Computer Aided Design

Module Information

2022.01, Approved

Summary Information

Module Code	4506NCCG
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
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Nelson and Colne College Group

Learning Methods

Learning Method Type	Hours
Lecture	60

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
APR-PAR	PAR	April	12 Weeks
JAN-PAR	PAR	January	12 Weeks
SEP-PAR	PAR	September	12 Weeks

SEP_NS-PAR	PAR	September (Non-standard start date)	12 Weeks

Aims and Outcomes

Aims	The aim of this module is to provide skills in the use of computer-aided design and 3D modelling systems to solve design problems.Product designers communicate their designs through CAD software packages. It is used at all stages of the design task, from conceptualisation to production of working drawings. It provides the basis for manufacturing products. Engineers must master computer-aided design techniques in order to ensure design intent is accurately taken through to manufacture and service. In this module students will practice the techniques involved in producing advanced 3D models.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Demonstrate basic CAD skills by undertaking 3D modelling tasks using appropriate software
MLO2	2	Evidence an ability to use the various tools and options available in the software to modify and manipulate existing drawings
MLO3	3	Perform computer-aided design drawing tasks in response to technical design problems
MLO4	4	Design, develop, optimise and predict the properties and performance a simple structural component

Module Content

Outline Syllabus	Drawing files: load and create and edit a drawing file from sourceRecord modifications: update the drawing and record modifications; produce updated documentation using a word-processing package with inserted views relating to modifications Produce hard copy: produce hard copy of updated drawing using scaled plots, scaled views, different printer/plotters and reconfiguring CAD software to suit Coordinate systems: manipulate co-ordinate systems to suit required geometry Correct geometry: using polylines to construct shapes for surfacing and constructing splines; using polyedit to restructure line/arcs into continuous geometry Surface construction: generate the bounded geometry required for any surface; use generated geometry to create surfaces; use of all methods of surface Facet numbers: numbers required to smooth surface; memory problems using high numbers of facets Viewing medium: use of Hide, Shade and Render to visualise the product; print or plot finish drawing; the use of different textures; lighting controlsCoordinate systems: manipulate UCS and WCS to suit required geometry Solid model: using polylines to construct shapes for extruding, using polyedit to restructure line/arcs into continuous geometry; use of Hide, Shade and Render to visualise the product; applying various materials to generated slides; cutting the solids and sectioning; different lighting; textures Construction techniques: the effects of subtract, union, intersect extrude, sweep and revolve in model construction; editing the geometry using fillet, chamfer etc; using primitives to create geometry Properties of solids: using solid model to find the mass, radius of gyration, centre of gravity and surface area Printing image: generating image Dimension a solid: dimensions are correctly added to a solid composite drawing in multiscreen mode; dimensions are correctly added to true shapes previously extracted from solid composite
Module Overview	
Additional Information	

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Assignment	100	0	MLO3, MLO4
Competency	NCC Group Pass/Fail			MLO1, MLO2

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Christian Matthews	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings