



**WVLC**  
UNU-INWEH

**جامعة الخليج العربي**  
ARABIAN GULF UNIVERSITY



## **Official launching of the Integrated Water Resources Management Diploma, IWRM (Course 1)**

**Arabian Gulf University, Bahrain  
19-30 October 2008**

The Regional **UNU Water Virtual Learning Center for the Arab Region at the Arabian Gulf University (UNU-WVLC@AGU)** was established in the Arabian Gulf University, Bahrain, in cooperation with the United Nations University/ International Network on Water, Environment and Health (UNU-INWEH). The main objective of the Center is to build national capacity for the sustainability of water resources in the Arab region by the offering of a distance-based post graduate diploma in IWRM.

The launching of the Course 1 of the IWRM Diploma was conducted in Bahrain during the period 19-30 October, 2008, with twenty four participants representing 8 Arab counties. The time schedule of Course 1 is attached (**Annex 1**). Prior to the launching of the IWRM Diploma, the **UNU-WVLC@AGU** organized jointly with UNU-INWEH and UNEP/ROWA two meetings, the “WVLC Partners Workshop” and the “Expert Group Meeting (EGM) on IWRM Status in the Arab Region”. During these two meetings, the official launching of the Center were made, and was followed by the commencement of Course 1 of the IWRM Diploma. The followings are a brief summary of each activity.

### **1. WVLC Partners workshop**

The Partners workshop was attended by the coordinators of the six regional UNU-INWEH WVLCs to discuss the present status and the future developments of the regional WVLCs. During the meeting an international perspective was given by the WVLC coordinators, and experiences were exchanged in the scientific content, customization of the curriculum, students’ evaluation, and the operation of the WVLC. A separate report was made for this activity by UNU-INWEH.

### **2. EGM on IWRM Status in the Arab Region**

The EGM concentrated on the various multi-disciplinary topics of water resources management in the Arab countries, and capitalized on the relevant work that was carried out earlier by the international and regional organizations in this field. The main objectives of the EGM were to review the status of IWRM in the Arab countries and assess progress made in these countries toward the adoption of integrated and comprehensive water policies and strategies and their implementation, as well as review the efforts made by international organizations.

The EGM meeting identified main gaps and issues, challenges, constraints as well as opportunities and lessons learned in the implementation IWRM plans for sustainable development in the arid Arab region, with special reference to these countries prevailing socio-economic, political, cultural and environmental conditions. Furthermore, possible joint cooperation was identified, and an action plan to enhance water resources management capacities in the Arab countries was formulated. A separate report was made for this activity by AGU and was disseminated to the participants and sponsoring organizations.

### **3. Course 1: Introduction to Integrated Water Resources Management**

Course 1 began on 19 October, 2008, for a period of two weeks to implement the first module of the IWRM Diploma program. Twenty four water resources professionals working in water-related agencies and private sector from the Arab region participated in module 1, as follows: Bahrain 12, Kuwait 1, Qatar 1, United Arab Emirates 1, Saudi Arabia 3, Jordan 2, Egypt 3, and Palestine 1. The participants' list is attached (**Annex 2**).

The IWRM Diploma consists of 10 modules, these are:

**Course 1:** *Introduction to Integrated Water Resources Management*

**Course 2:** *Water Transfer*

**Course 3:** *Terrestrial Ecosystem and Impacts of Land Use Changes*

**Course 4:** *Aquatic Ecosystem*

**Course 5:** *Aquatic Ecosystem Health and Impact Assessment*

**Course 6:** *Water Use*

**Course 7:** *Wastewater*

**Course 8:** *Governance and Community Based Approaches*

**Course 9:** *Organizational Infrastructure and Management*

**Course 10:** *Applying IWRM (Projects Evaluation and Comprehensive Final Exam)*

In the Course opening ceremony, Prof. Waleed Al-Zubari, Vice-President of Academic Affairs, AGU, and coordinator of the diploma, welcomed the delegates and AGU participating professors. He indicated that this year (2008) marks the 25<sup>th</sup> Anniversary of AGU, and that since its inception, AGU has placed Water Resources Management as one of its major focal subjects. During this period, Water Resources related courses have moved from concentrating on the technical aspects of water resources management, particularly groundwater resources, the main source of water in the region, with little links to socio-economic, and environmental aspects, to a more holistic approach to water resources management, including desalination and wastewater. The current emphasis is on developing capacities and skills in integrated planning and management, which is aimed at contributing to reforming institutes, individuals and society at large. The launching of the WVLC @ AGU for the Arab Region and the commencement of the UNU IWRM Diploma capacity building program marks the beginning of a new shift in water education in the university, and will be used as a stepping-stone in developing the University's Master program in Water Resources Management.

