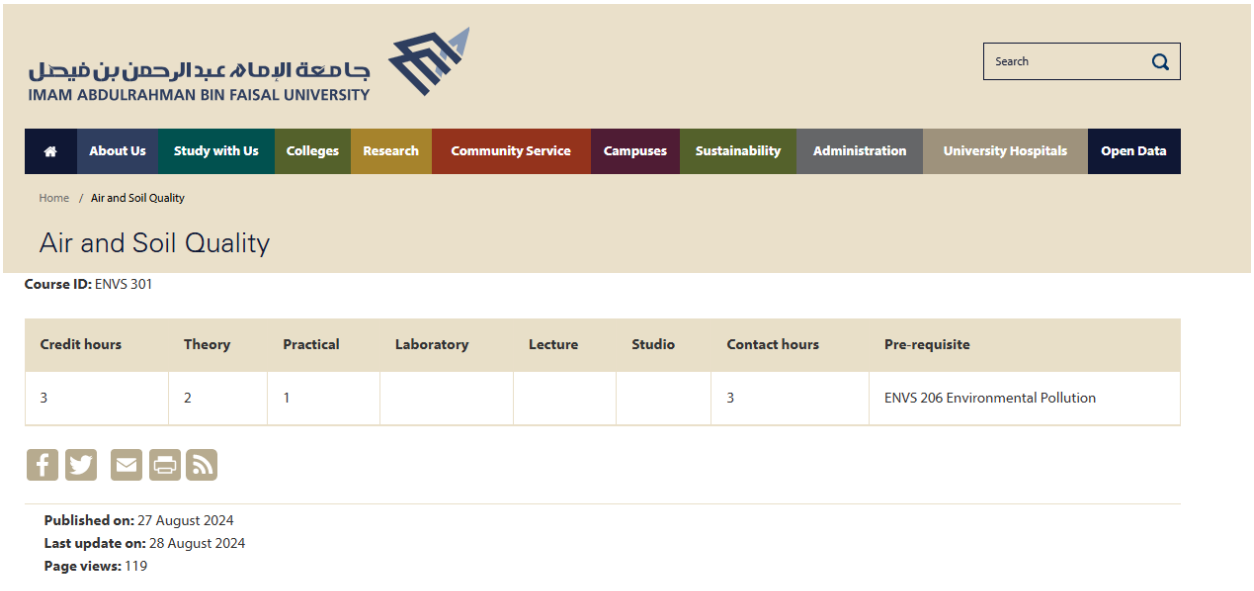
# 2. Courses offered by IAU for Student Community on Life on Land

