



Course Specifications

Course Title:	Construction Estimating and Costing
Course Code:	CE 443
Program:	B.Sc. in Civil Engineering
Department:	Civil Engineering
College:	Jubail University College
Institution:	Jubail University College

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A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Level 6, Third Year
4. Pre-requisites for this course (if any):	CE 206 Surveying CE 312 Reinforced Concrete-1
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 443 Construction Estimating and Costing (3-0-3)

Prerequisite: CE 206, CE 312

Introduction. Purpose of quantity estimate. Estimating process. Conceptual estimating. Detailed estimate. Earthwork. Concrete. Masonry. Carpentry and steel. Introduction to Mechanical, Electrical and Plumbing estimates. Labor productivity. Rate analysis. Cost estimate of Civil Engineering structures. Use of computer programs in estimating.

2. Course Main Objective

The main purpose of this course is to enable the students to analyze and apply different methods of estimate techniques and cost control used for Civil Engineering projects. Students also will be familiar with the use of computer software for measurement and estimation of construction projects.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding N/A	
2	Skills :	
2.1	Develop bill of the quantities including Earthwork, Concrete, Masonry, Carpentry and metal work in Civil Engineering structures	1
2.2	Analyze the rates of different items of work involved in the construction activities of the project	1
2.3	Estimate the cost of Earthwork, Concrete, Masonry, Carpentry and metal work in Civil Engineering structures	1
2.4	Use of Microsoft excel sheet for the quantity take-off of different components in construction activities of the project.	1
3	Values N/A	

C. Course Content

No	List of Topics	Contact Hours
1	Unit 1. INTRODUCTION TO ESTIMATE 1.1 Role of Estimating in the Construction Industry 1.2 Estimate and its types 1.4 Contract and its types 1.5 Methods of Estimating	3
2	Unit 2. ESTIMATION AND MODE OF MEASUREMENTS 2.1 The Quantity Take Off 2.2 Units of Measurement 2.3 Measuring "Net-In-Place" 2.4 Take Off Items 2.5 Organization of the Take Off	6
3	Unit 3. SPECIFICATION OF CIVIL WORKS 3.1 Importance of specification 3.2 Types of specification 3.3 Principle of writing specification 3.4 Specification of different items of works	9
4	Unit 4. RATE ANALYSIS OF CIVIL WORKS 4.1 Task Work and Factors affecting it 4.2 Labour required for different works and Labour rates 4.3 Market rates of construction materials 4.4 Schedule of Rates (SOR) 4.5 Rate analysis and factors affecting it rate analysis 4.6 Rate analysis for items of works	9
5	Unit-5. COST ESTIMATE OF CIVIL ENGINEERING STRUCTURES 5.1 Various method of detailed estimate. 5.2 Introduction of Mechanical, Electrical and Plumbing estimates	18

	5.3 Introduction to Computer Software in estimating	
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	Develop bill of the quantities including Earthwork, Concrete, Masonry, Carpentry and metal work in Civil Engineering structures	Independent learning Interactive learning Cooperative learning	Quizzes, Midterm, Assignments, Final
2.2	Analyze the rates of different items of work involved in the construction activities of the project		Quizzes, Assignments, Final,
2.3	Estimate the cost of Earthwork, Concrete, Masonry, Carpentry and metal work in Civil Engineering structures		Final
2.4	Use of Microsoft excel sheet for the quantity take-off of different components in construction activities of the project.	Independent learning Interactive learning	Assignments
3.0	Values		
	N/A		

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 6 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	David J Pratt. (2010). <i>Fundamental of Construction Estimating</i> . Boston ,USA .CENGAGE Learning
Essential References Materials	Phillip F. Ostwald, 2000. <i>Construction Cost Analysis and Estimating</i> . USA. Pearson Higher Education. Steven Peterson MBA,PE, Frank Dagostino, 2014. <i>Estimating in Building Construction</i> . USA. Pearson Higher Education Index of Material Costs in Saudi Arabia, by Riyadh Chamber of Commerce. Means Cost Index, USA
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 PC.
Technology Resources (AV, data show, Smart Board, software, etc.)	Construction Estimating and costing Softwares
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,	Faculty	Direct: Course Report (Section B-3)

Evaluation Areas/Issues	Evaluators	Evaluation Methods
QMS-CDP-112 Curriculum Review		
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 papers as per QMS-ACP-119 External Assessment Review	Assessment External Reviewer	Direct: Report of assessment external reviewer. Review of 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			