Sultan Qaboos University
Course outline

Program:BSc

Course Code	NREC 3105	
Course Title	Water Economics and Policy	
Credits	3 CH, 12 CP, 6 ECTS	
Pre-requisite Course(s)	CAMS 2003	
Co-requisite Course(s)		
Equivalent Course(s)		
Course Category	☐ University Requirement	☐ University Elective
	☐ College Requirement	☐ College Elective
	☐ Department Requirement	☐ Department Elective
	☐ Specialization Requirement	☐ Specialization Elective
	☐ Other (specify):	
Course Owner	College: Agricultural&MarineScienc	Department:Natrual Resource Ec
Course Type	☐ Lecture	☐ Lecture/Lab
	☒ Lecture/Seminar	☐ Lecture/Studio
	☐ Lecture/Tutorial	☐ Lecture/Lab/Seminar
	☐ Tutorial	☐ Lab or Practical
	☐ Field Work	☐ Field Placement
	☐ Studio	☐ Seminar
	☐ Internship	☐ Workshop
	☒ English Language Skill	☐ Project
Language of Instruction	English	

Course Description
This course concentrates on economic characteristics of water resources and the growing problem of water scarcity. It covers the economics of water resources, with special emphasis on the GCC countries where water is an extremely scarce resource. The aim is to teach both about economic tools and theory – how economists go about analyzing key aspects of water policy – and what has been learned by applying these tools to water issues all over the world with references to successful case studies. The course is addressed to students from the Natural Resource Economics Department as well as students from the Department of Soils, Water and Agricultural Engineering. The course looks at prevailing pricing system of urban water and provides comparative analyses of different ways of transition to the efficient pricing and the role of

government policy. The course also addresses the investment in water-saving technologies, the role of water recycling and environmental policy. Finally the course examines the energy-water nexus and the role of renewable energy to provide desalinated water in a sustainable way.

Teaching/Learning Strategies

The course is taught in 15 weeks with two lectures per week of 80 minutes each. Lecture notes are sent by Email at the beginning of each chapter. Discussions and participation of students in class are highly encouraged. Students will have to show their talent of reading, understanding, summarizing and presenting a topic to the class. This allows students to master self-learning and get used to life-long learning activities

Evaluation Methods

For this course the marking scheme is based on a series of short quizzes, assignments and 2 examinations:

1	Quizzes	5%
2	Topic presentation	30%
3	Midterm exam	30%
4	Final Exam	35%
	Total	100%

Required Course Core Material

There is no single text book for this course. We will rely on different books available at SQU library and on material available on the web.

1- Ronald Griffin. 2006. Water Resource Economics: The Analysis of Scarcity, Policies and Projects. The MIT Press.
2- The 2030 Water Resources Group. 2009. Charting Our Water Future: Economic frameworks to inform decision-making.
3- George Raftelis. 2005. Water and Wastewater Finance and Pricing: A comprehensive Guide. Taylor & Francis.
4- Stephen Merrett. 1997. Introduction to the Economics of Water Resources. UCL Press.
5- Collin Green. 2003. Handbook of water Economics: Principles and Practice. Wiley.
6- Douglass Shaw. 2005. Water Resource Economics and Policy: An Introduction. Edward Elgar.
7- Cap-Net, 2008. Economics in Sustainable water Management. Training Manual. 165 pages. http://www.cap-net.org/node/1302

Lecture notes are available and distributed through Email at the beginning of each chapter.

Supplementary material covering water economics in Oman are shown below. The students are also recommended to explore international material on water economics from websites such as of FAO, IWMI, World Bank and other international organizations.

Kotagama, H.; Zekri, S.; Al Harthi, R.; Boughanmi, H. 2016. Demand Function Estimate for Residential Water in Oman. International Journal of Water Resources Development.

Al-Maktoumi, A.; El-Rawy, M.; Zekri, S. 2016. Management Options for a Multipurpose Coastal Aquifer in Oman. Arab J Geosci (2016) 9:1-14. DOI 10.1007/s12517-016-2661-x

Zekri, S.; Al Harthi, S.; Kotagama, H.; Bose, S. 2016. An Estimate of the Willingness to Pay for Treated Wastewater for Irrigation in Oman. Journal of Agricultural and Marine Sciences.