## Soil Science & Hydrology



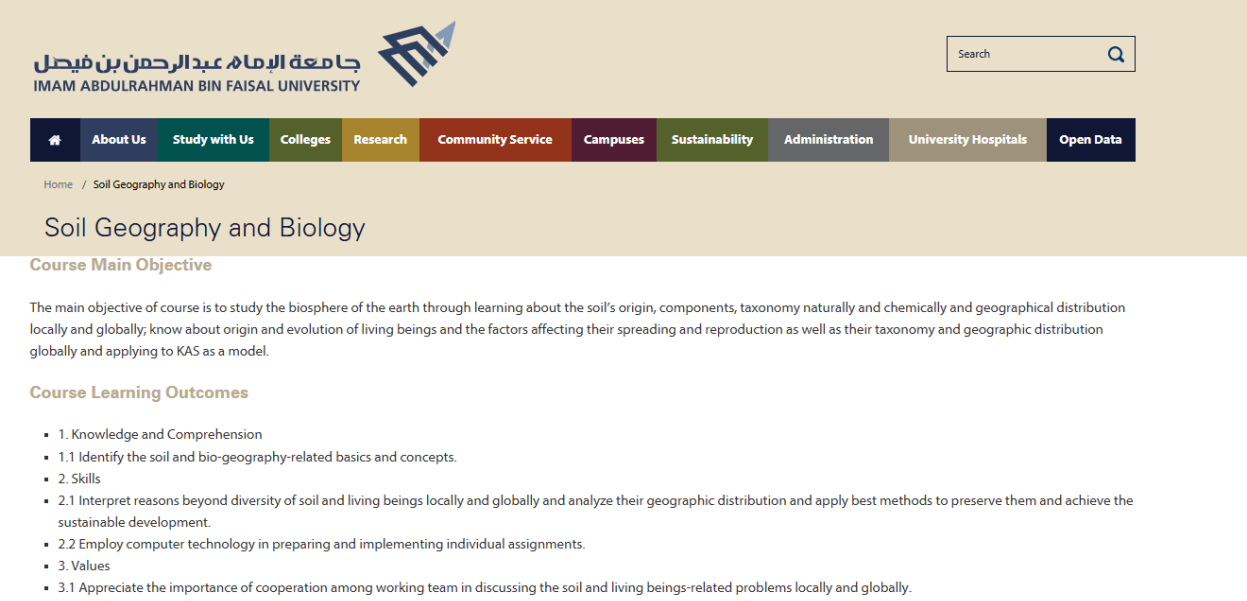

https://www.iau.edu.sa/en/courses/soil-science-hydrology-0

## Air and Soil Quality



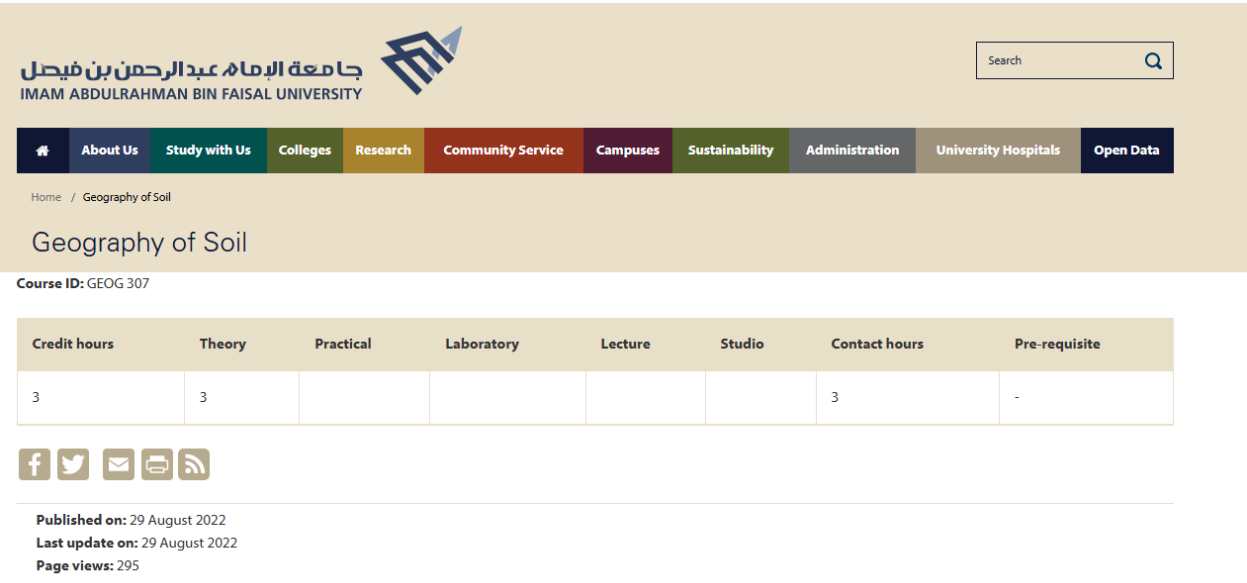

https://www.iau.edu.sa/en/courses/air-and-soil-quality

## Soil Geography and Biology



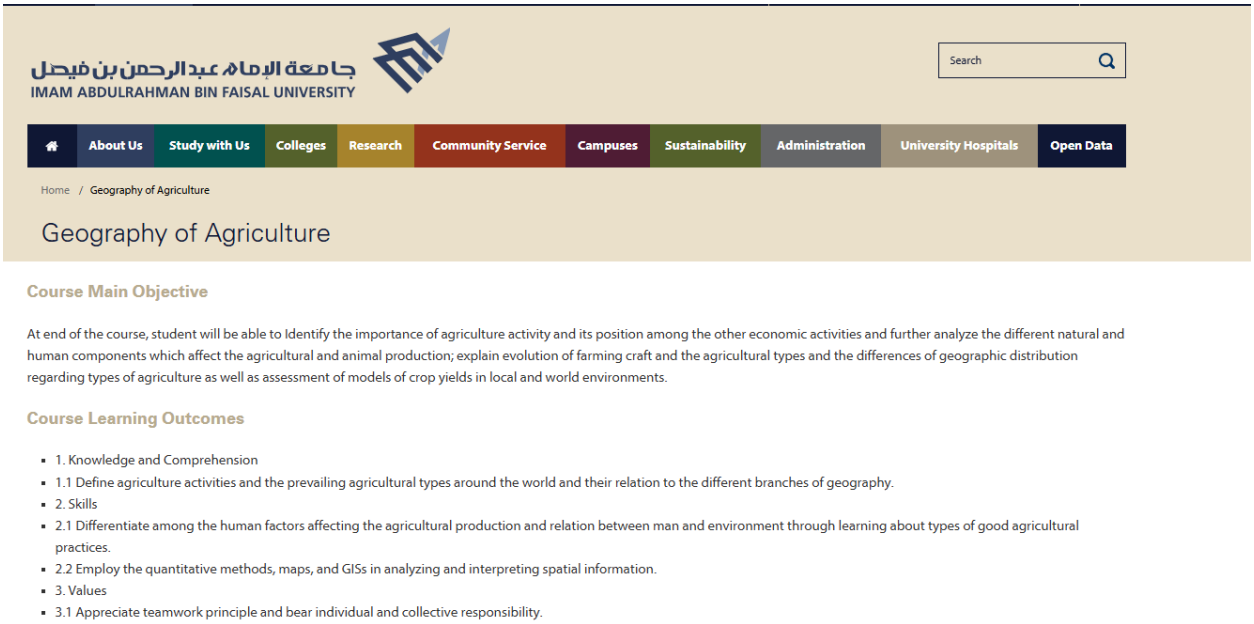

https://www.iau.edu.sa/en/courses/soil-geography-and-biology

## Geography of Soil




https://www.iau.edu.sa/en/courses/geography-of-soil-0

# Geography of Agriculture




https://www.iau.edu.sa/en/courses/geography-of-agriculture-1

# 3. Research by IAU on Life on Land in the Web of Science Database

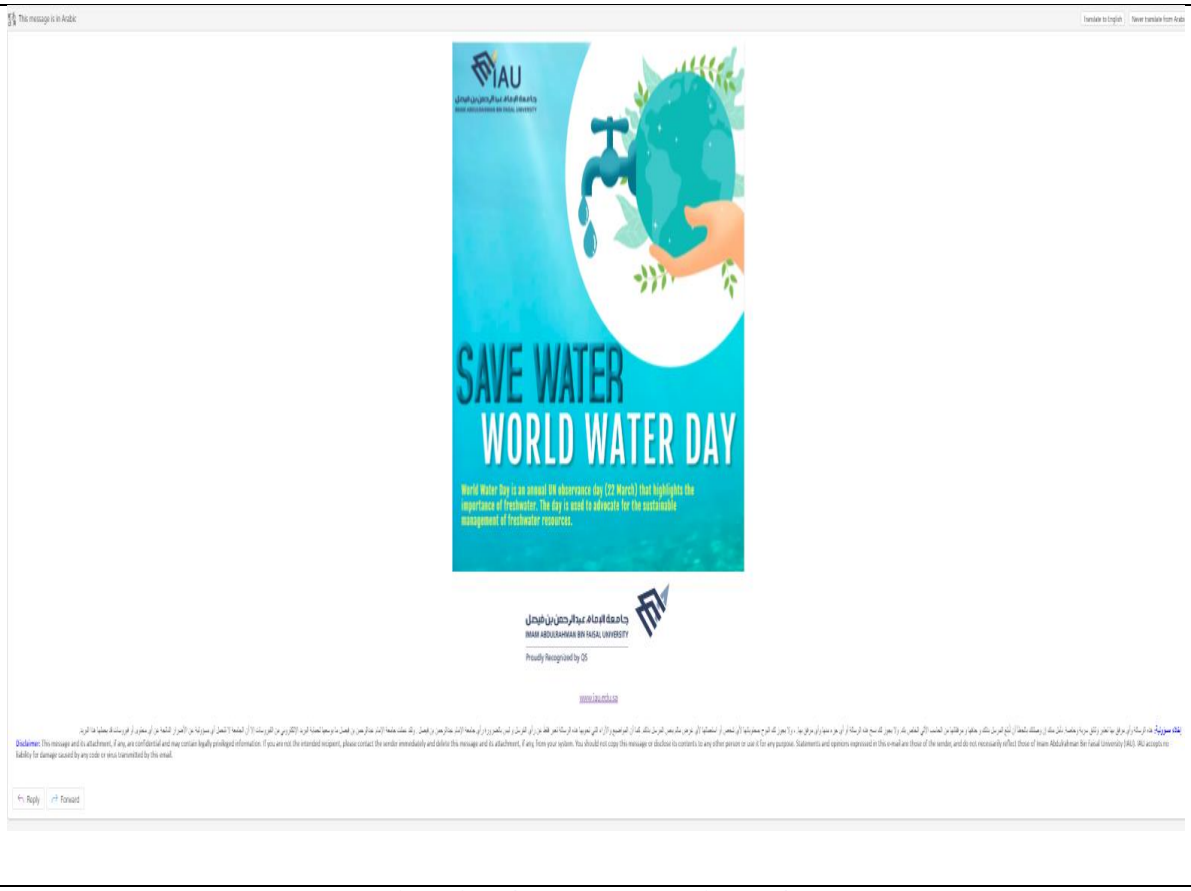
**2022-2024**

| Research Title | Link | Keywords |
|---|---|---|
| A Conceptual Framework of Public Participation Utilization for Sustainable Urban Planning in the Kingdom of Saudi Arabia | DOI 10.3390/su141811470 | Urban Planning |
| Investigating the prospect of e-participation in urban planning in Saudi Arabia | DOI 10.1016/j.cities.2022.104186 | Urban Planning |
| Spatial Analysis and Interpretation of Geological and Geotechnical Database: A Case Study of Riyadh, Saudi Arabia | DOI 10.1007/s13369-024-09244-7 | Geology |
| Geochemistry study of soil affected catastrophically by tsunami disaster triggered by 2004 Indian Ocean earthquake using a fourth harmonics (?=266 nm) Nd:YAG laser induced breakdown spectroscopy | DOI 10.1016/j.arabjc.2022.103847 | Soil |
| Coastal Flood risk assessment using ensemble multi-criteria decision-making with machine learning approaches | DOI 10.1016/j.envres.2023.118042 | Coast |
