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

CE 680 System Engineering Management

College: Engineering

Department: Civil

First: Course Definition

1- Course Code: CE 680

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 systems engineering management.
2. Analyzing the management techniques within system engineering.
3. Develop the technical performance measurement and other case studies projects.

1- Topics to be covered

Subject	No of Weeks	Units
Introduction to System Engineering Management	1	3
The System Engineering Process	1	3
System Design Requirements	1	3
Engineering Design Methods and Tools	2	8
Design Review and Evaluation	3	9
System Engineering Program Planning	2	6
Organization for System Engineering	1	3
System Engineering Program Evaluation	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:

-Fundamental concepts of system engineering management.
-Designing and evaluating system engineering process.
-Planning system engineering program.
-Constructing process activities in requirement analysis, functional analysis and allocation and system analysis and control.
-Specifying functional and performance requirements
-Simulation, work breakdown structures, measures of effectiveness and earned value analysis.
-Specifying verification techniques in loops.

ii) Teaching strategies to be used to develop that knowledge

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

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 use the core principles and processes for designing effective systems in Engineering Management.
-The ability to determine the customer needs and distinguish between needs and solutions.
-The ability to construct system engineering requirements and perform a functional analysis

-The ability to translate customer requirements into design specifications,
-The ability to analyze the system requirements to make the system reliable, supportable, and maintainable throughout the system's life cycle.

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

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 System Engineering Management

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

- NA
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iii) Methods of assessment of student's psychomotor skills

- NA
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4- Student Assessment Schedule

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

-Blanchard, B.S. "System Engineering Management" . John Wiley & Sons, 4th Edition, 2008. ISBN-10: 0131869779 , ISBN-13: 978-0131869776

- Kossiakoff, A. "Systems Engineering Principles and Practices", John Wiley & Sons, 2nd Edition, 2011. ISBN-10: 0471234435 , ISBN-13: 978-0471234432.

ii) Course Notes

- NA
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iii) Recommended Books

- Buene, D. "The Engineering Design of Systems: Models and Methods". John Wiley & Sons, 2000
- Eisner, H. "Essential of Project and System Engineering Management". John Wiley & Sons, 3rd Edition, 2008
- Grady, J. . "System Requirement Analysis". Academic Press, 2006.
- Jamshidi, M. "System of Systems Engineering: Innovation for the 21st Century". John Wiley & Sons, 2008.
- Lamsweerde, A. V. "Requirements Engineering from System Goals to UML Models to Software Specifications" . John Wiley & Sons, 2009.

iv) Electronic Books & Web Sites:

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

v) Periodicals

- International Council on System Engineering (INCOSE) Journal
- Journal of Engineering and Technology Management
- Journal of Systems Science and Systems Engineering.

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

- 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.