هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	Project Surveying
Course Code:	CE 442
Program:	B.Sc. in Civil Engineering
Department:	Civil Engineering
College:	Jubail University College
Institution:	Jubail University College

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☐ Elective ☑
3. Level/year at which this course is offered: Level 6, Third Year Level 7, Fourth Year
4. Pre-requisites for this course (if any)**:** CE 206 Surveying
5. Co-requisites for this course (if any)**:** None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	✓	100
2	**Blended**		
3	**E-learning**		
4	**Correspondence**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
Contact Hours		
1	**Lecture**	45
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	**45**

B. Course Objectives and Learning Outcomes

1. Course Description

CE 442 Project Surveying (3-0-3) ***Prerequisite: CE206***

Laser systems and alignment, electronic distance measurement with high precision, land subdivision and legal aspects; route surveying, hydrographic surveying, Mine surveying, construction surveying, ruin surveying, industrial surveying, plane table surveying, structure deformation measurement and monitoring, earth crust deformation measurement.

2. Course Main Objective

The main purpose of this course is to enable the students to acquire the knowledge on various surveying methods & instruments used. They will get the idea of selecting the type of survey based on the conditions in the field.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding:**	
	N/A	
2	**Skills**	
2.1	Discuss the basic concepts of various types of Engineering Surveys and the regulations which govern land subdivision in Saudi Arabia.	1
2.2	Evaluate various surveying and leveling equipment.	6
2.3	Measure lengths, distances and elevations related to various surveying and leveling measurement.	1
3	**Values**	
3.1	Use various survey instruments	4

C. Course Content

No	List of Topics	Contact Hours
1	**Unit 1: LASER SYSTEMS AND ALIGNMENT** 1.1 Laser Alignment Theory 1.2 Optical Tooling 1.3 Laser Tooling Methods 1.4 Review of Laser Alignment Technology 1.5 Single and Two Target Laser Alignment • Passive Pointing Compensation • Active Pointing Compensation 1.6 Error Sources • Wedge Angle Error • Target Deviation • Target Accuracy	6
2	**Unit 2: ELECTRONIC DISTANCE MEASUREMENT WITH HIGH PRECISION** 2.1 Evolution of EDM instruments 2.2 Physics of EDM instruments 2.3 Current E D M Instruments 2.4 E D M Instrument Operation Basics 2.5 Errors of E D M	6
3	**Unit 3: LAND SUB DIVISION AND LEGAL ASPECTS** 3.1 Points to be considered in the land subdivision process 3.2 Conditions controlling the land subdivision process 3.3 Legal aspects of land subdivision in Saudi Arabia	3
4	**Unit 4: ROUTE SURVEYING** 4.1 Reconnaissance survey 4.2 Route curves for horizontal and vertical alignment 4.3 Terrain Data 4.4 Specifications for Horizontal and Vertical Accuracy	6
5	**Unit 5: HYDRO GRAPHIC SURVEYING** 5.1 Introduction 5.2 Methodologies	6