| Wildland-urban interface fire ashes as a major source of incidental nanomaterials | DOI 10.1016/j.jhazmat.2022.130311 | Wildland-Urban interface |
| Assessment of data mining, multi-criteria decision making and fuzzy-computing techniques for spatial flood susceptibility mapping: a comparative study | DOI 10.1080/10106049.2022.2076910 | Flood |

| | | |
|---|---|---|
| Tree species, mycorrhizal associations, and land-use history as drivers of cohesion in soil biota communities and microbe-fauna interactions | DOI 10.1016/j.foreco.2024.121827 | Tree-species |
| Prospects of earthworm coelomic fluid as a potential therapeutic agent to treat cancer | DOI 10.1007/s10555-023-10148-5 | Earthworm |
| Arbuscular mycorrhizal fungi improve tolerance of wheat plants under soil Europium contamination | DOI 10.1007/s11104-024-06936-9 | Soil |

# 4. Water Conservation Program at IAU Campus

## Water Conservation Program Implementation at IAU




**IAU circular for conservation of water**

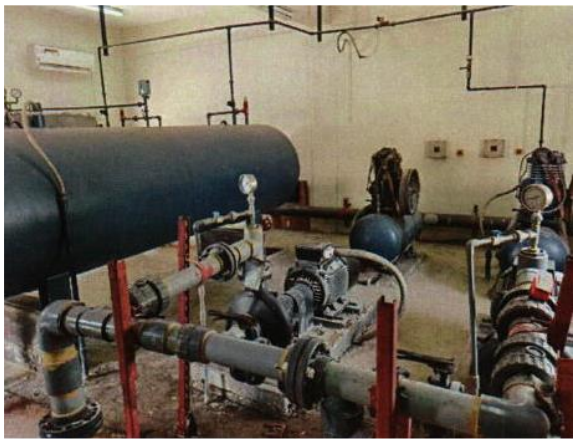
**Place for Rainwater Harvest at IAU, KSA**

**Place for Rainwater Harvest at IAU, KSA**

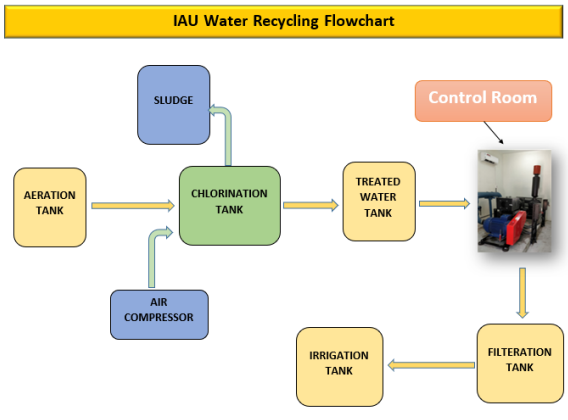

**Brakish water well Reverse osmosis desalination, IAU, KSA**




**Displaying "Save Water" slogan in IAU Cafeterias and washrooms**



**Water treatment plant at IAU**




| On campus biological water treatment plant | Water Recycling Flow Chart |
|---|---|

**Water Recycling Program (IAU, KSA)**

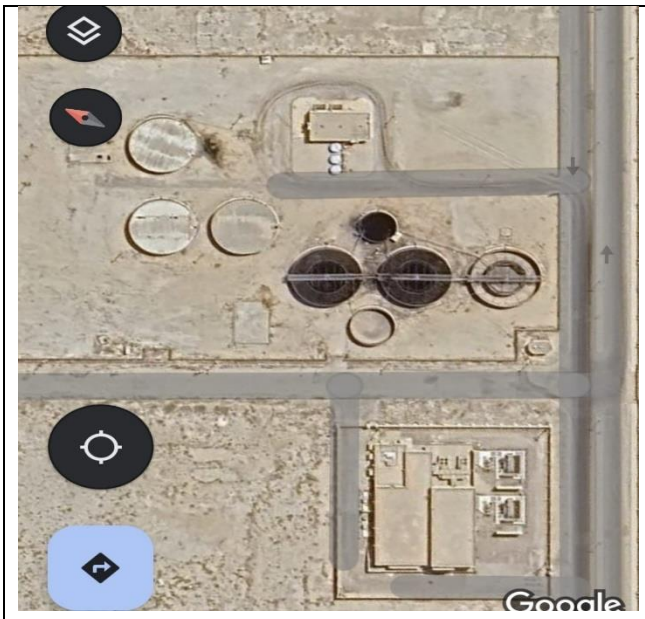
# 5. Water Collection, Storage & Utilization at IAU

