Template for Evidence(s)
UI GreenMetric Questionnaire

University : Alexandria University
Country : Egypt
Web Address : https://alexu.edu.eg/

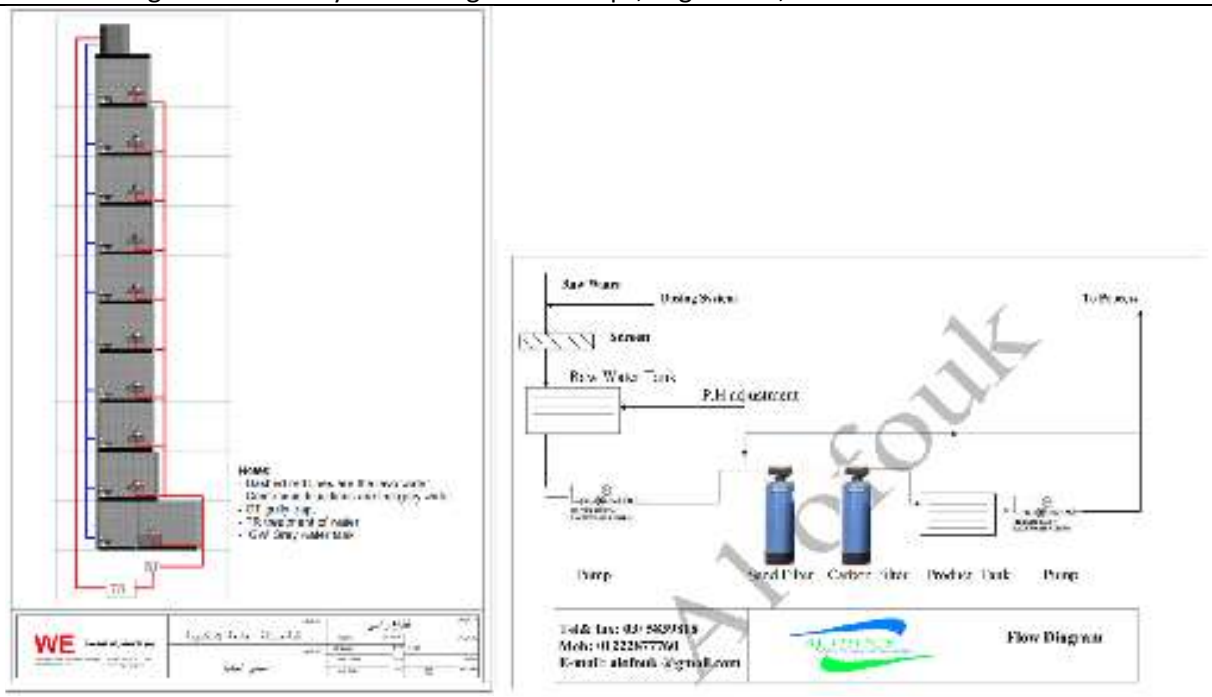
[4] Water (WR)

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


Water Efficient Appliances Usage (Alexandria University, Egypt)


Supplying water taps with water conservation units (Alexandria University, Egypt)

The irrigated water supplied to the fish farm at the Agriculture Experimental Research Station of the Faculty of Agriculture is recycled to irrigate the crops, vegetables, and fruits of the land farm.



Grey water recycling system by Faculty of Pharmacy (Alexandria University)

Description:
Some examples of water conservation measures include, low flow of urinal flushing, low flow of toilet flushing and low flow taps.

Appliance	Total Number	Total number water Efficient appliances	Percentage
Urinal	208	100	48%
Toilet	416	180	43%
bathroom faucets (Water taps)	1605	1090	68%
Showers	30	20	67%
		Average Percentage	**56.5%**

Alexandria University program to decrease the water consumption in its faculties and buildings:

Campus water use is an important indicator in the sustainability scale. The aim is to urge universities to reduce water use, increase water conservation programs, and protect the environment. Among these criteria:
The water conservation program,
The water recycling program
The use of water-saving equipment
The treatment of wastewater
The rainwater collection program