Unlike the other diploma courses, Course 1 (introduction to IWRM) was given face-to-face, and has a shorter time allocation (2 weeks face-face: 19-30 October + 3 weeks distance learning and communication + exam to end 22 November, 2008). The course provided an overview of the concepts involved in IWRM and a brief summary of the other courses (Courses 2-9). A simplified process for implementing an IWRM plan was also included as an example of the mechanisms and problems that might be encountered at the national level. A broad examination of critical concepts and knowledge needs related to IWRM, including essential human and institutional capacities development, with the course structure and content linked to, and driven by, the subsequent eight courses. Specifically, Course 1 modules are: *Why IWRM?; History of IWRM; Current IWRM; Capacity Development (CD); IWRM Knowledge Base; Data Sources and Toolkits; Planning Process, Implementing IWRM; Summary of IWRM; Readings in IWRM, with examples and case studies from the Arab region.* .

Course 1 was taught in details by selected AGU professors specialized in water resources, environment and social and economic sciences. The instructors' list is attached (**Annex 3**) and their contributions are indicated in Annex 1. The course was conducted in the form of presentations given by the AGU professors and group discussion contributed by the students. The course presentations and discussion highlighted the main water resources management issues and challenges in the Arab countries, IWRM status and implementation constraints, particularly those related to capacity development (i.e., institutional, individual, and societal). Also, the other eight modules were introduced during course 1. In the last two days, the students presented their proposed diploma projects (module 10). The students projects' list is attached (**Annex 4**).

To help students in studying Course 1, a list of questions was provided to guide them to the main and most important points of the course. Answering these questions will make sure that they understood the course main points and achieved its objectives. The students answered the questions and sent them back by 15 November, 2008. The course study questions counted for 50% of Course 1 total grade. Another short list of questions that were more country-specific and practical followed these questions for the course exam (16-22 November, 2008), and counted for the other 50% of the total grade for Course 1.

With the exception of very few, most of the students answered the study and exam questions satisfactorily. Those who did not get some of the answers right or had difficulty in , the course instructors (Prof. Waleed Al-Zubari) communicated the study and exams questions results and worked with the students in achieving the expected results. The main objective of the whole exercise is to get them the knowledge and prepare them for the final comprehensive exam (Course 10), where selected questions from these study questions will be used in the final comprehensive exam with more challenging tasks.

## **Annexes**

Annex 1: Time schedule

Annex 2: List of participants

Annex 3: List of instructors

Annex 4: Students' projects



## Annex 1

### Time schedule

#### **UNU WVLC for the Arab Region (UNU WVLC @ AGU)** **Orientation of IWRM Diploma & Course 1 – Introduction to Integrated Water** **Resources Management, 19 – 30 October, 2008**

	09:00 - 10:30	10:30-11:00	11:00 - 12:30	12:30-13:30	13:30 - 15:30 Refreshments Available	Assignment/self-study/ Remarks
19 Oct. (Sun)	Opening Ceremony (0900 – 1000)	COFFEE BREAK	Students introduction/ Instructors Introduction WVLC Program Orientation (Velma Grover)	LUNCH BREAK	Orientation of Study Space/ software installation (Velma Grover and other staff)	Getting oriented with the teaching software
20 Oct. (Mon)	Course 1 Why IWRM? History of IWRM (Dr. Waleed Zubari)		Course 1 Current IWRM, Capacity Development (Dr. Waleed Zubari)		Course 1 Data Sources and Toolkits/Readings in IWRM (Dr. Waleed Zubari)	Reading the discussion Working on answering related questions
21 Oct. (Tues)	Water Issues and Challenges in the Arab countries (Dr. Waleed Zubari)		Water Issues and Challenges in the Arab countries (Dr. Waleed Zubari)		IWRM Status in the Arab Countries (Dr. Waleed Zubari)	Reading of related materials Reporting on country problems
22 Oct. (Wed)	Course 1 Knowledge Base (course 2) (Dr. Alaa El-Sadek)		Course 1 Knowledge Base (course 3 & 4 & 5) (Dr. Asma Abahussain)		Course 1 Knowledge Base (course 4) Special lecture GIS (Dr. Sabah Al-Junaid)	Reading the discussion Working on answering related questions
23 Oct. (Thur)	Course 1 Knowledge Base (course 6) Agriculture (Dr. Asad Alajmi)		Course 1 Knowledge Base (course 7) wastewater (Dr. Lamyia Faisal)		Field Trip	Reading the discussion Working on answering related questions
24 Oct. (Fri)	Free Day					
25 Oct. (Sat)	Free Day					
26 Oct. (Sun)	Course 1 Knowledge Base (course 8) economics (Dr. Waleed Zubari)	COFFEE BREAK	Course 1 Knowledge Base (course 8) (Dr. Anwar Shaikuldin)	LUNCH BREAK	Course 1 Knowledge Base (course 9) Project management (Dr. Alaa El-Sadek)	Reading the discussion Working on answering related questions
27 Oct. (Mon)	IWRM Planning/ exercises		IWRM Planning/ exercises		IWRM Planning/ exercises	
28 Oct. (Tues)	IWRM Planning/ exercises		IWRM Planning/ exercises		IWRM Planning/ exercises	
29 Oct. (Wed)	Students presentations/ Course 10 preparation and project identification		Students presentations/ Course 10 preparation and project identification		Students presentations/ Course 10 preparation and project identification	
30 Oct. (Thur)	IWRM summary		Next plans/courses schedule Course closing			