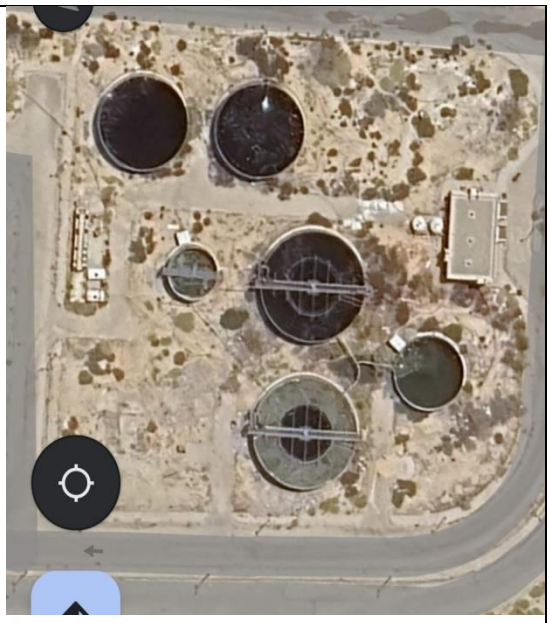
## Water Recycling Program Implementation at IAU

**Water recycling tanks**

## Water Treatment facility – Desalination and water processing tanks for drinking

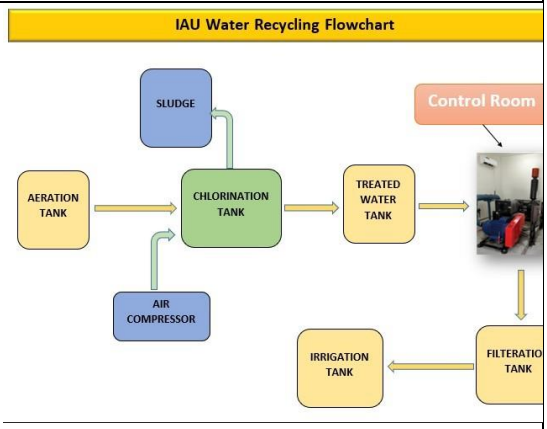
**Water treatment plants**



Water recycling tanks in Googlemaps

On campus biological water treatment plant at IAU




Water Recycling Flow Chart in IAU

**Water Recycling Program (IAU, KSA)**

**Water Pollution control system at IAU**

**Recycled water processed in the tanks to protect ground water contamination**

## Consumption of Treated Water

**Consumption of Treated Water in Water Dispensers at IAU**

**Treated water consumption at dispensers installed in every college building**

Description:

The water treatment plant is positioned within the IAU campus. This plant provides the grey water and brown used for flushing toilets and washing basins. Then, the water is collected at a central on-campus wastewater treatment plant (WWTP). This WWTP carries out a biological aeration process to lessen the number of water pollutants that make the water to be suitable for re-use.

The capacity of the WWTP is 1200 m3 per day. It consists of two working tanks and one sapre of capacity 600 m3. Water reuse is performed by mixing 1200 treated WWTP with + 2800 m3 of well water (TDS 10%). The total = 3600 m3 per day, which is the amount of reused water for greening and irrigation.

As per the present condition of IAU, we have framed a formal policy for 100% water recycling program, and that recycled water is used for toilet flushing, watering plants, etc.

The IAU is reusing 100% treated wastewater on campus with zero discharge since water is scarce in this region.

## Water Efficient Appliances Usage (e.g. hand washing taps, toilet flush, etc.)

**Water Efficient Appliances Usage**
**(IAU, KSA)**

Description:

The water used in IAU campus is entirely generated from RO on campus system that intake is from ground water wells.

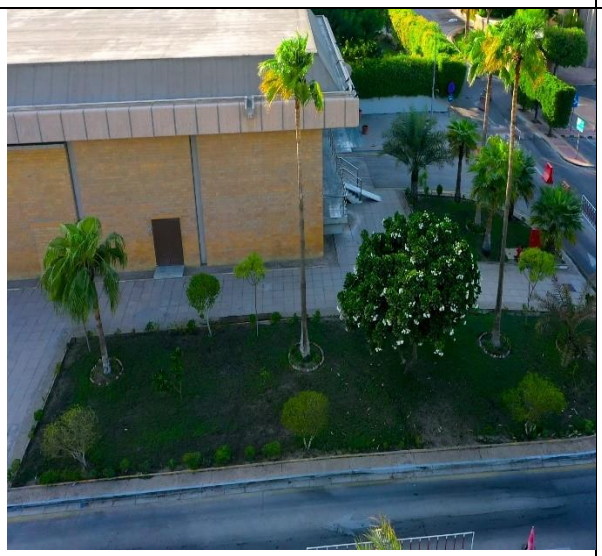
The water generated is combined with brackish water to raise the amount of water utilized for washing and flushing toilets.

## Consumption of treated water at IAU

**Treated water used in Water Fountains**

**Plant beds and trees consuming treated water**




**Consumption of treated water for various plants and trees**

**1- Comsumption of treated water dispensors installed in every college building**

2- Recycled water used for garden sprinkler system

**Recycled water is utilized for Irrigation and for garden sprinkler system**

**Consumption of treated water, Imam Abdulrahman Bin Faisal University, Saudi Arabia**

**Treated water is consumed in all Washrooms across IAU**

Description

The treated water is utilized by students and staff. Treated water dispensers are installed in each college building for consumption. Moreover, recycled water is used for Irrigation and garden sprinkler system in IAU, Saudi Arabia.

