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COURSE BROCHURE

3D CAD Modelling and Visualisation Training Course

6 – 10 June 2027
Muscat

3D CAD Modelling and Visualisation Training Course

Ref: 525_19479 **Date:** 6 – 10 June 2027 **Location:** Muscat **Fees:** 6500 GBP

3D CAD Modelling and Visualisation is a 1-week training course for design engineers, architectural technicians and draughtspersons moving from 2D drafting, and it ends with a presentation model package holding rendered views and derived 2D drawings. Clients now expect to see a design in three dimensions before committing, and fabricators increasingly cut from model geometry. Jupiter Prime Training presents 3D CAD Modelling and Visualisation as a bridge from flat sheets to buildable form.

Why 3D CAD Modelling and Visualisation Matters Now

Two groups drive the shift to 3D today: clients and planning panels who judge massing, finishes and daylight from rendered images, and manufacturers who take geometry straight into cutting, printing and moulding. A design office fluent in solid and surface modelling settles form, fit and appearance before tooling or site work begins; one that stays in 2D finds interferences late. The course rests on established methods — constructive solid geometry, boundary representation and polygon meshes, applied from coordinate set-up to final render.

Who Gains Most from 3D CAD Modelling and Visualisation

- Drafters converting existing plans and elevations into solid models
- Design engineers testing form, fit and clearances of assemblies
- Architectural technicians preparing massing studies and client views
- Product and equipment designers who send geometry to fabrication, moulding or 3D printing

A design studio or engineering section moving its drawing office from 2D to 3D gains most when drafters and design engineers attend together.

3D CAD Modelling and Visualisation Capabilities

Participants learn to think in volumes that can be sectioned, measured and rendered.

- Build solid primitives, extrusions, revolves, sweeps and lofts from 2D profiles — part and building form
- Apply user coordinate systems and Boolean union, subtract and intersect operations — accurate assembly geometry
- Design surface and mesh models for curved and freeform shapes — architectural and product styling
- Specify sections, elevations and projected views extracted from the model — fabrication and approval drawings
- Calculate mass properties and check interferences between bodies — design verification
- Communicate design intent through materials, lighting, cameras and rendered images — clients and approval panels

Key 3D CAD Modelling and Visualisation Terms

- Solid Model — a closed volume with mass properties that can be cut, joined and measured like a physical object.
- Surface Model — a zero-thickness skin describing complex curved shapes, later thickened or stitched into a solid when needed.
- Mesh Model — geometry made of faceted polygons, suited to freeform shapes, terrain and files exchanged for rendering or printing.
- User Coordinate System UCS — a movable working plane and origin that lets geometry be drawn on any face or angle.
- Boolean Operation — a union, subtraction or intersection that combines two solids into a single new body.
- Rendering — the computation of a realistic image from model geometry, materials, light sources and a camera position.

3D CAD Modelling and Visualisation Day by Day

Day 1: Moving From Plans to Volumes

- 3D Workspace and Visual Styles — Choosing How Models Are Viewed
- Viewpoints, Orbit and Named Views — Navigating Geometry Without Losing Orientation
- User Coordinate Systems — Placing Work Planes on Any Face
- Solid Primitives — Blocking Out Massing for Early Design Choices
- Extrude and Push-Pull From 2D Profiles — Reusing Existing Drawings

Day 2: Solid Modelling and Editing

- Revolve, Sweep and Loft — Forming Shafts, Ducts and Shaped Elements
- Boolean Union, Subtract and Intersect — Combining Bodies Into Parts
- Solid Editing of Faces, Edges and Shells — Refining Wall Thickness and Openings
- Fillets and Chamfers on Solids — Detailing Edges for Manufacture
- Mass Properties and Interference Checks — Verifying Weight and Clearances

Day 3: Surfaces and Meshes

- Network and Blend Surfaces — Shaping Roofs, Canopies and Product Shells
- Surface Trimming and Thickening — Converting Skins Into Usable Solids
- Mesh Primitives and Smoothing — Modelling Freeform and Organic Forms
- Mesh Conversion Rules — Deciding When to Facet or Keep Solids
- Model Exchange Formats — Preparing Geometry for Printing and Rendering

Day 4: Drawings, Materials and Rendering

- Section Planes and Live Sections — Exposing Internal Construction
- Projected Views From the Model — Generating Plans, Elevations and Details
- Material Libraries and Mapping — Representing Finishes Convincingly
- Lights, Sun Studies and Cameras — Setting Mood and Daylight Conditions
- Render Presets and Output Resolution — Balancing Image Quality Against Time

Day 5: Practising the Presentation Model Package

- Brief Analysis and Massing Model — Applying Solid Primitives to a Live Brief
- Detailed Body Construction — Applying Boolean and Surface Methods to the Design
- Derived Drawing Sheets — Applying Section Planes and Projected Views
- Rendered View Set — Applying Materials, Lights and Cameras to Key Angles
- Presentation Model Package — Completing the Model, Renders and Drawings

Applying 3D CAD Modelling and Visualisation After the Course

- Convert one current 2D drawing set into a solid model, then extract sections and elevations to check that the model and sheets agree
- Produce a rendered view set for an upcoming client or design meeting, using a shared material library and saved camera positions

3D CAD Modelling and Visualisation Questions FAQ

What is 3D CAD Modelling and Visualisation and why does it matter now?

3D CAD Modelling and Visualisation is building solid, surface and mesh geometry on computer and presenting it as drawings and rendered images. It matters now because clients judge designs visually and manufacturers cut directly from model geometry.

Which roles gain most from 3D CAD Modelling and Visualisation training?

Drafters, design engineers, architectural technicians and product designers gain most. Their geometry is checked for fit, shown to clients and sent to fabrication.

How does 3D CAD Modelling and Visualisation differ from a BIM course?

It concentrates on geometry, form and presentation rather than building information and coordination. This course builds and renders the shapes themselves, for buildings and products alike.

What do you bring back from 3D CAD Modelling and Visualisation?

You bring back a model package built on a live brief: solid and surface geometry, derived section and elevation sheets, and a set of rendered views ready for the next design meeting.

3D CAD Modelling and Visualisation: The Way Forward

The presentation model package first informs the choice of design option at the next client or approval meeting. Engineers test clearances with it and clients respond to its renders, while technicians issue sheets from its sections. After its first use, revisit how much model detail each design stage really needs.