

COURSE DESCRIPTION

Course Title	Mechanical Engineering Drawing (Computer Aided Drafting)				
Course Code	ME 113				
Course Type	Compulsory				
Level	BSc (Level 1)				
Year / Semester	1 st / Fall				
Teacher's Name	Dr. Sotiris Omirou				
ECTS	5	Lectures / week	3	Laboratories/week	-
Course Purpose	The course purpose is to teach students to use modern CAD software to produce two- and three-dimensional drawings for manufacturing applications.				
Learning Outcomes	<ol style="list-style-type: none"> 1. Explain the importance of engineering drawing as a communication tool between engineers. 2. Read mechanical engineering drawings in 2D and 3D space. 3. Recognize the sketching elevations and plans in first and third angle orthographic projection. 4. Identify the role of each line type (visible, hidden, center axis, dimension, section) in engineering drawings. 5. Apply various types of dimensioning according to engineering rules and mechanical principles. 6. Execute CAD commands for drawing entities, editing, viewing and plotting. 7. Create drawings of machine elements such as screws, bolts, nuts springs, gears, etc. 8. Prepare in CAD environment real mechanical drawings and assemblies in 2D and 3D space applying all mechanical drawing rules. 9. Gain a design experience using modern software tools and techniques 				
Prerequisites	None		Corequisites	None	
Course Content	<ul style="list-style-type: none"> • Linework: Visible, Hidden, Center axis, dimension and section lines. • Orthographic projections: Drawing of views in orthographic projection using first and third angle projections. • Dimensioning Principles: Appropriate dimensions in engineering drawings. • Sections and Sectional Views: Include appropriate sectional views in 				

	<p>engineering drawings.</p> <ul style="list-style-type: none"> • 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 • 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, • Plotting: Plotting and other AutoCAD manager utilities • Laboratory work: Use of CAD software at computer laboratory.
Teaching Methodology	<p>The course material is delivered to the students by means of lectures and practical sessions in Computer Labs equipped with the Autocad software. Lectures are conducted with the help of computer presentations. Lecture notes and presentations are available through the web for students to use in combination with the textbooks.</p>
Bibliography	<p>a) Textbooks:</p> <ul style="list-style-type: none"> • Technical drawing with engineering graphics, by Giesecke, Frederick; Mitchell, A, Pearson, 2012. • Mastering AutoCAD 2019 and AutoCAD LT 2019, by George OmuraBrian C. Benton, Wiley online library, 2018 <p>b) References:</p> <ul style="list-style-type: none"> • A First Course in Engineering Drawing, by K. Rathnam, Springer ebook, 2018 • Engineering Drawing and Graphics Using Autocad, T Jeyapoovan, 3/e 2016.

Assessment	Coursework 40% Test 1 (2D drawing): 50% Test 2 (3D Drawing): 50%	Final Exam 60% (4 exercises in CLAB) <ul style="list-style-type: none"> - Drawing of views - Section views - Advanced Autocad capabilities - 3D prestation of a mechanical part
Language	English	