# 6. Water pollution control in Campus area.

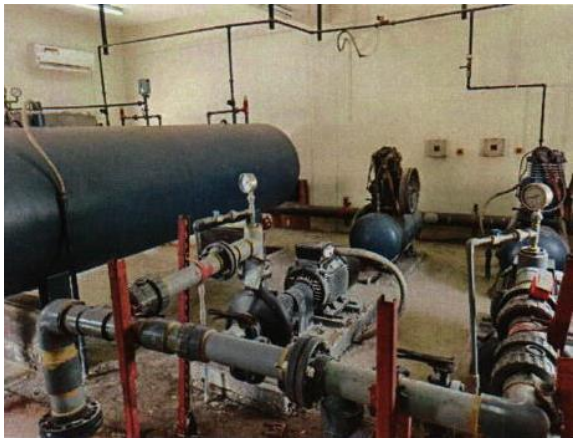
**Water Pipes periodically inspected and repaired for any leaks or worn outs**

**Monitoring Water pipes regularly for preventing leakages and water pollution**

The maintenance department at IAU periodically check the water Pipes, they inspected and repaired it in case of any leaks or worn outs.


**Water meter to regularly check water quality**

**Water Desalination plant at IAU**



**Water treatment plant at IAU**

**Water Pollution control system at IAU**

**Recycled water processed in the tanks to protect ground water contamination**

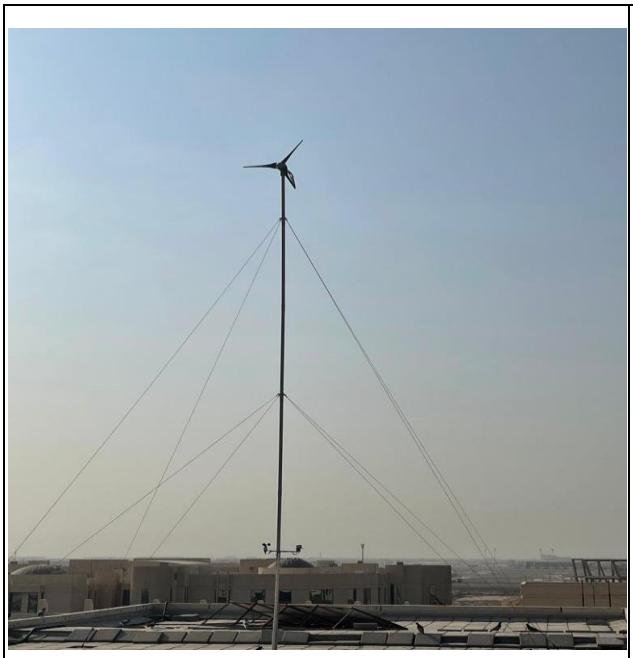
# 7. Clean Energy through Solar Panels


**Solar Plants at IAU Open Spaces for Renewable Energy**

**Solar Panels installed all over the campus to provide energy for the purposes of lighting, heating, cooling, running university laboratories, etc.**

**Solar Panel as substitute to conventional electricity installed in the campus as part to reducing Greenhouse gas emission**

**Solar Panel as substitute to conventional electricity installed in the campus as part to reducing Greenhouse gas emission**



**Wind power plants installed at IAU campuses**

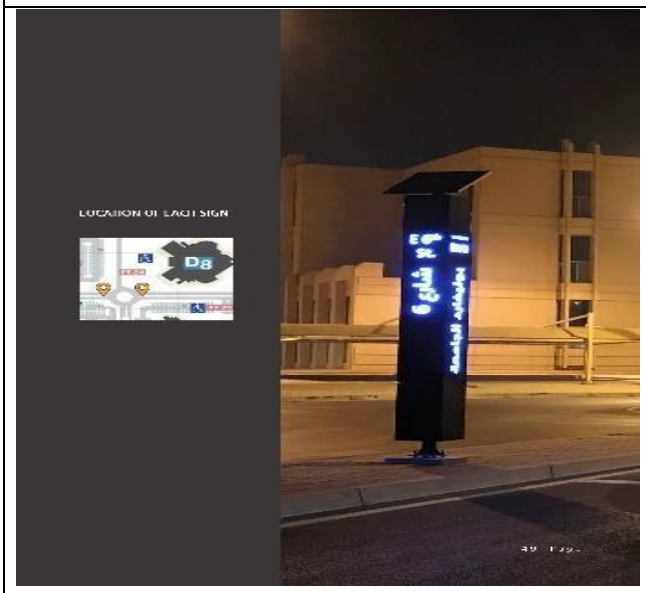


**NIGHTVIEW OF SOLAR OUTDOOR SIGNAGE IN IAU CAMPUS**



**DAY-VIEW OF SOLAR OUTDOOR SIGNAGE IN IAU CAMPUS**

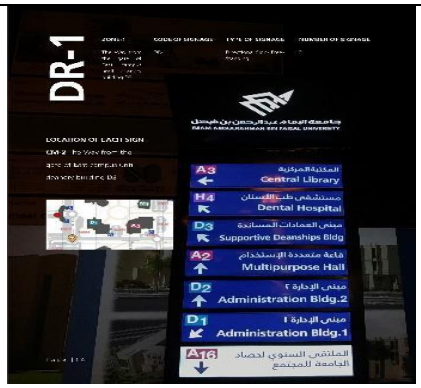


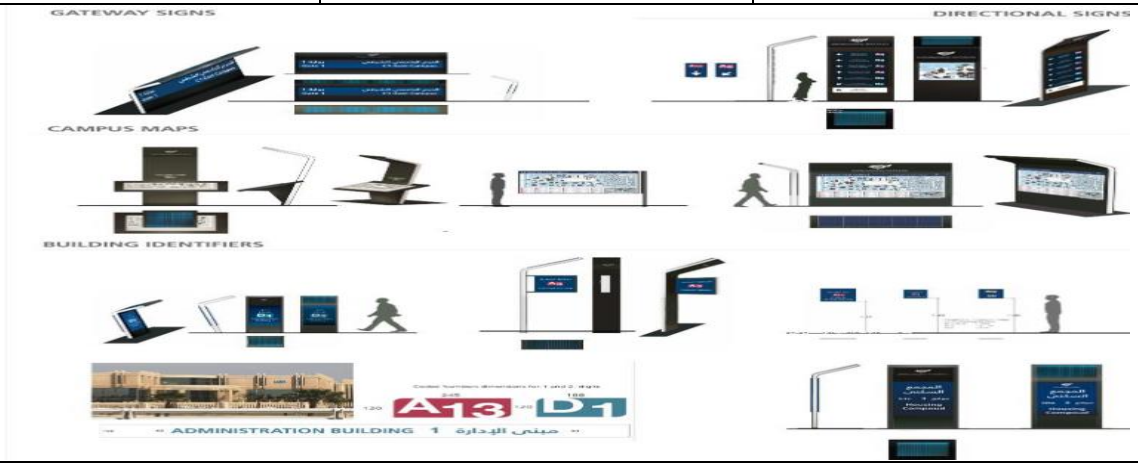




**NIGHTVIEW OF SOLAR OUTDOOR SIGNAGE IN IAU CAMPUS**






**OUTDOOR SIGNAGE IN C1-EAST CAMPUS**



**Example of Energy Efficient Appliances Usage: Solar energy for map direction and board and light outside**

**EXAMPLES OF SIGNAGE & SOLAR LIGHTS IN IAU CAMPUS**

# 8. Elements of Green Building Implementation

Elements of Green Building Implementation as Reflected in All Construction and Renovation Policies