1- The University has applied a strategy in the faculties to decrease water consumption through installation of special parts on water taps, showers, toilette and bathroom bidet which can conserve about 50% of water consumption.
Water saving devices are used instead of traditional devices. For example, the use of a hand-washing faucet with automatic control via a sensor, and high-efficiency bathroom devices. Supplying water taps with water conservation units.
2. Adopting a mechanism to maintain water pipes to prevent waste resulting from leaks.
3. The use of efficient and modern Techniques for irrigation of green and planted areas in the Alexandria University Campus.
4. Adopting plans and mechanisms for maintaining the taps and internal supply networks of the university to prevent water wastage.
5. Providing a sewage treatment plant at the university to make it suitable for irrigating green areas and gardens inside the university campus.
6. The irrigated water supplied to the fish farm at the Agriculture Experimental Research Station of the Faculty of Agriculture is recycled to irrigate the crops, vegetables, and fruits of the land farm. The recycled water is rich with natural fertilizers and enhances the crops production.
7. In addition, the water recycling in Fish Aquaculture of the Faculty of Agriculture, Alexandria University: The water sewage of the Aquaculture of the Faculty of Agriculture, Alexandria University which consist of eight ponds (one acre and quarter/each) in Abis region. Alexandria University used the recycled water for crops culturing in the adjacent agriculture research center in Abis.
8. The use of biochar produced from Agricultural waste and waste Forests in residual removal chlorpyrifos pesticide Imidacloprid is from water agricultural drainage. Cooperation project between the Egyptian Academy of Research Science and Technology and the Czech Academy of Sciences.
9. IOT Pilot Project in Egypt by Shanghai Water Saving Irrigation Corp. Etd performed an automatic controlled irrigation systems IOT project for modern irrigation technology. The company implanted the IOT platform project to irrigate economic crops and facilitate irrigation systems to overcome the water shortage problems in Egypt. This project will be performed in Alexandria University Farm for agroecological farming in Egypt.

Green Cycle project in the Faculty of Pharmacy - Alexandria University

The project began in October 2022 by organizing a number of events in cooperation between the Community Service and Environmental Development Committee, ASPSA, and the Alexandria Rotary Clubs, under the supervision and organization of Faculty of Pharmacy - Alexandria University.

Also, the faculty is seriously seeking to implement a grey water (wastewater) recycling system that depends on reusing wastewater from sewage basins only (without using wastewater from laboratory basins) by re-pumping it into the flushing bins in the toilets after work. Filtration and primary treatment. The grey water recycling initiative has a significant impact on rationalizing water use.

Also, taking advantage of rainwater for use in irrigation and regulatory operations.

Alexandria University have generalized this initiative in some of the faculties of Alexandria University in gradual stages.

Link for Green Cycle Project:

https://fb.watch/mzqhBHazV4/?mibextid=j8LeHn

Link for Sustainable Development: https://alexu.edu.eg/index.php/en/sustainable-development

https://alexu.edu.eg/index.php/en/2015-11-24-10-38-07/ranking?id=6011

http://sustainability.alexu.edu.eg/

Link for Green University:

https://alexu.edu.eg/index.php/?option=com_content&view=article&id=5932&catid=21&lang=ar-AA

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Elements of Green Building Implementation as Reflected in all new construction and renovation policies in the new buildings in Abis campus:

- The area of the project is 160 acres, a general site for educational buildings, and 120 acres are complementary activities. The percentage of green areas and lake is about 52% in addition to 25% streets and lanes.
- Water-saving plots are used, which will reduce water consumption by about 30%. The sewage water will be treated and reused in the irrigation of green areas in the project.
- Rainwater is collected in the main lake and used for irrigation.

- The use of plants with few water rationed plants to reduce irrigation needs in addition to absorbing quantities of rainwater to reduce the severity of rain spells.

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Integrated strategy Project for rainwater management in Alexandria Governorate in cooperation with Alexandria University

Remote sensing technology was used to know the current values of Rain and assess the current situation with the help of satellites. This is done with the help of the following artificial satellites:

-TRMM and GPM are two of the NASA satellites. (Administration National Aeronautics and Space Administration, United States of America)

- NOAA (National Oceanic, Atmospheric, and Space Administration, United States of America)

- NCEI (National Center for Environmental Information in the United States of America)

Proposed rain management strategy

A separate network will be created to drain rainwater for the nearest body of water for areas close to the body of water. The first area is the Corniche, where rainwater is collected and discharging it into marine estuaries. The second area is on both sides of the Mahmoudiyah and Beheira axis near the airport. The rainwater is collected and part of it is drained on the canal and the other part on the airport lake.

In the third stage of the project, the two projects on the airport lake to exploit rainwater will be linked to the New Delta project. The rainwater will be used to irrigate the crops, vegetables, and fruits in the New Delta.

Sincerely,

Prof.
Community Service & Environment Development
Alexandria University

Who are we

The Center of Excellence for Water is a USAID- funded program, managed by the American University in Cairo.

Its goal is to catalyze long-term improvement in Egyptian water resources management by improving its innovative applied research and educated enterprise.

