

SULTAN QABOOS UNIVERSITY

COURSE OUTLINE

PROGRAM:soil sciences

1.	Course Code	SWAE 4110			
2.	Course Title	Soil & Water Tour			
3.	Credits	2 CR, 8 CP, 4 ECTS			
4.	Pre-requisite Course (s)	Soil Genesis and Classification (SWAE4404) + College Requirements			
5.	Co-requisite Course (s)	N/A			
6.	Equivalent Course (s)	N/A			
7.	Course Category	University Requirement	University Elective		
	(Specify either as Elective or Requirement and appropriate level: College, Department, etc.)	College Requirement	College Elective		
		Department Requirement	Department Elective		
		Other (specify):			
8.	Course Owner	College:	Department:SWAE		
9.	Course Type	Fieldwork / Laboratory			
10.	Language of Instruction	English			

11. Course Description

The Soil & Water Tour is a compulsory, 2-credit, research oriented, inquiry based fieldworklaboratory integrated course. It includes 5 days of fieldwork during the winter break followed by laboratory experiments and analysis, which last for 3 months. The course aims to train the undergraduates to handle robust scientific models, to solve wicked and ill-posed problems, to sustain intellectual curiosity, and to commit to lifelong learning. It facilitates students to acquire both generic-specific skills and fundamental laws and principles of soil sciences. The fieldwork consisting of wide arrays of assigned research topics relevant to soil-water-vegetation relationships in natural and anthropogenic environments, soil quality, and terrestrial ecosystem functions. Specific examples of such fieldworks include: Studying soils across soil catena, classification and management of salt affected soils, studying terraced soils and irrigation system in wadies across Al-Hajar Mountains, evaluation of soil fertility of agricultural lands of the Al-Batinah region; Impact of recharge/ storage dams on the soils' hydropedological properties; management of Aflaj systems, in particular, water use efficiency and quality assessment, among others. Students go through the multifaceted learning activities of the inquiry based paradigm, which involves making observations, posing questions, examining literature; planning investigations; using tools and instruments to gather, analyse, and interpret data; proposing answers, explanations, and predictions; and communicating the results. The ultimate goal is to adequately prepare the soil sciences students for the challenges of professional life or future graduate studies. This is in line with the considerable international interest in strengthening the roles of inquiry and research, with closer integration of learning, research, and teaching in the undergraduate experience.

the Soil & Water Tour course embraces the best practice of teaching soil science such as: (i) Conducting fieldwork that demonstrating relevance and real-world connections and linking Soil Science to other related disciplines, (ii) Experiencing active learning by assisting students to derive Soil Science theory by using current real problems, scenarios and case studies, (iii) Encouragement the creation of connections, synthesis and integration, among students that allow them to revisit concepts in different situations, (iv) Assisting students develop a holistic thinking and appreciate that soil is part of larger systems, emphasizing the nature and role of soil in various natural, managed, social and economic systems, (v) Allowing students to interpret and present information and ideas in a variety of formats that resemble real-life scenarios where possible, and (vi) Giving students opportunities to deal and solve contemporary, authentic, challenging problems in groups that should allow them develop personal skills and enable them to apply their abilities and experience in multiple perspectives.

The course is designed in a way that it integrates the basic components of significant learning as proposed Fink (2013) on his book creating significant learning experiences: An integrated approach to designing college courses.

12. Teaching/Learning Strategies

13. Evaluation Methods

The course will be graded out of 100 points. The grade assignments from the final mark will be as follow:

- a. Frequency/regularity (minimum once a week) of meetings with the faculty-group supervisor (10%),
- b. Students technical skills graded by the supervisor in both field and laboratory experiments (25%);
- c. Students' final presentations to the panel, presentations are formally evaluated using a form, which includes: Demonstration of knowledge and understanding of the assigned research topic, Power Point presentation style, quality of the slides and appearance (eye contact, gesticulation, jerking when speaking), time management, among others (See attached SWAE 4110 Presentation Evaluation Form).
- d. Final group written report (the quality of the technical content, punctuality of submission, level of academic English, format of the print-out, and potential plagiarism) (35%);
- e. Student's group leader/group members' self-assessment (5%).

14. Required Course Core Material

During the course, Field notes and handouts will be distributed during field sessions or send to you via e-mail during the semester.

- a. Lecture Notes and handouts: Soil and Water Tour Outline.
- b. Supplemental Materials:
- -USDA (2012). The Field Book for Describing and Sampling Soils. Version 3. USDA-Natural Resources Conservation Services. Washington. DC.

-Keys to Soil Taxonomy. 2014. 12th ed. USDA-Natural Resources Conservation Service.