	5.3 Vertical Depth measurement 5.4 Horizontal position fixing 5.5 Effects of vessel roll pitch and heave 5.6 Tide Surveys	
6	**Unit 6: MINE SURVEYING** 6.1 Introduction 6.2 Principal activities of mine surveying 6.3 Equipment used in Mine surveying	3
7	**Unit 7: CONSTRUCTION SURVEYING** 7.1 Introduction 7.2 Horizontal and Vertical Control in a Construction Project	3
8	**Unit 8: RUIN SURVEYING** 8.1 Introduction 8.2 Survey of ruins: specific issues 8.3 Case studies	3
9	**Unit 9: INDUSTRIAL SURVEYING** 9.1 Introduction 9.2 Equipment used in Industrial Surveying	3
10	**Unit 10: PLANE TABLE SURVEYING** 10.1 Introduction 10.2 Methods of Plane Table Survey 10.3 Errors in plane table survey	3
11	**Unit 11: DEFORMATION MEASUREMENTS** 11.1 Structure Deformation Measurement and Monitoring 11.2 Earth Crust Deformation Measurement	3
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
	N/A		
2.0	**Skills**		
2.1	Discuss the basic concepts of various types of Engineering Surveys and the regulations which govern land subdivision in Saudi Arabia.	Interactive learning Self-directed learning	Written Exams (Quiz, midterm, & final) and Assignments
2.2	Evaluate various surveying and leveling equipment.	Interactive learning Self-directed learning Experiential Learning	
2.3	Measure lengths, distances and elevations related to various surveying and leveling measurement.		
3.0	**Values**		
3.1	Use various survey instruments	• Interactive learning	Assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	4	10%
2	Assignment 1	6	10%
3	Mid-term LT	8	20%
4	Quiz 2	12	10%
5	Assignment 2	14	10%
6	Final Exam LT	17-19	40%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Office hours 5 hr/week; students can go in times of office hours for teacher to explain what could not be understood from the lesson.
- Students can communicate with a staff member outside the official working hours by email.
- Students are also encouraged to visit their academic advisors.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Kavanagh B. (2008). *Surveying Principles and Applications.* London: Pearson prentice hall.
Essential References Materials	James M. Anderson and Edward M. Mikhail. (1997). *Surveying Theory and Practice* , London: McGraw-Hill Publications Schofield.W and Mark Breach. (2007) *Engineering Surveying*, London: CRC Press.
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture rooms with a capacity of at least 25 students and fitted with multimedia projector and a computer.
Technology Resources (AV, data show, Smart Board, software, etc.)	AutoCAD

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment as per QMS-Policy-006 Feedback Survey, QMS-QAP-116 Monitoring Students' Satisfaction	Students	Indirect: Analyzing the results of the following surveys Course Evaluation Survey(CES), Program Evaluation Survey (PES), Student Experience Survey (SES)
Quality of Exam papers and Verifying Standards of Student Achievement as per QMS-Policy-004 Policy for Examinations and Marking, QMS-ACP-102 Procedure for Marking Examinations	Examination Committee	Direct: Peer review of examination papers and review or double check a minimum of three or 10% of answer papers. Verifying the entries in the Activity Mark Sheet.
Achievement of learning outcomes as per QMS-Policy-001 Course Review, QMS-CDP-106, QMS-CDP-112 Curriculum Review	Faculty	Direct: Course Report (Section B-3)
Implementation of the action plans based on previous semester as per QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS-CDP-112 Procedure for Curriculum Review	Faculty	Direct and Indirect: Course report (Section G-1, G-2)
Monitoring Teaching and Learning as per QMS-Policy-005 Monitoring of Teaching and Learning	Chairperson/Program Director/Course Director	Indirect: Feedback by Chairperson/Program director/Course director. Program Delivery Record.
Effectiveness of planned Teaching Strategies QMS-Policy-001 Course Review	Faculty	Indirect: Course Report (Section B-4)
Course effectiveness and planning for improvement as per QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS- CDP-112 Procedure for Curriculum Review	Faculty	Direct and Indirect: Course report (Section G-3)
Verifying Standards of Student Achievement and Quality of Exam		Direct: Report of assessment external reviewer. Review of

Evaluation Areas/Issues	Evaluators	Evaluation Methods
papers as per QMS-ACP-119 External Assessment Review	Assessment External Reviewer	sample of ten or 10% of student's assessments and coursework scripts.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Civil Engineering Department Council
Reference No.	REG MIN-CED-10
Date	27-04-2020

Appendix A
Revision Details

Revision no.	DESCRIPTION	Reference MoMs			
		DC		CDC	
		Sem	#	Sem	#
1	Revision of Course Teaching Strategies and action verbs based on the comments of NCAAA reviewer	392	4	392	4
2	Course Specification Template 2018	402			