Located at Alexandria University, and in cooperation with four Egyptian Universities (Ain Shams University – Aswan University – Beni Suef University – Zagazig University) and four U.S. Universities (University of California, Santa Cruz, Temple University, Utah State University, and Washington State University),

The Center of Excellence for Water is designed to be a state-of-the-art center that raises the quality of all aspects of higher education, including curriculum, teaching, and applied research to international standards.

The Center supports the Egyptian government, academia, and industry to address water challenges, and prepare a new generation of graduates and entrepreneurs to be change agents that stimulate economic growth.

Leveraging on the public-private partnerships established, the Center of Excellence for Water will be the hub for research and a vibrant network of Egyptian industries, research centers, and ministries.

Exchange, Training and Scholarships

Role of Pillar

Strengthen the capacity of Egyptian Faculty, students and researchers and promote the exchange of expertise, knowledge, and technology in the water discipline between U.S. partner universities and industries and the Egyptian government, academia, and private sector.

Key Activities

- Providing 350 undergraduate/ graduate full scholarships in specialized water programs.
- Funding one-semester abroad in U.S.-Based Universities for selected undergraduate/ postgraduate students.
- Providing internship opportunities in U.S/ Egyptian industries for undergraduate/ postgraduate students.
- Building the capacity of Egyptian Faculty on governance, research and instructional innovation.
- Conducting training workshops at U.S.- Based Universities.
- Organizing faculty Exchange between the U.S. Universities and the Egyptian universities.
- Organizing more than 20 webinars on water-related topics.

High-quality Applied Research

Role of Pillar

Elevates Egypt's water-related research capacity and ability to create policy-relevant, innovative, and market-driven research products.

Key Activities

- Funding 42 high-quality applied research projects to address water-related challenges.
- Developing a National Water Research Roadmap.
- Organizing Annual International Water Symposium.
- Promoting the linkage between supply and demand for water research by engaging the public and private sectors in research initiatives.

Instructional Innovation and Curriculum Development

Role of Pillar

Improve the relevance and quality of the water curricula in partner Egyptian Universities to meet the needs of the public and private sectors and introduce innovative teaching methods for undergraduate and graduate students in water-related fields.

Key Activities

- Developing and updating new/ existing undergraduate water-related programs to strengthen their water dimensions.
- Establishing two new Graduate programs in Sustainable Water Management.
- Developing 12 new undergraduate water-related courses.
- Developing 18 new postgraduate water-related courses.
- Establishing four new Professional Certification Programs.
- Developing nine Water Resources Career Development Modules.
- Introducing innovative teaching methods and supporting online learning management systems.

Governance

Role of Pillar

Establish the governance structure of the Center of Excellence for Water at Alexandria University that would enable the center to create collaborations and maintain accountability among partners and stakeholders.

Key Activities

- Establishing of the Center of Excellence for Water at Alexandria University
- Establishing Center of Excellence for Water Advisory Committee
- Establishing Center of Excellence for Water steering Committee
- Developing the Center of Excellence for Water guidelines for reporting, agreements, and documentation system.
- Signing MoUs with the key private and public sectors.
- Developing the Center of Excellence for Water Strategic Plan.

Sustainability

Role of Pillar

Ensure the institutional and financial sustainability of the Center through revenue generation and the creation of a network of partners from the public and private sectors.

Key Activities

- Organizing Public-Private Partnership Seminars
- Expanding the Center of Excellence for Water network to include more partners in the US and Egypt.
- Developing revenue-based models to ensure the financial sustainability of the Center of Excellence for Water.
- Establishing the Center of Excellence for Water Website and dissemination Channels.
- Developing water-specific technical publications.

Activities

Governance and strategic planning workshop:

The COE conducted a workshop, titled ‘Governance and strategic planning workshop in cooperation with Washington State University from 24th of October to 29th of October 2021.

the workshop discussed the academic or COE’s related governance mechanisms appropriate for a national water center. This is to build a sustainable governance structure for AWR-COE

Exchange Opportunities for Faculty and Graduate/Undergraduate Students:

There are many opportunities for Faculty and Students at the Egyptian Partner Universities to apply for several activities:

Water Energy Food Nexus Winter School

Water Energy Food Nexus Winter School (Faculty and Graduate Students)– Cairo organized by the AUC: 1 November 2021 – 31 January 2022

Water Quality and Equipment Testing Workshop

Water Quality and Equipment Testing (Faculty and Graduate Students) – US – organized by Temple University.

First Call

From 29 November to 10 December 2021.