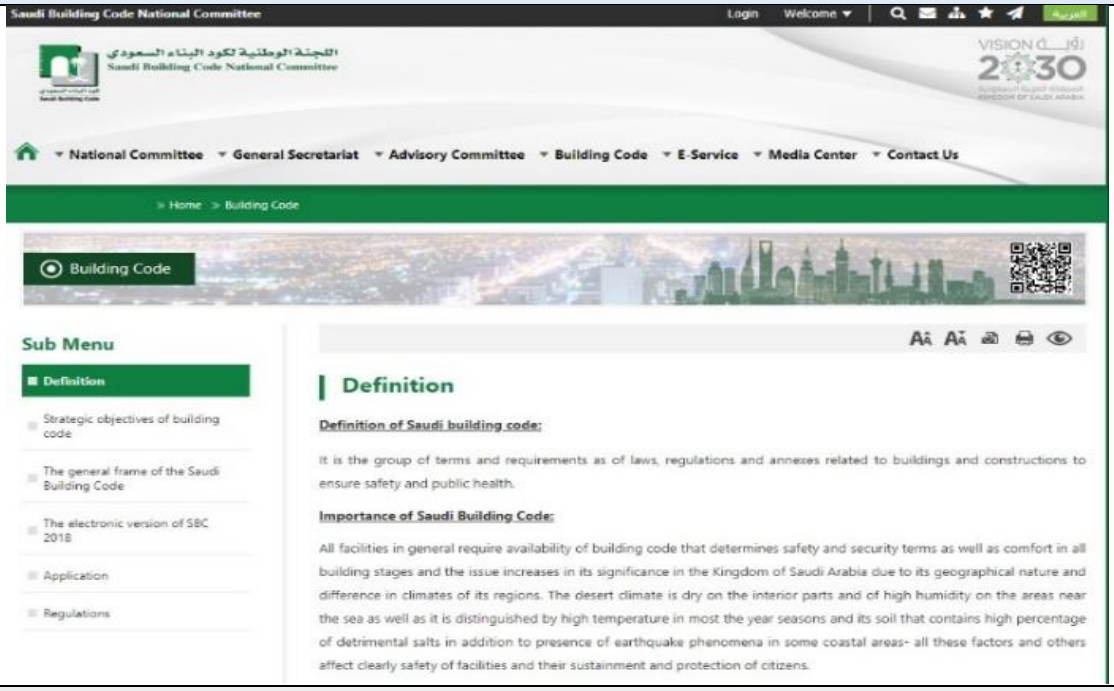
All buildings of the IAU Campus fulfil the requirements of the Saudi Building Code National Standard for construction of buildings, whereby many of our building follow the international building standard code, which is of much higher standard.

As stated in Saudi Building Code that "all facilities in general require availability of building code that determines safety and security terms as well as comfort in all building stages and the issue increases in its significance in the Kingdom of Saudi Arabia due to its geographical nature and difference in climates of its regions. The desert climate is dry on the interior parts and of high humidity on the areas near the sea as well as it is distinguished by high temperature in most the year seasons and its soil that contains high percentage of detrimental salts in addition to presence of earthquake phenomena in some coastal areas- all these factors and others affect clearly safety of facilities and their sustainment and protection of citizens."

As far as Green Building implementation is concern, one of the steps IAU had started implemented that is the cultivation of invented nono - plants in IAU as a tool for removal of air pollutants.

In addition, all irrigation System in Imam Abdulrahman Bin Faisal University (IAU) is connected and treated with wastewater.

**Natural Ventilation in the class room and office corridors**




**IAU follow Saudi Building Standards in all his buildings**

# 9. Introducing E-scooters: Promoting a sustainable transportation


**IAU Launching Smart Mobility Service**

H.E, President of IAU, Dr. Abdullah bin Muhammad Al-Rubaish, inaugurated the pilot phase of the smart mobility service for generating clean energy inside the university campus by bicycles and electric scooters through (WAYZ) application, on Al-Rakah campus.

An initiative IAU GREEN without CO2, inaugurated by H.E. the President of IAU


E-Scooter initiative in IAU, in an effort to reduce Greenhouse gas emission

**DAMMAM —** Dr. Abdullah Al-Rubaish, president of Imam Abdulrahman Bin Faisal University, Dammam, launched the Smart Mobility initiative at the lobby of the College of Architecture and Planning on the university campus here on Wednesday.

The initiative, which was commissioned by the Deanship of Community Service and Sustainable Development, comes as part of using clean energy within the university campus and make available its health benefits to the members of the campus community.

Dr. Al-Rubaish said that the university launched the pilot phase of the smart mobility service so as to achieve the Kingdom's Vision 2030 towards providing new opportunities for transportation.

"This is through generating clean energy within the university campus by bicycles and e-scooters with the WAYZ application, which will facilitate for its users the rapid mobility feature at the university through an electronic mobile application," he added.

For her part, Dr. Fatima Bint Abdullah Al-Mulhim, head of the Deanship of Community Service and Sustainable Development, said that the new experiment is based on using clean energy for the mobility inside the university campus.

"We launched earlier the initiative of 'Green University without Carbon,' under which these scooters, which are charged and operated with solar energy will be used. It is a service available to all educational and administrative staffers of the university as well as to male and female students," she said.

She noted that it has many health benefits, including the fight against obesity and the promotion of being environmentally friendly and serving the members of society with its environment.

According to Dr. Fatima, the goal is also to be sustainable through the presence of solar-powered stations.

"Today is the beginning of an experimental start and work is continuing in order to equip stations to charge these devices powered by solar energy.

