

Course unit title:	Mechanical Engineering Drawing (Computer Aided Drafting)		
Course unit code:	ME 113		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st Cycle)		
Year of study:	1		
Semester when the unit is delivered:	1 (Fall)		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Dr. Sotiris Omirou		
Learning outcomes of the course unit:	<ul style="list-style-type: none"> • Explain the importance of engineering drawing as a communication tool between engineers. • Recognize the sketching elevations and plans in first and third angle orthographic projection. • Identify the role of each line type (visible, hidden, center axis, dimension, section) in engineering drawings. • Apply the rules for dimensions, tolerances, and surface roughness on engineering drawings. • Use Autocad toolbars, menus, control windows and generally manipulate the environment of the Autocad software in the most effective way. Create, save and open CAD files of different format. • Create simple mechanical drawings using CAD software. Create points, lines and curves. • Use and apply various types of dimensioning according to engineering rules and mechanical principles. Learn all about plotting with autocad and other advanced utilities. • Design real mechanical drawings and assemblies in 2D and 3D dimension applying all mechanical drawing rules. • Implement new techniques and methods for designing complicated mechanical drawings, faster and easier. 		
Mode of delivery:	Face-to-face		
Prerequisites:	None	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	<ul style="list-style-type: none"> • Linework: Visible, Hidden, Center axis, dimension and section lines. • Orthographic and Isometric projections: Drawing of views in orthographic projection using first and third angle projections, as well as isometric drawings. • Dimensioning Principles: Appropriate dimensions in engineering drawings. • Sections and Sectional Views: Include appropriate sectional views in engineering drawings. • Geometrical Tolerances in engineering drawings. • Drawing of machine components, such as screws, bolts, nuts springs, gears, cams, bearings etc. • Introduction to Computer Aided Design (CAD): learning the basic steps in a CAD environment. • CAD Files: IGES, STEP, DXF formats 		

	<ul style="list-style-type: none"> • Designing principles and engineering rules: Mechanical drawings, Geometry and Line generation, Planes and coordinates, Points and lines, Line segments, Curves • AutoCAD usage: The AutoCAD Screen, File Creation, Attaching Menus, Design File Concepts, Activating Drawing Commands, The Main Palette, Window Controls, Symbology and Toolbars. • Dimensioning: Placement of dimensions, Miscellaneous dimensioning, Linear dimensioning, Angular Dimensioning, Radial dimensioning. • Mechanical parts creation - 2D: Creation and designing of mechanical part and elements in 2D dimension • Mechanical parts creation - 3D: Definition of 3D Surfaces using the CAD systems, Construction of mechanical parts in 3D dimension, Sections and views • Assembly drawings: Drawing and construction of assembled mechanical parts, Searching for new techniques and methods for the designing of complicated mechanical parts • Plotting: Plotting and other AutoCAD manager utilities • Laboratory work: Use of CAD software at computer laboratory.
Recommended and/or required reading:	
Textbooks:	<ul style="list-style-type: none"> • Engineering Drawing, P.S. Gill, Katson books, 13th edition, 2016. • Engineering Drawing and Graphics Using Autocad, T Jeyapoovan, 3/e 2016.
References:	<ul style="list-style-type: none"> • Graphics Concepts with SolidWorks, Richard M. Lueptow, Michael Minbirole Prentice Hall, 2004 • Engineering Drawing and Design, Jay D. Helsel, Dennis R. Short, Cecil Howard Jensen, Glencoe McGraw Hill, 6th Bk&cdr, 2002. • Design Dimensioning and Tolerancing, Bruce A. Wilson, Goodheart-Willox, 2001 • Engineering Drawing & Design by David A. Madsen (Editor), Delmar Learning, 3rd edition, 2001. • Principles of Computer Aided Design and Manufacturing, Farid M. Amirouche, Prentice Hall, 2004 • Engineering Design Graphics, James H. Earle, Prentice Hall, 2004 • Engineering Graphics, Frederick E. Giesecke, Alva Mitchell, Prentice Hall, 2004
Planned learning activities and teaching methods:	<p>This subject is based mostly on practical sessions and lectures. Student evaluation is based on assignments, mini practical projects, labour projects, tests and final exam. Illustration of the CAD techniques is based on the AutoCAD software. 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:	<ul style="list-style-type: none"> • Tests: 40% • Final Exam 60%
Language of instruction:	English
Work placement(s):	No