

IE 360: CAD/CAM 3 (2, 1, 2)

Catalog Data	Introduction to CAD/CAM Systems, Components of CAD/CAM Systems, Geometric Modeling Systems, Geometric Transformations, Representation and Manipulation of Curves, Geometric Projections, Data Exchange between CAD/CAM Systems, Finite Element Modeling and Analysis, Introduction to Numerical Control (NC), Manual Part Programming, Computer-Assisted Part Programming, and Group Technology	
Prerequisite	Prerequisite: IE 352	
Co requisite		
Level	8	
Textbook	Principles of CAD/CAM/CAE Systems by Kunwoo Lee, Addison Wesley, 1997	
Reference	CAD/CAM by Ibrahim Zeid, McGraw-Hill, 2005, Introduction to CNC by Valentino and Goldenberg, Prentice Hall, 2003.	
Learning Objectives	To introduce the students not only to the science of CAD/CAM but also provide skills and knowledge about the use of the CATIA CAD/CAM software.	
Topics (classes)	CAD Part: 1. Introduction to CAD/CAM Systems 2 classes 2. Components of CAD/CAM Systems 2 classes 3. Geometric Modeling Systems 2 classes 4. Geometric Transformations 2 classes 5. Representation and Manipulation of Curves 2 classes 6. Geometric Projections 2 classes 7. Data Exchange between CAD/CAM Systems 2 classes 8. Finite Element Modeling and Analysis 2 classes CAM Part: 1. Introduction to Numerical Control (NC) 2 classes 2. Manual Part Programming (three lectures) 2 classes 3. Computer-Assisted Part Programming 6 classes 4. Group Technology 2 classes	
Laboratory Topics	Use of the CATIA CAD/CAM software	
Project work	Design a product and write a machining program using CATIA software before actually producing the part on CNC machine.	
Computer Usage	CATIA	
Learning outcomes	1. To enable the students to understand the science behind the CAD/CAM [a, d, e, f, g]. 2. To provide the students a practical knowledge and skill of using the CATIA CAD/CAM software [f, h, I, j]. 3. To enable the students to integrate the isolated components of automation [I, j, k].	
Estimated	Engineering Science: 1.5 credit hours	
Category Content	Engineering Design: 1.5 credit hour	
Prepared by	Dr Ashraf Afifi	
Preparation Date	May 2012	