

مختصر توصيف المقرر

رقم المقرر ورمزه: ECE 203	اسم المقرر: Introduction to Engineering Design
لغة تدريس المقرر: English	المتطلب السابق: MATH 103T
الساعات المعتمدة: 2(0-2-1)	مستوى المقرر: Year 3-Level 6

Module Description

وصف المقرر:

This course is a sophomore level design course that introduces the basic elements of engineering design with emphasis on teamwork and communication skills. It exposes students to engineering profession, jobs and disciplines. Topics include problem-solving procedure: from problem definition, needs identification, literature review, concept generation, generation of alternatives, selection methodology to solution implementation, and assessment of implementation. Reverse engineering and engineering code of ethics with impact of engineering solutions on society is also discussed. This course gives practice in open-ended problems, critical and lateral thinking, planning and scheduling through design project plus organization of the work and design documentation. It enables students to consider safety, legal, environmental and human factors, and other societal constraints in execution of their design projects.

Module Aims

أهداف المقرر:

The course aims to introduce the engineering design process, the tools and the techniques used for product development or services applied to many engineering disciplines like industrial, mechanical, electrical and computer. This course provides opportunities for students to develop oral and written communication skills and work effectively in teams. It gives students opportunity to practice elements of active learning and demonstrate skills in the engineering design process in completing a design project.

مخرجات التعليم: (الفهم والمعرفة والمهارات الذهنية والعملية)

يفترض بالطالبة بعد دراستها لهذا المقرر أن تكون قادرة على:

Take personal responsibility for learning as of how to search and collect information and rearrange it for a given topic.	
Use skills in teamwork including team norms and use effective teams discussion tools such as team agenda, minutes and team process check	
Explain problem definition techniques and problem solving strategies	
Explain quality, customer expectations, and process	
Explain planning components such as Gantt chart, deployment chart and critical path	
Discuss ethical issues, safety considerations, and environmental, social and cultural impact pertaining to the project.	
Present technical work in an organized way using modern techniques such as book keeping (Design Notebook), using checklist, etc.	
Present professional behaviour in the areas of	

punctuality, time management, meeting deadlines, and professional appearance appropriate of engineering professionals	
Develop written and oral communication skills while networking with faculty and students.	

الكتاب المقرر والمراجع المساندة:

سنة النشر	اسم الناشر	اسم المؤلف	اسم الكتاب
2001	McGraw Hill	Arvid Eide , Roland Jenison Larry Northup , Lane Mashaw	Introduction To Engineering Design and Problem Solving
2007	Prentice Hall	Fogler, H.S., LeBlanc, S., E	Strategies for Creative Problem Solving
2013	Cengage	John R. Karsnitz, Stephen O'Brien , John P. Hutchinson	Engineering Design: An Introduction
2009	Great Lake Press	W.C. Oakes, L.L. Leone, and C.J. Gunn	Engineering Your Future: A Comprehensive Approach

Topics to be covered

الموضوعات التي سيتم تناولها:

List of topics	No. of Weeks
What engineering do? Engineering disciplines and their systems	1
Learning Culture	1
Introduction to Engineering Design Process and design team	2
Creative Problem Solving	2
Generation of alternative concepts, evaluation of alternatives and selection of a concept. Design defense and performance evaluation and design report	3
Engineering The Profession and Communication	2
Architecture and physical function decomposition; human factor, environment, and safety issues in design;	1
Autonomous Learner, time management and study skills	1
Engineering codes of ethics and impact of solution on society	1