

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
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CE 682 Risk Management in Construction Engineering

College: Engineering

Department: Civil

First: Course Definition

1- Course Code: CE 682

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 Concepts and current issues surrounding construction project, evaluation and financing.
2. Use of decision theory in evaluating project feasibility studies.
3. Learn about decision making under conditions of risk and uncertainty

1- Topics to be covered

Subject	No of Weeks	Units
Mapping risk management to construction engineering and construction processes.	1	3
Human elements	1	3
Proper planning prevents poor performance	1	3
Identification and qualitative assessment of risks	2	6
The qualitative assessment of risk	2	6
Responding to risk	1	3
Risk and the project structure: procurement and supply chains	2	6
The "management" in risk management	1	3

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Other risks related issues	1	3
Case Studies	2	6

2- Course components (Total hrs in a 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:

- The concept of risk management and benefits of a risk management course in construction engineering.
- The technical characteristics of risks and how those features can influence the ultimate risk management response to those risks.
- The concepts and principles of organizational risk and basic methods for organizing a comprehensive view of organization-wide risks.
- The risk management perspectives that exist at different levels within an organization (strategic, operational, tactical) and the implications that arise for effective risk communication.
- The issues, methods and challenges in risk data analysis that will help construction engineers to become competent consumers of risk information.
- The strategic planning, goal setting, and the actions necessary to lead construction companies risk management initiatives.
- The comprehensive range of risk management tools, techniques, systems and processes for managing construction companies risk including specifically risk financing, physical risk control, business continuity planning and project risk management.
- Different strategies for managing risk using options and futures, including an understanding of complexities and problems associated with the use of such strategies.

ii) Teaching strategies to be used to develop that knowledge

- Class lectures.
- Term projects.
- Student's presentations.
- Group discussion.

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iii) Methods of assessment of knowledge acquired
Exams.
- Quizzes.
- Homework assignments.
- Term projects.

b- Cognitive (Intellectual) Skills

i) Cognitive skills to be developed
- The ability to identify, prioritize, mitigate and document project's risks.
- The ability to monitor projects risks as part of project monitoring.
- The ability to build a risk breakdown structure appropriate to construction companies.
- The ability to design a risk management program suited to the specific need of construction companies.
- The ability to communicate risk management plan to other constituents of event.
- The ability to control costs by applying the earned value analysis and other progress metrics.
- The ability to prepare, analyze and update bar charts and critical path method schedules.
- The ability to use critical thinking/problem solving skills necessary to the implementation and ongoing maintenance of risk management program.

ii) Teaching strategies to be used to develop these cognitive skills
- Case studies analysis.
- Class lectures.
- Term projects.

iii) Methods of assessment of students' cognitive skills
- Students' seminars and presentations.
- Term projects.
- Written reports.

c. Interpersonal Skills and Responsibility

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

- Communication skills.
- Decision making based on engineering analysis.
- Team work.

ii) Teaching strategies to be used to develop these skills

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

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

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

d. Communication, Information Technology and Numerical Skills

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

- Literature research.
- Problems modeling.
- Utilization of computer applications in Risk Management in Construction Engineering

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.

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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.
- Providing the necessary computer applications for the course.

6- Learning Resources

i) Essential Books (References)

- Hull, J. & White, A.A. "Risk Management and Financial Engineering", Prentice Hall, 4th Edition, 2006. ISBN-10: 0130224448 , ISBN-13: 978-0130224446.
- Key, R."The Management of Engineering Risk", Caenz, 2000. ISBN: 9780908993253
- Karolak, D. W. "Software Engineering Risk Management: Finding Your Path through the Jungle", Version 1.0 for Windows.Wiley-IEEE Computer Society Press. 2006. ISBN: 978-0-8186-7970-4

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ii) Course Notes
- NA

iii) Recommended Books
- Crouhy, M., Galai, D. & Mark, R. "The Essentials of Risk Management", McGraw-Hill, 2005.
- Hubbard, D. "The Failure of Risk Management: Why It's Broken and How to Fix It". Wiley & Sons, 2009.
- Hull, J.C. (2005). "Options, Futures and other Derivatives", Prentice Hall. 6th Edition, 2005.
- Jorion, P. "Financial Risk Manager Handbook", Wiley & Sons, 6th Edition, 2010.
- Kolb, R. "Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives". Wiley & Sons, 2010.

iv) Electronic Books & Web Sites:
- Scientific journals and forums.
- Instructor's instruction.

v) Periodicals
- International Journal of Risk Assessment and Management
- Journal of Risk Management in Financial Institution
- Risk Management Association Journal

7- Course Evaluation and Improvement Processes

i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching
- Students' questioners.
- Students' evaluation of course and instructor.

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

iii) Processes for Improvement of Teaching

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- 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.