DEPARTMENT OF INDUSTRIAL ENGINEERING
COURSE SYLLABUS

IE 201: Introduction to Engineering Design I

COURSE TITLE	ENGLISH CODE/NO	ARABIC CODE/NO.	CREDITS			
			Th.	Pr.	Tr.	Total
Introduction to Engineering Design I	IE 201	هـ ص ٢٠١	-	6	-	3
Pre-requisites:	ELI 104, COMM 101					
Course Role in Curriculum *(Required/Elective):*	Required					

Catalogue Description:
Introduction to active learning: team work, team dynamics, team norms and communication, conducting effective meetings and quality assessment. Problem solving procedure: problem definition, generation of solutions, selection methodology, solution implementation, assessment of implementation. Levels of learning and degrees of internalization. Ethical decision. Organization of the work and design notebook. Reverse engineering and design projects.

***Textbooks*:**
(Author, Title, Pub., year)

1. STRATEGIES FOR CREATIVE PROBLEM SOLVING, Fogler, H.S., LeBlanc, S., E.,, 2th Ed., 2007, Prentice Hall PTR ISBN 978-0130082794
2. INTRODUCTION TO ENGINEERING DESIGN, McNeill, B. W., Bellamy, L., Burrows, V. A.,2004, King Abdulaziz University Press

Supplemental Materials:

Course Learning Outcomes:

By the completion of the course the students should be able to:

1. Develop and exhibit the behaviors associated with taking personal responsibility for time management, classroom expectations, professional and ethical behaviors in the class, and academic integrity, etc.
2. Practice elements of active learning as well as apply active learning techniques such as Engineering Journal, Facilitator Signal, Process Check
3. Explain quality, costumer, expectations, and process as well as demonstrate the ability to meet customer expectations.
4. Develop team norms.
5. Use effective teams tools such as team agenda, minutes and team process check as well as team dynamics tools such as maintenance phase.
6. Use team discussion tools such as Boogle method, affinity process, deployment flowchart, multi-voting and prioritization techniques.
7. Explain problem solving strategies such as using heuristic, perceiving problems, potential problem, real problem, etc.
8. Explain problem definition techniques such as exploring the problem, present state/desired state, Dunker diagram, statement restatement, KT Problem Analysis and

apply them on semester design project.

9. Explain idea generation techniques such as Osborn's Checklist, random stimulation, fishbone diagram as well as apply them on semester project.
10. Explain situation analysis, problem analysis, decision analysis, potential problem analysis and apply these techniques on semester design project.
11. Explain planning components such as Gantt chart, deployment chart and critical path management and apply them on semester design project.
12. Explain ethical issues, safety considerations, and environmental, social and cultural impact and evaluate them on semester design project.
13. Demonstrate the fundamentals of organizing and presenting technical work using modern engineering tools in their written and oral presentation
14. describe their chosen field of engineering as well as identify other fields of engineering
15. Explain stages of level of learning (LOL) and degree of internalization (DOL) and apply them on example
16. use organization techniques such as book keeping (Design Notebook), using checklist, etc
17. search and collect information and rearrange it for a given topic

Topics to be Covered:		***Duration in Weeks***
1.	Learning Culture	2
2.	Quality	2
3.	Teaming	2
4.	Creative Problem Solving	4
5.	Engineering The Profession and Communication	2
6.	Autonomous Learner	2

Key Student Outcomes addressed by the course: (Put a ✓ sign)

(a)	an ability to apply knowledge of mathematics, science, and engineering	
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	✓
(d)	an ability to function on multidisciplinary teams	✓
(e)	an ability to identify, formulate, and solve engineering problems	✓
(f)	an understanding of professional and ethical responsibility	✓
(g)	an ability to communicate effectively	✓
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	✓
(i)	a recognition of the need for, and an ability to engage in life-long learning	✓
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	✓

Key Student Outcomes assessed in the course: (c), (f) and (k)

Instructor or course coordinator: Dr Ahmed Z. Salem (c), Mohammad Rehan Maqbool

Last updated: 02-02-2014