"All the university people, including male and female students, administrators and members of the educational staff, as well as university security personnel, will benefit from this service.

This will facilitate their freedom of movement without cars, and the initiative received a lot of encouragement and demand," she said while noting that safe corridors have been provided inside the university campus.

"This is one of our priorities to ensure the safety of the beneficiaries of this service, and it will be included in the first

stage inside the university campus until the infrastructure and private roads are provided at the university for this type of initiative that is reflected in reducing the proportion of carbon.

"Now we are in the process of working with faculty members who obtained a patent in measuring carbon levels in the atmosphere, and we aim for the measurements and they will be returned according to the research scheme prepared for that," she added.

# 10. Planting more Trees in the Campus

**Conservation of plants and green vegetation at IAU Campus**

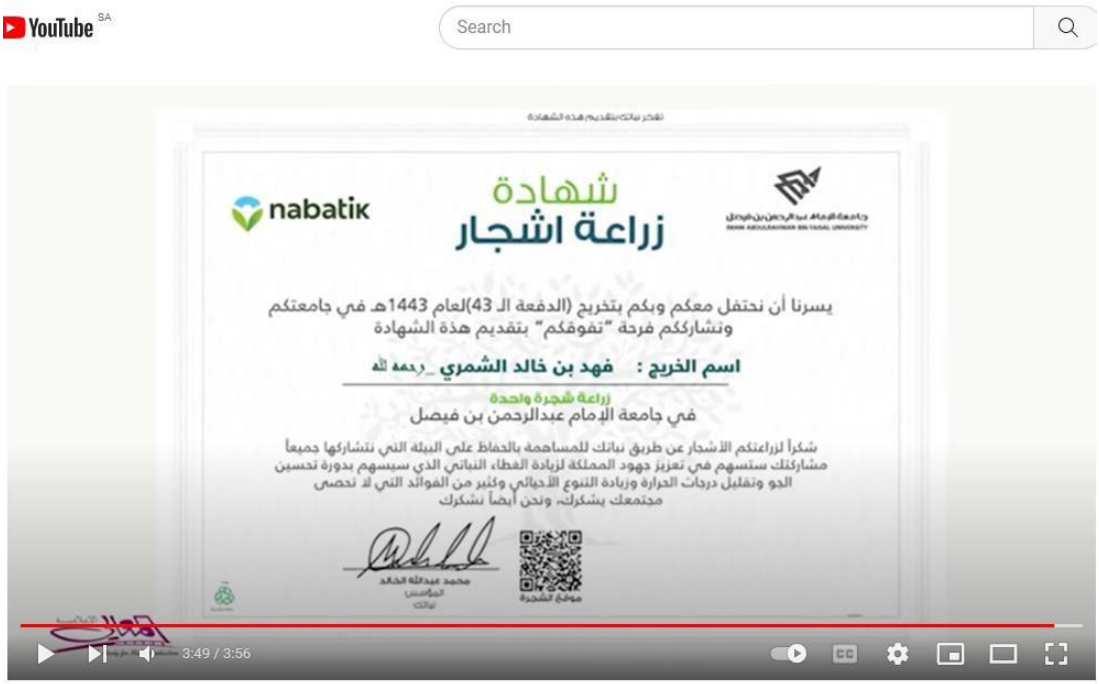
**Flowering plants planted at IAU campus**

**Saplings Planted and watered regularly (Recycled water) at IAU**

**Let's Make Green campaign by IAU**

Participation of female students of the Environmental Engineering Department of College of Engineering, Imam Abdulrahman Bin Faisal University, in the **"Let's Make Green campaign"** launched by the National Center for Vegetation Cover Development and Combating Desertification by planting 6,000 mangrove seedlings on the shores of the Arabian Gulf in Qatif Governorate.

https://twitter.com/CE_IAU_SA/status/1607302669139312641




إهداء من جامعة الإمام عبدالرحمن بن فيصل لأبنائها وبناتها المتميزين من خريجي دفعة 43

**Certificate for planting and monitoring the plant thru Nabatik platform**

**The recording of planting activities using NABATIK platform, in cooperation with Ministry of Environment, Water and Agriculture, Eastern Province, Saudi Arabia**

**Awareness Program on Plant Pests by KFHU, IAU**

**Lecture by Prof. Dr. Mohammed Al-Shahrani, KFHU, IAU on Plant Pests**

King Fahd Hospital of the University (KFHU) affiliated to the Imam Abdulrahman Bin Faisal University (IAU) represented by the Green Spaces Department, organized an awareness lecture entitled: **"Common Plant Pests and Methods of Combating Them in Correct and Safe Ways,"** presented by representatives from the National Center for the Prevention and Control of Plant Pests and Animal Diseases, WeqaaCenter.

https://x.com/IAU_KFHU/status/1712364692184695184
https://twitter.com/IAU_KFHU/status/1712363110915256398

(Green University without Carbon) Under the Slogan "Towards a Sustainable Environment"

**Afforestation Initiative Led by IAU**

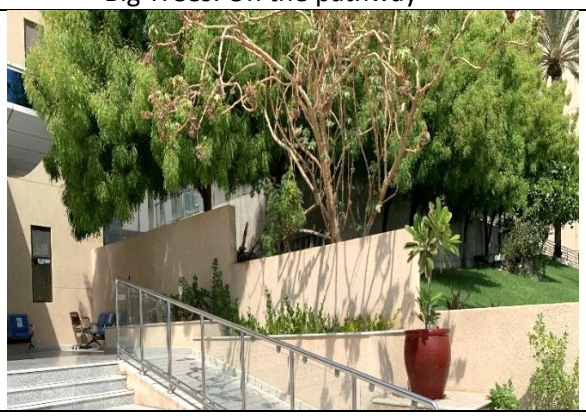
In order to integrate with the national efforts for sustainable development and as an extension for the pioneering initiatives in this field, as (Green Saudi Initiative) and (Green Middle East Initiative), Imam Abdulrahman bin Faisal University launched (Green University without Carbon Initiative) aiming to plant thousands of seedlings and trees with participation of IAU employees and students in Campaigns for mass afforestation in the university areas over Dammam, Khobar, Qatif and Jubail, to reduce carbon emissions, as the first initiative of its kind at the level of universities in the Kingdom, to consolidate the concept of sustainability inside campuses at the level of the local community.

