

Sub.	Course Description – توصيف مقرر دراسي	الموضوع	 كليات المعرفة ALMAAREFA COLLEGES
Date		التاريخ	

Course Code & No	IE 300	صنع 300	رقم المقرر ورمزه
Course Name	Industrial Engineering Design	تصميم الهندسة الصناعية	اسم المقرر
Credit Hours	3 (2+1+2)	(2+1+2) 3	عدد الساعات المعتمدة
Pre-requisite	ENGR 202, MATH 251		المتطلب السابق

General Description	توصيف عام
<p>Introduction to engineering design, formulation of design problems, the design process, design phases, IE and the design process, Quality function deployment for specifying design requirements, design strategies, generating alternatives, probabilistic consideration in design, communication issues, design evaluation, selection and implementation. Discussion of case studies including operations systems, manufacturing, quality, ergonomics, layout and scheduling. Includes team project with an application in manufacturing or service industry.</p>	

Course Objectives	أهداف المقرر
<p>The course aims to provide the knowledge and skills to design and develop a product emphasizing on engineering design, team behavior and tools, gathering information, product architecture, industrial design, reverse engineering, function analysis, value engineering and analysis, patent and intellectual property, ethics and design communication.</p> <p>By the end of the course, each student should be able To</p> <ol style="list-style-type: none"> 1) Recognize the engineering design process principles and design team roles 2) Collect and analyse design information data 3) Define product structure and synthesis; design requirements and calculation; detail plans of product and its components 4) Recognize and analyse the product and components functions 5) Reconstruct design of product using reverse engineering and prototyping techniques 6) Use computer aided design(CAD) software to design product components <p>Understand the engineering ethical issues</p>	

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Course Outlines	مفردات المقرر
<ul style="list-style-type: none"> • Introduction to engineering design: formulation of design problems, the design process, design phases, IE and the design process • Team Behaviors and Tools: Team Roles, Team Dynamics, Team Meetings, Problems with Teams. • Gathering Information: Information Problem, Copyright, Sources of Information, Codes and Standards • Product Architecture: Types of Modularity, Implications of Architecture, Platform Planning. • Industrial Design (ID): Assessing Need for ID, Impact of ID, ID Process, Assessing Quality of ID. • Reverse Engineering (RE): Concepts of RE, RE Tools, RE Process • Function Analysis: Function Decomposition • Value Engineering: cost of function, Function analysis systematic technique (FAST) • Patents and Intellectual Property (IP): IP Concepts, Strategy and Plan, Outline Claims. • Ethics and Design Communication: Contracts, Liability, Codes of Ethics, Nature of Communication, Writing Technical Report 	

References	المراجع
<p>Required Textbooks</p> <ol style="list-style-type: none"> 1. Product design and development; Ulrich, K.T., Eppinger, S.D., McGraw-Hill, ISBN-13: 978-0073101422 (Latest edition) 2. Engineering Design; Dieter G., Schmidt L., McGraw-Hill, ISBN-13: 978-0073398143. (Latest edition) <p>Essential References Materials</p> <ol style="list-style-type: none"> 1- Product design “techniques in reverse engineering and new product development”; Otto, K. and Wood, K.; Prentice Hall, 2001, ISBN0-13-021271-7 2- Product design methods and practices; Stoll, Henri W.; Marcel Dekker, Inc. USA. (1999) ISBN-08247-7565-1 3- Product design and manufacture; Lindbeck John R. , Wygan Robert M. t Prentice Hall, 1995, ISBN0130342572, 9780130342577 4- Engineering design methods: strategies for product design; Nigel Cross; John Wiley & Sons, 2008, ISBN 0470519266, 9780470519264 	