Zekri, S; Maktoumi, A; Abdalla, O; Akil, J; Y, Charabi. 2014 Hydrogeological and Economical Simulation: Water Provision in Emergency Situation for Muscat. Water Policy. 16 (2014) 340–357. doi:10.2166/wp.2013.187

Zekri, S; Ahmed, M; Gaffour, N; Chaieb, R. 2014. Managed Aquifer Recharge Using Quaternary treated Wastewater in Muscat: An economic perspective. International Journal of Water Resources Development. 30(2), 246–261.

Zekri, S.; Fouzai, A; Helmi, T. 2012. Damage Cost in Dry Aflaj in the Sultanate of Oman. Agricultural and Marine Sciences, 17, 9-19.

Zekri, S. 2009. Controlling Groundwater Pumping Online. Journal of Environmental Management, 90 (2009) 3581–3588.

Matching Course Objectives with Program Outcomes and SQU Graduate Attributes		
SQU Graduate Attributes		
SQU graduates should be able to: apply the knowledge and skills relevant to the specialization communicate effectively and use information and communication technologies critically analyze complex information and present it in simple legible manner	SQU graduates possess interpersonal communication skills and alignment with culture of international labour market to assist them in practical life and in living successfully skills and motivation for independent learning and engagement in lifelong learning and research work ethics and positive values, and intellectual independence and autonomy teamwork skills and display potential leadership qualities	SQU graduates should relish good citizenship qualities, conscious of their national identity and socially responsible, engage in community affairs and mindful of contemporary issues.

#	Course Learning Objective	Relevant Program Outcome(s)	Applicable Attribute(s)
	The course introduces the student to economic concepts and analytic techniques, which can be used in understanding water resource management. It provides an understanding of the economics of water demand and supply, water		

	treatment, water recycling and desalination. The following are specific objectives of the course: 1. Introduce students to the concept of supply of water and water systems and patterns		
	2. Describe the range of problems facing the water sector		
	3. Explain the concept of water demand and the determinants of efficient water pricing		
	4. Introduce students to the role of institutions and the role of government in water management		
	5. Examine the energy-water nexus, desalination and environmental problems		
	6. Explain the role of water saving technologies and innovations in water use efficiency		

Student Responsibilities
It is the student's responsibility to know and comply with all University Academic Regulations relevant to participation in this course. These regulations specifically include attendance requirement and students` academic code of conduct. For attendance, it is the student's responsibility to be punctual and to attend all classes. Students are expected to perform their work with honesty and avoid any academic misconduct, which is defined as the use of any dishonest or deceitful means to gain some academic advantage or benefit. This can take many forms, including but not limited to, the following: copying, plagiarism, collusion and forging documents. For full details please refer to the Undergraduate Academic Regulations and to the Student Academic Misconduct Policy. Additionally, this course requires that you:

Course INFORMATION

Course Code	NREC 3105	Course Title	Water Economics and Policy
Year/Semester	Fall 2017	Section	10
Day, Time, and Place	Mon 10:00-11:20 CMT/A09 Wed 10:00-11:20 CMT/A09		

Course Coordinator			
Office Location	Room 229 Anx, NRE, CAMS	Office Hours	Generally any time or by appointment
Office Tel. Ext.	24141243	Email	slim@squ.edu.om

Tentative Schedule

Week	Lecture/Topic	Material to be covered	Assignment/Exam	Weight (%)
1	Introduction to Water Economics and Policy	Charting our water future. Whole document		
2	The Fundamental Economic Theory Applied to Water	Griffin 2006. P 11-61		
3	The Fundamental Economic Theory Applied to Water	Griffin 2006. P 11-61		
4	Water Policy Analysis	Griffin 2006. P 145-174		
5	Water Policy Analysis	Griffin 2006. P 145-174		
6	Demand Analysis	Griffin 2006. P 273-303		
7	Demand Analysis & Water and Wastewater Pricing	Griffin 2006. P 273-303 & Raftelis 2005. P 175-206		
8	Water and Wastewater Pricing	Raftelis 2005. P 175-206		
9	Mid-Term Exam Wednesday 9th of November 2016			
10	Water and Economics in Oman	References mentioned above		
11	Water and Economics in Oman	References mentioned above		
12	Water pollution and pollution control	Tietenberg. 2011. P 471-503		
13	Topics presentations			
14	Topics presentations			
15	Final Exam 28/12/2016 3:00-6:00			

appendix A: Instructors of multiple sections

Section	Instructor	Day, Time, and Location	Office Location and Extension	Email	Office Hours

appendix B: ADDITIONAL INFORMATION