



Course Specifications

Course Title:	Construction Methods and Management
Course Code:	CE 419
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 7, Fourth Year
4. Pre-requisites for this course (if any): CE 452 Design Project I
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 419 Construction Methods and Management (3-0-3)

Prerequisite: CE 452

Construction engineering environment and practices, contract documents, types of contract, bidding strategies and professional liabilities; construction equipment and methods; concepts and legal requirements of risk management and safe design; CPM network analysis, scheduling and resource leveling; cost control and project management with computer applications; Introduction to PERT.

2. Course Main Objective

The main purpose of this course is to make the students familiar with the procedures involved in construction industry and also the working of equipment used along with the planning and scheduling of the projects.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Define the responsibilities of members of construction team.	8
1.2	Describe types of contracts and bidding strategies.	8
1.3	Classify construction equipment and their uses.	8
1.4	Explain the basic concepts and legal requirements of risk management.	8
2	Skills :	
2.1	Apply project planning and scheduling using the CPM and PERT network analysis.	1
2.2	Use computer software for project management.	1
3	Values	
3.1	Share the ethical responsibilities of members of the construction team.	4

C. Course Content

No	List of Topics	Contact Hours
1	<p><u>Unit 1. CONSTRUCTION ENGINEERING ENVIRONMENT AND PRACTICES:</u></p> <p>1.1 Various elements of a construction team and their responsibilities 1.2 Introduction to tendering and tendering procedures</p>	3
2	<p><u>Unit 2. CONTRACTS:</u></p> <p>2.1 Introduction to contract systems and various types of contracts 2.2 Contract documents</p>	6
3	<p><u>Unit 3. BIDDING STRATEGIES AND PROFESSIONAL LIABILITIES:</u></p> <p>3.1 Introduction to bidding 3.2 Adjudication and setting the bid price 3.3 Factors considered by contractors while bidding 3.4 Bid submission and presentation</p>	9
4	<p><u>Unit 4. CONSTRUCTION EQUIPMENT AND METHODS:</u></p> <p>4.1 Excavating equipments : Excavators and crane shovels, Draglines, Clamshells, Chain Trencher and thrust boring equipments 4.2 Lifting Equipments – Cranes :Heavy lift cranes, Tower cranes 4.3 Loading Equipments : Wheel loaders, Track Loaders, Material handler, Scrapers 4.4 Hauling Equipments : Trucks, Wagons, Conveyor belts 4.5 Compaction Equipments: Tamping foot rollers, Grid or mesh rollers, Vibratory compactors , Steel wheel or smooth drum rollers, Rubber tired or pneumatic rollers, Segmented pad rollers, Rammers or tampers 4.6 Grading and Finishing Equipments: Motor grader, Grade excavators, Trimmers 4.7 Equipments for mixing concrete and asphalt 4.8 Equipments for paving and surface treatment</p>	9

5	<u>Unit5. CONCEPTS AND LEGAL REQUIRMENTS OF RISK MANAGEMENT AND SAFE DESIGN:</u> 5.1 Risk, hazard and safe design definition. 5.2 Introduction to risk management and safe design. 5.3 Legal requirements of risk management. 5.4 Legal requirements of safe design.	9
6	<u>Unit 6. PROJECT PLANNING AND SCHEDULING:</u> 6.1 Importance of planning and scheduling a project 6.2 Bar Chart method 6.3 Critical Path Method (CPM): Preparation of network –Event time calculations – Activity time Calculations - Identification of Critical path 6.4 Scheduling and resource levelling using CPM 6.5 Introduction to PERT network analysis – Event times	9
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		
1.1	Define the responsibilities of members of construction team.	Interactive learning Self-directed learning	Quiz 1, midterm, assignment 1
1.2	Describe types of contracts and bidding strategies.		Quiz 1, midterm, assignment 1
1.3	Classify construction equipment and their uses.		Quiz 2 midterm, Final Exam
1.4	Explain the basic concepts and legal requirements of risk management.		Quiz 2, Final Exam.
2.0	Skills		
2.1	Explain the basic concepts and legal requirements of risk management..	Interactive learning Self-directed learning	Quiz 2, Final Exam.
2.2	Use computer software for project management.		assignment 2
3.0	Values		
3.1	Share the ethical responsibilities of members of the construction team.	Interactive learning Self-directed learning	Quiz 1, midterm, assignment 1

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	Nunnally, S.W. (2014), Construction Methods and Management, London: Pearson Education Limited.
Essential References Materials	Plotnick, F. and O'Brien, J. (2009), CPM in construction management. New York, NY: McGraw-Hill Education. Illingworth, J.R. (2000), Construction Methods and Planning. London: CRC Press.
Electronic Materials	http://www.coneq.com http://www.constructioneducation.com http://www.construction.com
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.)	None
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),

Evaluation Areas/Issues	Evaluators	Evaluation Methods
		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 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			