

Course unit title:	Computer Aided Design Methodology		
Course unit code:	ME203		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st Cycle)		
Year of study:	2		
Semester when the unit is delivered:	3 (Fall)		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Dr. Antonios Lontos, Unit leader: Dr. Sotiris Omirou		
Learning outcomes of the course unit:	<ul style="list-style-type: none"> • Apply the advantages of advanced CAD software and the basic principles. • Use drawing commands and designing principles of advanced CAD software. • Design and modify 2D and 3D mechanical parts. • Analyse construction drawings by creating various views. Design mechanical parts that will assemble together. • Explain the creation of assembled mechanical parts especially for car components • Create solid models of car component, Create assemblies of car components. • Use software and web libraries of an advanced CAD software. 		
Mode of delivery:	Face-to-face		
Prerequisites:	ME113	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	<ul style="list-style-type: none"> • SolidWorks basics: Design Intent, File References, Opening Files, The SolidWorks User Interface • Sketching and drawings creation: 2D Sketching, Stages in the Process, Saving Files, Sketching, Sketch Entities, Basic Sketching, Rules That Govern Sketches, Design Intent, Sketch Relations, Dimensions, Extrude, Sketching Guidelines • Part modeling: Basic Modeling, Choosing the Best Profile, Choosing the Sketch Plane, Details of the Part, View Options, Filletting, Editing Tools, Detailing Basics, Drawing Views, Dimensioning, Changing Parameters, Revolved Features, Edit Material, Mass Properties, Part Editing • 3D solid modelling: Camshaft, Crankshaft, Piston, Cylinders, Valves, Gearbox assembly, Independent Front Suspension assembly, Roller chain timing drive assembly, Brake system assembly • Creation of assemblies: Creating and editing of assemblies, Analyzing the Assembly, Checking for Clearances, Changing the Values of Dimensions, Exploded Assemblies, Explode Line Sketch, Assembly Drawings, Drawing and construction of assembled mechanical parts (car components) • Engineering model libraries: Localization of automotive engineering model libraries on the World Wide Web • Laboratory work: Use of CAD software at computer laboratory. 		
Recommended and/or required reading:	None		
Textbooks:	Solidworks book and manual Engineering Drawing and Design, Jay D. Hesel, Dennis R. Short, Cecil Howard		

	Jensen, Glencoe McGraw Hill, 6th Bk&cdr, 2002.
References:	<p>Graphics Concepts with SolidWorks, Richard M. Lueptow, Michael Minbiole Prentice Hall, 2004</p> <p>Engineering Drawing and Design, Jay D. Helsel, Dennis R. Short, Cecil Howard Jensen, Glencoe McGraw Hill, 6th Bk&cdr, 2002.</p> <p>Design Dimensioning and Tolerancing, Bruce A. Wilson, Goodheart-Willox, 2001</p> <p>Engineering Drawing & Design by David A. Madsen (Editor), Delmar Learning, 3rd edition, 2001.</p> <p>Principles of Computer Aided Design and Manufacturing, Farid M. Amirouche, Prentice Hall, 2004</p> <p>Engineering Design Graphics, James H. Earle, Prentice Hall, 2004</p> <p>Engineering Graphics, Frederick E. Giesecke, Alva Mitchell, Prentice Hall, 2004</p>
Planned learning activities and teaching methods:	<p>This subject is based mostly on practical sessions and lectures.</p> <p>Student evaluation is based on assignments, mini practical projects, labour projects, tests and final exam. Illustration of the CAD techniques is based on commercial software.</p> <p>A description is given at the beginning of the course in order for the students to get enough information on the main subjects of the course.</p>
Assessment methods and criteria:	<p>Tests: 40%</p> <p>Final Exam: 60%</p>
Language of instruction:	English
Work placement(s):	No