The workshop covered several topics as: a. Lab safety training and Laboratory Compliance, b. Introduction to water quality parameters, c. State of the art equipment used in water quality analysis, d. Quality control and Quality Assurance (QA/QC), e. Precision and Accuracy, f. pH, Acidity, Alkalinity & Hardness, Dissolved Oxygen, Turbidity, TSS, DSS, VSS, g. Total Organic Carbon, Chemical Oxidation Demand (COD), and 5-day Biological Oxidation Demand (BOD), h. Inorganic chemicals (Fluoride, Chloride, Nitrates, etc.), i. Disinfection By-Products, j. Microbial Enumeration, k. Use of TOC Analyzer, Ion Chromatograph (IC), UV/vis Spectrophotometer. In addition to: a. Seminars from industry experts, b. Field Trip to Drinking Water Treatment Plant, c. Field Trip to Municipal Wastewater Treatment Plant.

Second Call

Module 1:

From 31 July to 13 August 2022.

The workshop covered several topics as: a. Introduction to conventional water quality parameters, b. Acidity, Alkalinity, and Hardness, c. pH, Conductivity, Turbidity, and Solid analysis (TS, TDS, TSS and VSS), d. Dissolved Oxygen, 5-day Biological Oxidation Demand (BOD), Chemical Oxidation Demand (COD), Theoretical Oxidation Demand (ThOD), e. Total Organic Carbon analysis, f. Microbial Enumeration, g. Precision and Accuracy, and Quality control and Quality Assurance (QA/QC), h. Lab safety training and Laboratory Compliance, i. Water Sampling.

Module 2:

From 17 to 30 July 2022.

The workshop covered several topics as: a. State of the art equipment's used in water quality analysis, b. Inorganic chemicals (Fluoride, Chloride, Nitrates, etc.) using Ion Chromatography (IC), c. Use of advanced analytical instruments such as Gas and Liquid Chromatography-Mass Spectrometry (GC/MS, LC/MS/MS), d. Inductively Coupled Plasma Mass Spectrometry (ICP/MS), e. Gene detection and quantification using Quantitative Real-Time Polymerase Chain Reaction (qPCR), f. Quality control and Quality Assurance (QA/QC), including Precision and Accuracy, g. Solid phase extraction (SPE) and Liquid phase extraction (LLE), h. Lab safety training and Laboratory Compliance.

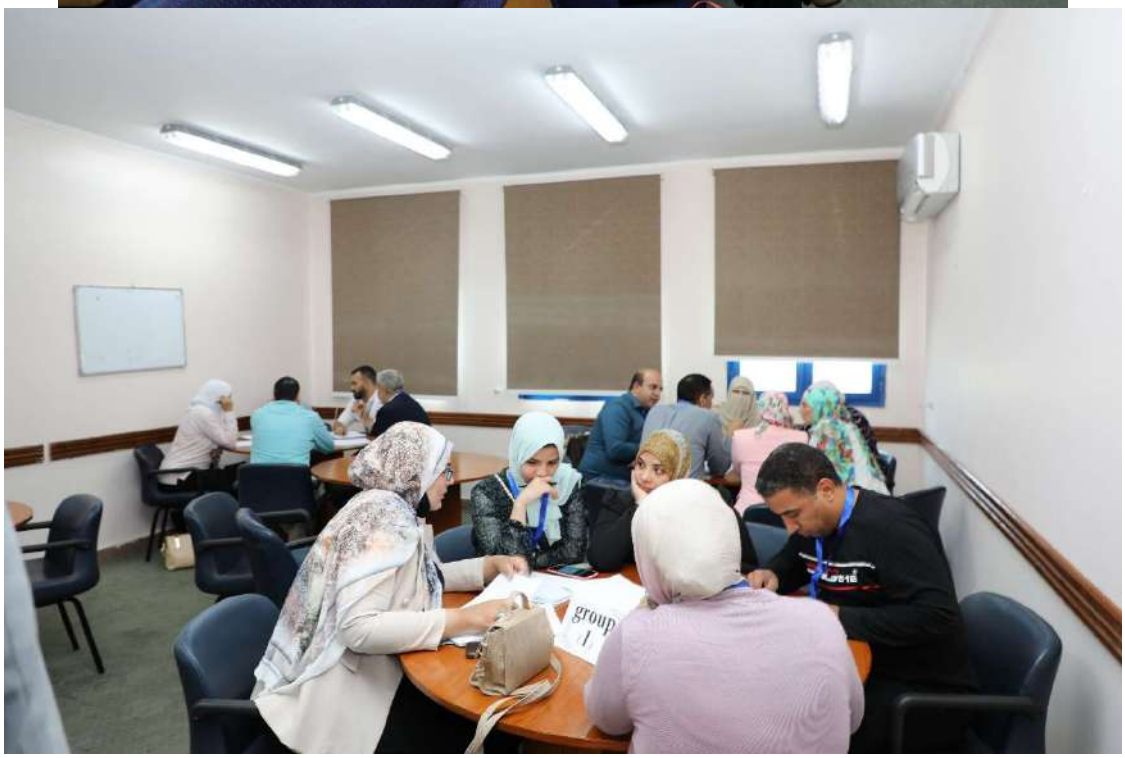
The State-of-the-Art Water Curriculum workshop

