

Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering		المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة
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CE 624 Value Engineering

College: Engineering

Department: Civil

First: Course Definition

1- Course Code: CE 624

2- Units: 3

3- Semester:

4- Prerequisite:

5- Co-requisite:

6- Location (if not on main Campus):

Second: Course Objectives

1. Develop an understanding of value and function concepts .
2. Extend their knowledge and proficiency in quality, reliability, and performance.
- 3.** Apply the techniques of creativity, weighted evaluation, design-to-cost, life-cycle costing, FAST diagramming, and human relations.

Third: Course Specifications

1- Topics to be covered		
Subject	No of Weeks	Units
Introduction about Value Engineering	1	3
Value Engineering and Constructing process	2	6
Integrating value engineering , life-Cycle costing and sustainable development	2	6
Application of Value Engineering in different Civil Engineering topics.	1	3

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Computerized System for Application of Value Engineering Methodology	2	6
Software Reliability and system	3	9
Techniques of Economics of Reduction Variation	1	3
Introduction to Engineering Psychology and human performances	1	3
Human resources and Value Engineering	1	3

2- Course components (Total hrs in the Semester: 42)

Lecture	Exercise	Other
42	-	0

3- Intended Learning Outcomes of the Course (ILO's)

a. Knowledge

i) Description of the knowledge to be acquired

- Know the principles of engineering decision making and how they interface with construction methodology.
- Comprehend the construction process and product delivery methods through the study of project controls, construction documents, cost estimating, bidding, construction agreements, scheduling and construction administration..
- Know the purpose, structure and importance of value engineering in the design, construction and facility management processes.
- Develop critical thinking skills regarding the evaluation of alternative materials, equipment and methods involved in construction.
- Develop insight into the practical applications of engineering principles through presentations by local professionals in the engineering, architecture and legal fields.

ii) Teaching strategies to be used to develop that knowledge

- Class lectures.
- Term projects.
- Students' presentations.
- Group discussion.
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iii) Methods of assessment of knowledge acquired

- Exams.
- Quizzes.
- Homework assignments.
- Term projects.

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b- Cognitive (Intellectual) Skills

i) Cognitive skills to be developed

- Advanced concepts of value engineering in the design.
- Discuss the importance of value engineering in facility management processes

ii) Teaching strategies to be used to develop these cognitive skills

- Class lectures.
- Case studies analysis.
- Term projects.

iii) Methods of assessment of students' cognitive skills

- Students' seminars and presentations.
- Term projects.
- Written reports.

c. Interpersonal Skills and Responsibility

i) Description of the interpersonal skills and capacity to carry responsibility to be developed

Develop critical thinking skills and analytical judgment related to construction economics through the application of interest calculations, present worth, equivalence, uniform annual cost, rate of return, depreciation and equipment replacement costs.

ii) Teaching strategies to be used to develop these skills

- Class lectures.
- Term projects.
- Case studies analysis.

iii) Methods of assessment of students' interpersonal skills and capacity to carry responsibility

- Term project.
- Written reports.
- Students' seminars and presentations.

d. Communication, Information Technology and Numerical Skills

i) Description of the skills to be developed in this domain

- Literature research.
- Problems modeling.

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- Utilization of computer applications in analysis and design.

- ii) Teaching strategies to be used to develop these skills**
- Class lectures.
 - Case studies analysis.
 - Computer lab sessions.
 - Term projects.
- iii) Methods of assessment of students numerical and communication skills**
- Term projects.
 - Written reports.
 - Students' seminars and presentations.

e. Psychomotor (if applicable) & Other Non-cognitive Skills

i) Description of the psychomotor or other skills to be developed and the level of performance required

- NA

ii) Teaching strategies to be used to develop these skills-

- NA

iii) Methods of assessment of student's psychomotor skills

- NA

4- Student Assessment Schedule

Serial	Assessment tool (test, group project, examination etc.)	Week due	Weight
1	Term Project – 1	3 rd	15 %
2	Mid Term Exam -1	7 th	15 %
3	Term Project – 2	10 th	15 %
4	Term Project – 3	13 th	15 %
5	Final Exam	16 th	40 %

5- Student Support

- Providing electronic library of textbooks and scientific periodicals.

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- Providing the necessary computer applications for the course.

6- Learning Resources

i) Essential Books (References)

- Dell'Isola ,A. "Value Engineering: Practical Applications for Design, Construction, Maintenance & Operations," RSMears Company, 1997. ISBN-10: 0876294638, ISBN-13: 978-0876294635
- Younker, D. "Value Engineering: Analysis and Methodology," CRC Press, 2003
- Park, R. "Value Engineering: A Plan for Invention," CRC Press; CRC Press, 1st edition, 1998. ISBN-10: 157444235X, ISBN-13: 978-1574442359
- Brown, J. "Value Engineering," Industrial Press, Inc.; 1st edition, 1992. ISBN-10: 0831130385, ISBN-13: 978-0831130381

ii) Course Notes

- NA

iii) Recommended Books

- William G. Sullivan, Elin M. Wicks, C. Patrick Koellin, Engineering Economy, 14th Edition, published by Upper Saddle River, N.J.; Harlow: Pearson Education
- Frederick E. Gould, Managing the Construction Process: estimating, scheduling, and project control, Published by Upper Saddle River, N.J.: Pearson/Prentice Hal

iv) Electronic Books & Web Sites:

- Scientific journals and forums.
- Instructor's instruction.

v) Periodicals

- ASCE scientific journals.

7- Course Evaluation and Improvement Processes

i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Students' questioners.
- Students' evaluation of course and instructor.

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- ii) Other Strategies for Evaluation of Teaching by the Instructor or by the Department**
- Public faculty seminars.
 - Assessment by external evaluators of students achievements.
 - Instructor (Course) Report

- iii) Processes for Improvement of Teaching**
- Assessment of students' work by external examiners.
 - Analysis of students' evaluation of course and instructor.
 - Seminars by industry professionals.

- iv) Processes for verifying standards of student achievement**
- Check marking by an independent faculty member of a sample of student work.
 - Periodic exchange and remarking of a sample of assignments/exams with a external evaluator.

- v) Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.**
- Assessment and evaluation of the level of achieving the course outcomes through a continuous improvement process (part of a quality assurance system established by the university),
 - Consequently, actions are to be taken to improve the course delivery when necessary.
 - Review of the course objectives, outcomes and curriculum every 2 years.