Engineering Program

Specialization Production and Computer Aided Manufacturing Technology
Course Number ٠٢٠٢٠٠١١٢
Course Title Mechanical Drawing
Credit Hours (2)
Theoretical Hours (0)
Practical Hours (6)

Brief Course Description:

Auxiliary views, Dimensioning, Tolerances, limits and fits (ISO system), Details and working drawings, Reading of mechanical engineering drawings, Assembly drawings, Graphics display hardware, Graphics software, Applications for CAD modeling and Solid works modeling, Features for CAD/CAM integration, Introducing 3D modeling, 3D models in viewports, The modification of 3D models, Rendering, 3D space, Editing 3D solid models, Other features of 3D modeling, Assembly and detail drawings for technical arrangements.

Course Objectives:

At the end of this course student will be able to:

1. Create technical drawings for elements and technical arrangements.
2. Represent the dimensions and data on technical drawings.
3. Create assembly drawings for technical arrangements.
4. Construct 3D models for specific parts.

Detailed Course Description:

Number	Title	Content	Time
1	Introducing 3D modeling	Precision and tolerances	
		The 3D Modeling workspace	
		Methods of calling tools for 3D modeling	
		The Polysolid tool	
		2D outlines suitable for 3D models	
		The Extrude tool	
		The Revolve tool	
		Other tools from the 3D Make control panel	
		The Chamfer and Fillet tools	
		Constructing 3D surfaces using the Extrude tool	
		The Sweep tool	
		The Loft tool	
		Revision notes	
2	3D models in Viewports	Setting up viewport systems	
		Revision notes	
3	The modification of 3D models	Creating 3D model libraries	
		Constructing a 3D model	
		The 3D Array tool	
		The Mirror 3D tool	
		The Rotate 3D tool	
		The Slice tool	
		The Section tool	
		Views of 3D models	
		The Helix tool	
		Using DYN	
		3D Surfaces	
		Revision notes	
4	Rendering	Setting up a new 3D template	
		The Render tools and dialogs	
		The Lights tools	
		Setting rendering background color	
		Practicing rendering a 3D model	
		Adding a material to a model	

		The 3D Orbit tool	
		Producing hardcopy	
		Saving and opening 3D model drawings	
5	3D space	3D space	
		The User Coordinate System (UCS)	
		The variable UCSFOLLOW	
		The UCS icon	
		Examples of changing planes using the UCS	
		Saving UCS views	
		Constructing 2D objects in 3D space	
		The Surfaces tools	
		Surface meshes	
		The Edge surf tool	
		The Rule surf tool	
		The Tab surf tool	
		Revision notes	
6	Editing 3D solid models	The Solid Editing tools	
7	Other features of 3D modeling	Raster images in AutoCAD drawings	
		Printing/Plotting	
		Polygonal viewports	

Evaluation Strategies:

Evaluation		**Percentage**	**Date**
Exams	Midterm	20%	
	Final Exam	50%	
Projects and Laboratory Assignments		30%	

Teaching Methodology:

- Lectures and practicing on PCs

Text Books & References:

- Murthy, "Computer Aided Mechanical Drawing", 2nd Ed., 2008
- Yarwood, Introduction to AutoCAD 2D and 3D
- محمد القاضي و زينب الدوس، "الرسم باستخدام الحاسوب"