**Encourage environment caring by planting tree by H.E. The President of IAU**

Big Trees and plants: Family Medicine

Big Trees: On the pathway

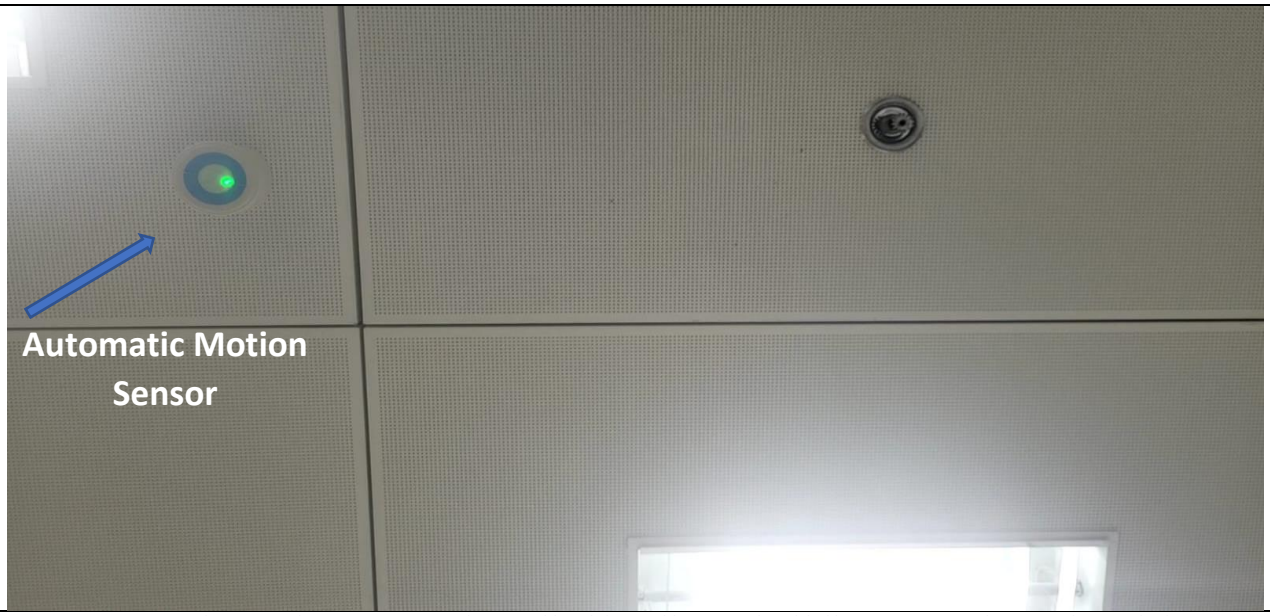
Planted trees & plants: University Hospital area



Natural Trees & plants at the entrance of IAU

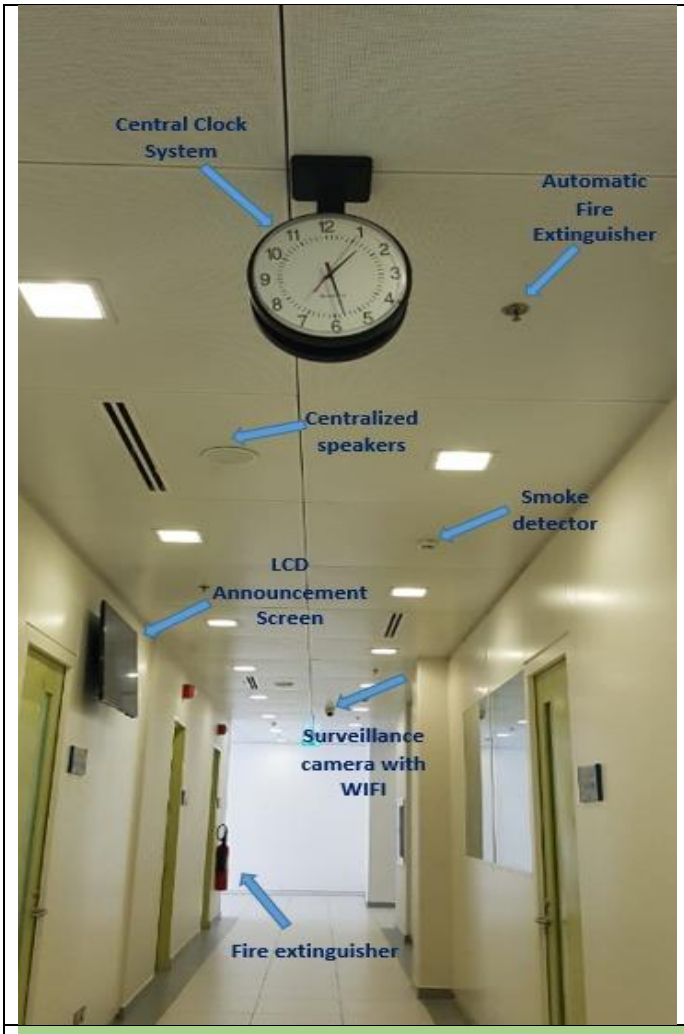
<table>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
<tr><td colspan="4">Big Trees Near Parking Slots</td></tr>
<tr><td colspan="2">Big trees on the pathway outside IAU buildings</td><td colspan="2">Big Trees at Orientation Studies - Medical Track</td></tr>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
<tr><td colspan="2">Big Trees at entrance of IAU main gate</td><td colspan="2">Natural Trees & Plants at Student Restaurant 1</td></tr>
</table>

# 11. Energy Efficient Appliances Usage




**Automatic Motion Sensor installed in all IAU buildings to reduce electricity consumption**


**IAU Advertisement : Reminder to Turn off the AC to conserve Energy**





Florescent Light


**Energy Efficient Appliances Usage in all the Buildings of IAU: Use of LED & fluoracent lighting and lamps with central clock system, centralized speaker & LCD Announcement screen**

Energy Efficient Appliances Usage in all the Buildings of IAU: Use of LED & fluorescent lighting and lamps with auto shut-off sensors. Central clock system, centralized speaker & LCD Announcement screen in each building.

# 12. IAU participates in Earth Hour by turning off buildings' lights


**"Earth Hour" – Global Environmental Event followed by IAU**

IAU followed the global environmental event "Earth Hour". For this event, all unnecessary lights and appliances will be turned off for 60 minutes on 25 March 2023 (8.30-9.30 PM) for the sake of the Earth

https://twitter.com/IAU_KSA/status/1639624859494805504