THE WATER LEARNING CENTER AT ARABIAN GULF UNIVERSITY

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The Arabian Gulf University in Bahrain offers the Water Learning Center Program (WLC) in coordination with the United Nations University Institute for Water, Environment and Health (UNU-INWEH). Their cooperation is based on common principles, complimentary objectives and a mutual interest in close collaboration in education and capacity development related to Integrated Water Resources Management (IWRM). The regional center was established in July 2007 and funded by the Arab Fund for Social and Economic Development.

AGU was selected to host the WLC serving the Arab region due to its expertise and experience in post-graduate education, training, research, and contractual studies in the water-related fields. The university has two specialized graduate programs in hydrogeology and water resources management.

The objectives of the regional WLC at AGU are to improve water resources management and water services and to develop and enhance the individual capacities of the water sector in the Arab region. The Center offers a core curriculum in IWRM customized to the Arab region’s water conditions. It trains students, trainers and decision makers in water resources management within an IWRM framework, identifies regional and country needs in water resources management and establishes a regional electronic network of young water professionals.

The targeted participants of the program are water resources professionals working in water-related agencies and the private sector in the Arab countries. The program was officially launched in November 2007, and the first batch of trainees enrolled in the IWRM program in 2008. Since its establishment, six batches of students have graduated, with a total of 79 students from Arab countries. The seventh batch of 13 participants is expected to graduate in November, 2019. (For information on the students and their research project abstracts: http://www.agu.edu.bh/wvlc/index.asp)

The IWRM diploma consists of ten courses, which include 250 hours of presentations (equivalent to lecture time) and are conducted in a mixed mode system (i.e., face-to-face and distant learning). The IWRM Overview course and the final Applied Session are delivered at the Water Learning Center at the AGU campus. During the period of the last course, the final comprehensive exam is administered and students are required to present and defend their research project in front of a panel of the program’s instructors, as well as the other students. Moreover, students are to make a mid-program visit to AGU to take an exam and present their research proposals with their assigned supervisors. The rest of the courses are delivered as distance education courses, with participant-instructor interaction made by e-mail and through a web-based conferencing system.

The IWRM program’s courses include:

1) An Introduction to IWRM: IWRM concepts, state of water resources management and main issues and challenges in the Arab region, hands-on dynamic simulation of a water system (using WEAP software) showing the integration concept in the management of water resources.

2) Water Transfer: natural components and processes of the hydrologic cycle, basic hydrological concepts such as climate change, erosion, infiltration, run-off, streamflow, baseflow, water storage, riparian functions, water budgets and modeling surface and ground water.

3) The Terrestrial Ecosystem: basic elements of terrestrial ecosystems, impacts of land use on terrestrial ecosystem, agriculture, mining, dams and diversions, urbanization and transportation, elements of conservation, economics and planning.

4) The Aquatic Ecosystem: basic elements and processes of aquatic ecosystems, analytical approaches and procedures related to understanding the structure and function of the aquatic ecosystem.

5) Aquatic Ecosystem Health and Impact Assessment: aspects of anthropogenic impact and change to the physical, chemical, biological and ecological components of the aquatic environment, biological monitoring processes, restoring aquatic ecosystems, restoration, toxicology,
and ecological risk assessment (ERA).

6) Water Use: consumptive and non-consumptive water use, agriculture, industrial and public water use.

7) Non-Conventional Water Resources: desalination in the Arab region, technologies, issues and challenges (financial, economic and environmental); wastewater in the Arab region, technologies, issues and challenges.

8) Governance and Community Based Approaches: legislative, regulatory, community and individual responsibilities and arrangements of IWRM, demand management, economics, pricing policies, subsidies and incentives, and private participation.

9) Organizational Infrastructure and Management: organizational and management structures for IWRM, financing, policies, management & operations, laboratory & information management, public health administration.

10) Applying IWRM: students’ research projects, including a scientific integrated approach to a water problem in their own country, a literature review, problem statement, objectives, methodology, results and discussion, conclusion and recommendations.

Research topics of students include: impact of climate change on water resources; social, economic and technical constraints in treated wastewater reuse; assessment of environmental impact of desalination; lifecycle assessment of tap water vs. bottled water; irrigation efficiency enhancement; characterization and management of the water-energy-food nexus; pricing of agricultural water. For research abstracts: http://www.agu.edu.bh/wvlc/pdf/IWRM%20Booklet_Final_18122018.pdf.

Participants in WLC meeting