

# SULTAN QABOOS UNIVERSITY

## **COURSE OUTLINE**

### **PROGRAM:** Agricultural Engineering

1.	Course Code	SWAE3005			
2.	Course Title	Land Surveying			
3.	Credits	3 CR, 12 CP, 6 ECTS			
4.	Pre-requisite Course(s)	Calculus I (MATH2107), General Physics (PH (PHYS2107)	YS2101) or Physics for Engineering I		
5.	Co-requisite Course(s)	N/A			
6.	Equivalent Course(s)	N/A			
7.	Incompatible Course(s)	N/A			
8.	Course Category	University Requirement	University Elective		
		College Requirement	College Elective		
		Department Requirement	Department Elective		
		Specialization Requirement	Specialization Elective		
		Other (specify):			
9.	Course Owner	College: CAMS	Department: SWAE		
10.	Course Type	Lecture	Lecture/Lab		
		Lecture/Seminar	Lecture/Studio		
		Lecture/Tutorial	Lecture/Lab/Tutorial or Seminar		
		Tutorial	Laboratory (Practical)		
		Field or Work Placement	Studio Studio		
		Seminar	Internship		
		Workshop	Project		
11.	Language of Instruction	English			

#### 12. Course Description

This course equips students with the essential skills necessary in land surveying. It covers basic principles of land surveying, theory of measurements and errors, distance, leveling, angles, use of Theodolite and area computation. It also enables the students to get familiar with electronic distance measurement instruments (EDMI) and how to use Total Stations. It introduces the students to Global Positioning Systems (GPS), Geographic Information System (GIS) and Remote sensing (RS) and their applications in surveying. Course information is available on the internet at http://moodle.squ.edu.om/login/index.php.

#### **13.** Teaching/Learning Strategies

The course learning objectives shall be achieved by the following strategies: homework, laboratory practical, quizzes, and exams.

On successful completion of this course, the student will be able to:

- 1. Introduce students to basic concepts of surveying. (a, f)
- 2. Enable the students to get familiar with vertical control and leveling techniques. (b, e)
- 3. Enable the students to get familiar with distances and angle measurements. (b, e)
- 4. Introduce the students to GPS, GIS and Total Stations and their applications in surveying. (b, j, k)
- 5. Encourage students to work in teams to perform the field work sessions. (d, f)

14. Assessment Components and Weight [%]						
Quizzes 5%	Practical 30%	Other (specify):				
Homework assignments 10%	Project					
☐ In-term examination(s) 15%  ☐ Final examination 40%						

15. Grading Method				
A-F Scale Pass/Not passed				
16. Textbook(s) and Supplemental Material				
Textbook: Elementary Surveying: An Introduction to Geomatics by C. Ghilani and P. Wolf. 2008. Prentice Hall.				
Reference Books: (These books are available at SQU library):				
1. Engineering surveying by Schofield, W. 2007. TA545 .S3 2007				
2. Surveying: problem solving with theory and objective type questions by Chandra, A. M. 2005. TA556 .M38 C42				
2005				
3. Surveying by McCormac, Jack C. 2004. TA545 .M328 2004				
4. Surveying: principles and applications by Kavanagh, Barry F. 2003. TA545 .K37 2003				
5. Land development handbook: planning, engineering, and surveying by Dewberry, Sidney O. 2002. TA549 .L36				
2002				

17.	17. Matching Course Objectives with Program Outcomes and SQU Graduate Attributes					
	SQU Graduate Attributes					
А.	SQU graduates should be able to:	B.	SQU graduates possess	C.	SQU graduates should	
1. 2. 3.	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 clear manner	<ol> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> </ol>	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		relish good citizenship qualities, be conscious of their national identity and be socially responsible, engage in community affairs and be mindful of contemporary issues.	
			leadership qualities			

#	Intended Student Learning Outcome /Course Learning Objective	Relevant Program Outcome(s)	Applicable Attribute(s)
1.	Introduce students to basic concepts of surveying. (a, f)	a. An ability to apply knowledge of mathematics, science, and engineering.	ABET (a, f) SQU A1, A3
2.	Enable the students to get familiar with vertical control and leveling techniques. (b, e)	b. An ability to design and conduct experiments, as well as an ability to analyze and interpret data.	ABET (b, e) SQU A1, A3
3.	Enable the students to get familiar with distances and angle measurements. (b, e)	c. An ability to design a system, component, or process to meet desired needs.	ABET (b, e) SQU A1, A3
4.	Introduce the students to GPS, GIS and Total Stations and their applications in surveying. (b, j, k)	d. An ability to function on multi- disciplinary teams.	ABET (b, j,k) SQU A1, A2, A3
5.	Encourage students to work in teams to perform the field work sessions. (d, f)	e. An ability to identify, formulate and solve engineering problems	ABET (d, f) SQU A2, A3
6.		f. An understanding of professional and ethical responsibility.	
7.		g. An ability to communicate effectively.	
8.		h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.	
9.		i. A recognition of the need for, and an ability to engage in life-long learning.	
10.		j. The knowledge of contemporary issues.	
11.		k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	
12.			

#### 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 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:

Students should be aware of and abide by all University Regulations. Students should attend class, read the lecture notes provided, read book chapters and other assigned readings, participate in class and discuss concepts. Students are responsible for all materials covered in the class whether presented orally during lectures or assigned from the texts, references, or handouts.

COURSE INFORMATION					
Course Code	Course Code SWAE3005 Course Title Land Surveying				
Semester/Year	Fall/Spring	Section(s)	10/11		
Day, Time, and Place	Day, Time, and Place Lecutres in AGR0016 and Lab in AGR0016 and open field at SQU				
<b>Course Coordinator</b>	Course Coordinator Dr. Yaseen Ahmed Al-Mulla				
Office Location         CAMS# 213 &         Office Hours         As mentioned in the timetable			As mentioned in the timetable		
	RSGISRC				
ENG#0039					
Office Tel. Ext.	3635	Email	yalmula@squ.edu.om		

Tentative Schedule					
Week	Lecture #	Topic/Material to be covered	Assessment		
1	1	Introduction to land surveying			
2	1,2	Introduction to land surveying	HW1		
3	2,3	Basic principles of land surveying			
4	6.1	Distance measurements	Quiz1		
5	6.2	Slope measurements			
6	6.3	Errors in taping	HW2		
7	4.1	Leveling			
8	4.2	Differential leveling	Quiz2		
9	5	Trigonometric leveling	Mid Term Exam		
		- Reciprocal leveling			
10	5	Three wire leveling	HW3		
11	5	Profile leveling - Contour leveling			
12	8	Total Stations	Quiz3		
13	12	Area	HW4		
14	13	Global Positioning Sys. (GPS) - Geographic Info. Sys. (GIS)			
15		Remote Sensing (RS) - Course Review	Quiz4		
16			Final Exam		
17					

APPENDIX A: INSTRUCTORS OF MULTIPLE SECTIONS							
Section Instructor		Day, Time, and Place	Office Location and Extension	Email	Office Hours		

## **APPENDIX B: ADDITIONAL INFORMATION**