



Course Specification

(Bachelor)

Course Title: Value Engineering in Construction Management

Course Code: COE4409

Program: Bachelor of Construction Engineering

Department: Civil and Environmental Engineering Department

College: College of Engineering and Computing in Al-Qunfudhah

Institution: Umm Al-Qura University

Version: 4th

Last Revision Date: 15th January 2025



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

2. Course type

A. University College Department Track Others
B. Required Elective

3. Level/year at which this course is offered: (Level 10/year 5)

4. Course General Description:

This course focuses on the principles and practices of Value Engineering (VE) within the context of construction projects. It emphasizes maximizing the function of a project while minimizing costs and resource use, aiming to deliver the best value to stakeholders. Through a blend of theoretical concepts and practical applications, students will learn how to systematically analyze the functions of projects, identify areas for improvement, and implement cost-effective solutions without compromising on quality.

5. Pre-requirements for this course (if any):

Project Cost Estimating (COE4403)

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

1. To understand the core principles and methodologies of Value Engineering.
2. To develop skills in identifying and analyzing project functions and costs.
3. To learn how to apply VE techniques to enhance value and optimize project performance.
4. To improve decision-making skills by considering various alternatives and their implications on cost and value.
5. To understand the role of interdisciplinary collaboration in the VE process.
6. To prepare students to effectively lead and participate in VE studies and workshops.

2. Teaching mode (mark all that apply)



No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3 credit hours	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Define and describe value engineering concepts, principles, theories, and procedures as applied to construction management.	K1	Interactive learning Self-directed learning	Midterm Exam, Final Exam, Homework, and Quizzes
1.2	Describe specialized knowledge in value engineering by analyzing and	K3	Interactive learning Self-directed learning	Midterm Exam, Final Exam, Homework, and Quizzes



	interpreting current advancements in cost-saving construction methodologies and recognizing research techniques relevant to optimizing construction management processes.			
2.0	Skills			
2.1	Apply engineering and scientific principles to identify, analyze, and solve complex construction engineering problems.	S1	Interactive learning Self-directed learning	Midterm Exam, Final Exam, Homework, and Quizes
2.2	Utilize critical thinking skills to analyze complex construction engineering issues and develop innovative, context-appropriate solutions that address current challenges in the field.	S2	Interactive learning Self-directed learning	Midterm Exam, Final Exam, Homework, and Quizes
...				
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate responsibility and ethical practices in evaluating the societal, environmental, and economic impacts of	V1	Interactive learning Self-directed learning	Midterm Exam, Final Exam, Homework, and Quizes





	construction engineering decisions.			
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Value Engineering	3
2.	VE Methodology and Process	6
3.	Function Analysis	6
4.	Cost-Worth Analysis	3
5.	Creative Problem-Solving Techniques	6
6.	Mid Term Exam	3
7.	Quantitative and Qualitative Evaluation	6
8.	Life Cycle Costing	6
9.	Interdisciplinary Collaboration in VE	3
10.	Case Studies and Practical Applications	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	4, 6, 12	15%
2.	Homework	3, 9, 13	15%
3.	Midterm Exam	8	30%
4.	Final Exam	16 or 17	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References

Kelly, J., Male, S. and Graham, D., 2014. *Value Management of Construction Projects*. 2nd ed. Hoboken: Wiley.





Supportive References	Dell'Isola, A.J., 2003. <i>Value Engineering: Practical Applications for Design, Construction, Maintenance, and Operations</i> . 5th ed. Hoboken: Wiley.
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom with minimum capacity of 30 students
Technology equipment (projector, smart board, software)	Projector, whiteboard
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Lecturer / Students	Direct / Indirect (Grades, surveys)
Effectiveness of Students assessment	Faculty	Indirect (Barriers to understand successor course)
Quality of learning resources	Lecturer	Direct (Grades)
The extent to which CLOs have been achieved	Lecturer / Faculty	Direct (Grades)
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Civil and Environmental Engineering Department Council in Al-Qunfudah
REFERENCE NO.	The fifteenth session of the academic year 1446
DATE	01/05/2025