## Annex 2

### List of participants

Name	Country	Position	Job Address
<b>1. Asim Al Khalid</b>	Kuwait	Research Associate	P.O Box: 24885 Kuwait- Safat 13109
<b>2. Nasser Al Kuwari</b>	Qatar	Head of sewer network project section- Public Work Authority	P.O Box:22188 Doha- Qatar
<b>3. Mohamed Bakr</b>	Egypt/UAE	Water Connection Engineer- Asset Management- Transmission & Dispatch Co.	Transco Abu Dhabi-UAE
<b>4. Hesham El Shazely</b>	Egypt	Civil Works execution Director- Ministry of Irrigation	P.O Box: 12666, Giza, Embaba, MWRI
<b>5. Yasser Mahmoud Rizk</b>	Egypt	Head of Regional Coordinating Unit of III MP, first director of Works, Ministry of MWRI	Regional Coordinating Unit of III MP, Elgeesh Street, Tanta, Egypt
<b>6. Hameed AlMahal</b>	Bahrain	Operation Engineer	P.O Box: 5, Manama Bahrain
<b>7. Ali AlAswad</b>	Bahrain	Senior Civil Engineer- Construction, SEPPD, MOW	P.O Box: 5, Manama Bahrain
<b>8. Mohammed AlAradi</b>	Bahrain	Senior Civil Engineer	P.O Box: 5, Manama Bahrain
<b>9. Seddeeqa AlJazeeri</b>	Bahrain	Senior Civil Engineer	P.O Box: 5, Manama Bahrain
<b>10. S. Ahmed Salman</b>	Bahrain	Planning Engineer	P.O Box: 2, Manama Bahrain
<b>11. Fadhel Hasan</b>	Bahrain	Electronics Engineer	P.O Box: 2, Manama Bahrain
<b>12. Yaqoob Yusuf Ahmad</b>	Bahrain	Operation Engineer	P.O Box: 2, Manama Bahrain
<b>13. Fadi Jamal</b>	Bahrain	Senior General Engineer	P.O Box: 2, Planning & Studies Directorate, EWA, Manama Bahrain
<b>14. Muneer Hajaj</b>	Bahrain	Head of Control, Water Transmission	EWA-P.O Box: 2, Manama Bahrain
<b>15. Raed Rashid Abdulla</b>	Bahrain	Civil Engineer Tech.-Water Distribution, BSc. Mechatronics Engineering	Water Distribution Directorate-P.O Box: 2, Manama Bahrain
<b>16. Mohammed J Redha</b>	Bahrain	Shift Charge Engineer	
<b>17. Huda AlHouqani</b>	UAE	Senior Consultant,	P.O Box 45553, Environmental Agency- Abu Dhabi

<b>18. Samer Kalbouneh</b>	Palestine	Director, project follow up and implementation department	Palestine- Ramalla, Al Bireh, P.O Box: 3841
<b>19. Buthainah Batarseh</b>	Jordan	Assistant Coordinator of Groundwater resources Management Program	Water Ministry, Amman, Alshmaisani
<b>20. Ahmad Atoum</b>	Jordan	Manager of Local Development Unit (LDU)	Municipality of Greater Jarash, P.O Box 41
<b>21. Ayad Al Dalbahi</b>	Saudi Arabia	مدير المختبر المركزي المديرية العامة للمياه بالقصيم	Ministry of Water and Electricity, Saudi Arabia
<b>22. Fahad Al-Fadda</b>	Saudi Arabia	مهندس متابع لمشاريع الصرف الصحي في منطقة القصيم بالسعودية	Ministry of Water and Electricity, Saudi Arabia
<b>23. Waleed Al-Murbati</b>	Bahrain	Desalination Engineer,	EWA-PO Box 2, Manama Bahrain
<b>24. Mane Abu-Darahim</b>	Saudi Arabia	Agricultural Engineer, Ministry of Agriculture, Saudi Arabia	