15. Matching Course Objectives with the Program Outcomes and with SQU Graduate Attributes

* <u>Click here</u> to view a list of action verbs use in developing objectives

SQU Graduate Attributes

А.	SQU graduates should be able to:	В.	SQU graduates possess	С	SOU graduates should
1. 2.	apply the knowledge and skills relevant to the specialization communicate effectively and use information and communication technologies	1. 2.	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	c. Sou graduates relish good citiz qualities, conscio their national ide socially responsi engage in comm affairs and mind: contemporary iss	relish good citizenship qualities, conscious of their national identity and socially responsible, engage in community
3.	critically analyze complex information and present it in simple legible manner	3. 4.	learning and engagement in lifelong learning and research work ethics and positive values, and enjoy intellectual independence and autonomy teamwork skills and display potential leadership qualities		affairs and mindful of contemporary issues.

#	Course Learning Objective	Relevant Program Outcome(s)	Applicable Attribute(s)			
1.	Develop analytical, designing, interpretation, communication skills (oral presentation & outreach activities) which are necessary for effective learning and their future carriers.	 (g) An ability to communicate effectively (b1,2,3,4) An ability to design experiments as well as to analyze & interpret data 	(ABET g, b 1,2,3,4)			
2.	Acquire "hands-on" skills and multidisciplinary (hydrology, soil science, geotechnical engineering) vision.	- (d 1,2,3) An ability to function in multi- disciplinary teams	(ABET d 1,2,3)			
3.	Practice metacognitive abilities, enhance by and foster their critical thinking, making predictions, proposing causative factors in solving soil and water management problems	- (e 1,2,3) Ability to identify, formulate & solve engineering or scientific problems	(ABET e 1,2,3)			
4.	Ability to integrate the multidisciplinary concepts gained from this course in projects relevant to soil survey, water resources management, soil-water- vegetative-anthropogenesis relationships, soil quality, and terrestrial ecosystem functions.	- (a 1,2,3) An ability to apply knowledge of Mathematics, Science & Engineering	(ABET a 1,2,3)			
5.	Ability to work as a team to prepare useful natural resources assessment of an area for a concerned user.	- (d 1,2,3) An ability to function in multi- disciplinary teams	(ABET d 1,2,3)			
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16. 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 the Attendance and Student Academic Misconduct policies.

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:

Obey the instructed rules, guidelines, and safety precautions for the fieldwork and laboratory activities.

COURSE INFORMATION					
Course CodeSWAE 4110Course TitleSoil & Water Tour					
Year/Semester	2016/Spring	Section	10		
Day, Time, and Place Winter Break (5days) & Spring semester					
Course Coordinator Dr. Said Al-Ismaily					
Office Location	AGR2002	Office Hours	1 hr/week - Spring semester		
Office Ext.	3642	Email	esmaily@squ.edu.om		

Week	Lecture/Topic	Material to be Covered	Assignment	Weight
	Field work (Winter Preak)	Concents and field skills	/Exam	(%)
	Field work (winter break)	relevant to soil nedology soil		
		survey soil physics soil		
		chemistry, hydrology, and		
		water resources		
		management. Full day of		
		fieldwork in themes that may		
		include:		
		a. Soil survey and studying		
		and classifying soil profiles a		
		long a soil catena;		
		b. Profile description and		
		management of salt affected		
		SOIIS;		
1		c. Studying terraced soils and		
1		crossing Al-Haiar Mountains		
		(e g Wadi Bani Kharus wadi		
		Mistal, wadi Bani Haras):		
		d. Soil sampling and		
		evaluation of soil fertility of		
		agricultural lands of Al-		
		Batinah region;		
		e. Impact of recharge/ storage		
		dams on the soils'		
		hydrogeological properties		
		and water quality;		
		I. Management of Afiaj water :		
		Quality Assossment		
		g Among others		
	Week 2: Assignment of research	Assignment of research tonics		
	topics.	to students groups (3-5		
		students per group with one		
2		student assigned as a leader);		
		meeting and panel discussion		
		among students and with		

		course instructor and other	
		supervisors (depending on	
		the nature of topic).	
	Weeks 3-4: Submmision project	Formulation of major	
2	work plan	research question; setting	
3		objectives; and planning and	
		experimental designing	
	Weeks 5-13: Execution of research	Execution of research topics;	
	topics	designing field and laboratory	
		activities, data analysis and	
4		interpretation; submission	
		short but frequent progress	
		reports.	
	Weeks 14-15: Final reporting & Oral	Conducting a final oral/public	
5	presentation	presentation and a	
		submission of a final report	
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