USAID-funded Center of Excellence for Water launches a total of four workshops on the use of Learning Management Systems, Innovative Teaching Strategies, and State-of-the-Art Water Curriculum. The State-of-the-Art Water Curriculum (SOAC) workshop is held on 27 and 28 June 2022 at Alexandria University. This workshop brings together 25 faculty, faculty teaching assistants, researchers, water professionals from industry and municipalities, and ministry personnel.
Over the course of seven months (between July 2022 – February 2023), participants will work in groups to create a set of recommendations for future water science and engineering

targeted at meeting Egyptian water challenges in 2035 in all organizations with a water focus.
The main lecturer for this Workshop include Dr. David Stevens, Professor at Civil and Environmental Engineering, @utahstate. Additionally, representatives from Egyptian Partner Universities Ain Shams University, Alexandria University, Aswan University, Beni Suef University and Zagazig University will be attending to help with the activities.

The ultimate goal of this workshop is to produce a report and roadmap to help inform water engineering and science education in Egypt to meet the future needs of the water sector with a target date of 2035.
The workshop's main objectives are to review the state-of-the-art water engineering and science issues critical to Egypt's long-term water security and water engineering and science curricula in Egypt and the greater Middle East, Europe, Asia, and the Western Hemisphere; envision Egypt's water needs by 2035, both quantity, and quality, that will serve the domestic, agriculture, industrial, and energy sectors, and identify education gaps that will prevent providing professional training to meet those needs. Also, the workshops aim to identify subject areas that are critical to defining a core curriculum suitable for all Egyptian Universities, identify location-specific curricula to be used as technical electives tailored to the needs of a community, and discuss how those needs are best translated to the undergraduate, postgraduate, ministry, and industry levels and cultivate a community of practice (CoP) as a means of managing knowledge sharing and promoting learning sustainability among faculty members and water professionals in Egypt.
By the end of this program, participants will reconvene in Aswan in February 2023 for a 5-day workshop to bring together their recommendations into an overall State-of-the-Art Water Curriculum Report and Roadmap to help inform water education into the future.


مركز تنمية قدرات
أعضاء هيئة التدريس والقيادات
FACULTY AND LEADERSHIP DEVELOPMENT CENTER
FLDC



Faculty Exchange – Semester Abroad

First

Host: Temple University
From 09/01/2022 – 12/31/2022.

Opportunity for advanced training on education and research, leading to capacity building and sustainability takes part in the Center of Excellence for Water activities for faculty. The faculty exchange program will strive towards meeting these envisioned goals through teaching and applied research capacity building, peer-reviewed publications, and technology commercialization activities.

Second

Host: Utah State University
From 09/01/2022 – 12/16/2022.

Opportunity for advanced training on education and research, leading to capacity building and sustainability takes part in the Center of Excellence for Water activities for faculty. The faculty exchange program will strive towards meeting these envisioned goals through teaching and applied research capacity building, peer-reviewed publications, and technology commercialization activities.

Undergraduate Semester Abroad – USU

Host: Utah State University
From 08/20/2022 – 12/16/2022.

The students will take courses at Utah State University that have been previously articulated with coursework at their home universities. These courses include hydrology, hydraulics, green infrastructure, solid/hazardous waste management, environmental management, and environmental quality analysis.

The First International Symposium

The International Symposium on “Sustainable Water Solutions”, organized by the Alexandria Water Resilience – Center of Excellence for Water, which is bringing together leading experts from Egypt and the United States to find solutions to problems caused by climate change in Egypt and around the world.
This annual event gathers prominent scientists and leading engineers to present their findings and research outputs and share their knowledge in four areas of the water field, namely, Water Use Efficiency, Integrated Water Resources Management, Safe Treated Water and Reuse, and Non-Conventional Water Resources and Desalination with climate change in the core.


USAID
Center of Excellence for Water
مركز التميز للمياه
RAW

Training for Undergraduate Students

The program's students visited the drinking water treatment plant in Alexandria (Al-Mansheya 2) to learn about the stages of water purification and the plant's boredom.

Training for civil and environmental engineering students at the Eastern Wastewater Treatment Plant in Alexandria.

Badya, Palm Hills, 6 October construction site visit for Civil and Environmental Engineering program Students.