### Annex 3

#### List of instructors & contacts

Instructor and Affiliation		E-mail Address	Telephone
Dr. Waleed Zubari	Professor, Water Resources Management Water Resources Management Program, AGU	waleed@agu.edu.bh	+973 17 239 880
Dr. Alaa El-Sadek	Assistant Professor, Water Resources Management Water Resources Management Program, AGU	alaasa@agu.edu.bh	+973 17 239 744
Dr. Asma Abahussain	Associate Professor, Geochemistry Desert and Environmental Resources Program, AGU	asma@agu.edu.bh	+973 17 239 840
Dr. Asad Al-Ajmi	Assistant Professor, Soil and Water, techniques in Desert Farming and Soilless culture, Desert and Arid Zones Sciences Program	asadulla@agu.edu.bh	+973 17 239 534
Dr. Sabah Al-Junaid	Assistant Professor, Water Resources Management GIS/RS Program, AGU	sabah@agu.edu.bh	+973 17 239 609
Dr. Lamyia Faisal	Associate Professor, Environmental Management Environmental Management Program, AGU	lamyafm@agu.edu.bh	+973 17 239 530
Dr. Anwar Shaikhuldin	Assistant Professor, Geography Desert and Environmental Resources Program, AGU	anwar@agu.edu.bh	+973 17 239 608

Contact Numbers for WVLC Staff:  
Sumaya Yousif, +17 239 543

## Annex 4

### Students' projects

#	Name	Country	Project Tentative Title/Topic
1	Asim Al Khalid	Kuwait	Groundwater rise in urban areas in Kuwait
2	Nasser Al Kuwari	Qatar	Wastewater Management in Qatar
3	Mohamed Bakr	Egypt/UAE	Water risk assessment in Abu Dhabi
4	Hesham El Shazely	Egypt	Monitoring, evaluation and environmental impacts of IIIMP projects, Egypt
5	Yasser Mahmoud Rizk	Egypt	Distribution of irrigation water on one canal in IIIMP project, Egypt
6	Hameed AlMahal	Bahrain	Impact of the pollutions on Tubli Bay environments
7	Ali AlAswad	Bahrain	The effects of infiltration in sewer collection systems, Bahrain
8	Mohammed AlAradi	Bahrain	Desalination: limitations and challenges in GCC
9	Seddeeqa AlJazeera	Bahrain	Irrigation and uses of TSE in Bahrain
10	S. Ahmed Salman	Bahrain	Analysis of Domestic Water Consumption in Bahrain
11	Fadhel Hasan	Bahrain	Industrial Water Use in Bahrain
12	Yaqoob Yusuf Ahmad	Bahrain	Strategic water distribution, Bahrain
13	Fadi Jamal	Bahrain	Water losses in Bahrain's EWA: Distribution grid (1)
14	Muneer Hajaj	Bahrain	Privatization of Desalination Plants in Bahrain
15	Raed Rashid Abdulla	Bahrain	Water losses in Bahrain's EWA: Distribution grid (2)
16	Mohammed J Redha	Bahrain	Environmental impacts of desalination plant (Sitrah)
17	Huda AlHouqani	UAE	Water indicators in decision making in the Arab Region
18	Samer Kalbouneh	Palestine	Shifting to salinity tolerant crop in the lower Fara'a based on the availability of water resources and the time frame
19	Buthainah Batarseh	Jordan	Integrated protection for Alqairawan aquifer in Jarash, Jordan
20	Ahmad Atoum	Jordan	Analysis of the increase in Nitrates Concentrations in Al-Qairawan Spring, Jarash, Jordan
21	Ayad Al Dalbahi	Saudi Arabia	Investigation of the pollution of the drinking water storage tanks in Buraydah City, Saudi Arabia
22	Fahad Al-Fadda	Saudi Arabia	Constraints of the reuse of tertiary treated wastewater in Buraydah, Saudi Arabia
23	Waleed Al-Murbati	Bahrain	Environmental impacts of desalination on the marine environment, Case Study: Ras Abu Jarjur RO plant
24	Mane Abu-Darahim	Saudi Arabia	Increasing of irrigation water efficiency in Saudi Arabia