Computer Aided Design

Module Information

2022.01, Approved

Summary Information

Module Code	4261PDE
Formal Module Title	Computer Aided Design
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Workshop	22

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	This module introduces the subject of 3D Computer Aided Design, with a focus on solid modelling of parts and assemblies in order to produce engineering drawings.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Understand 2D engineering drawings in the creation of 3D parts and assemblies
MLO2	2	Apply solid modelling techniques to create 3D parts
MLO3	3	Apply solid modelling techniques to create 3D assemblies

Module Content

Outline Syllabus	File ManagementHow to store, retrieve and use files correctly. Parts classification and coding systems.3D modelling3D techniques e.g. addition and subtraction of material, 3D coordinate entry (x, y, z), wire frame modelling, 2D to 3D (thickness, extrusion); solid models.PreparationDesign intent, location of origin, selection of planes and units.TerminologyBasic geometry, axis, planes, origin, face, edge, vertex geometric relationships, horizontal, vertical, intersection, parallel, collinear, perpendicular, coincident, document properties and system options.User interfaceOpening and saving files, toolbars, menus' feature manager, property manager, configuration manager toolbox, standard component libraries, help and tutorials.NavigationView control, view display, display modes, standard views.SketchingSketching environment, sketching tools, dimensioning sketches, editing sketches, applying relations in sketches, understand concept of fully defined sketch.Solid extrusionsCreating solid and thin base features, adding bosses and cutting features.FeaturesCreating chamfers, fillets, shelling, ribs, draft angles, use of hole wizard.Common operationsConverting entities, mirroring, linear and circular patterns, revolved extrusions/cuts, sweeps, lofting, adding and editing relations, creating additional planes.AssembliesCreating bottom up assemblies; inserting and manipulating components, degrees of freedom, adding mate relations, create sub-assemblies, editing assembly mates, editing assembly models, mirrored and patterned components.Interpretation of engineering drawingsProjections: Orthographic, first-angle / third angle projection. Multi-view drawings:Selection / number of views, auxiliary views, detail views and cross-sections. Types of line: visible, hidden, centre, cutting planes, section and hatching. Dimensioning: Parallel, running, chain, combined, co-ordinates, tabular, holes, circles and radii. Hole and shaft based tolerancing; Bilateral and unilateral tolerancing; surface finish.
Module Overview	**Aims** **This module introduces the subject of 3D Computer Aided Design, with a focus on solid modelling of parts and assemblies in order to produce engineering drawings.** **Learning Outcomes** **After completing the module the student should be able to:** **1 Understand 2D engineering drawings in the creation of 3D parts and assemblies.** **2 Apply solid modelling techniques to create 3D parts.** **3 Apply solid modelling techniques to create 3D assemblies.**
Additional Information	UN Sustainable Development GoalsThis module includes content that relates to the following UN Sustainable Development Goals:SDG09 – this module investigates advanced design processes used to deliver products to market at a faster rate, boosting industrial productivity in a sustainable manner.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Test	Timed computer assessment	100	0	MLO1, MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Adam Papworth	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings