

Level 3 Award in 3D Computer Aided Design

This training course Allows the learner to develop the ability to apply the drafting procedures required to create and modify existing 3D objects either surfaces or solids at any position within Three Dimensional Space.

For details of the training units for this course, please see overleaf.



It is recommended that **90** hours should be allocated for this course. This may be on a full-time or part-time basis.

To register your interest, or find out more, call freephone **0808 2000 129** or email your contact details to enquiries@cadcentreuk.com

There are nine learning outcomes from this training course.

1. Apply appropriate commands to set the 3D modelling environment

The learner will be able to:

1. Set appropriate drawing aids and drawing parameters
2. Set appropriate system variables for the CAD system to control the appearance of the 3D objects
3. Set appropriate multiple view windows to aid the construction of 3D models
4. Set-up a drawing space in order to layout a drawing ready for printing
5. Create and use a template(s) for the 3D environment

2. Create and use working planes at any required position/attitude within 3D Space

The learner will be able to:

1. Restore and use the default co-ordinate system
2. Create and apply User Co-ordinate Systems for the construction of 3D models
3. Save and restore User Co-ordinate Systems that have been assigned meaningful names
4. Change the position and appearance of the User Co ordinate System icon or indicator

3. Define and use co-ordinate points at any position within 3D Space

The learner will be able to:

1. Apply the use of 3D points that are entered in absolute, relative and polar co-ordinates in relation to the current user co-ordinate system
2. Apply the use of 3D points that are entered in default absolute co-ordinates whilst in a user coordinate system
3. Apply the use of appropriate filtering techniques to create another point / object from an existing point / object in 3D space

4. Apply appropriate commands to construct the whole or part of a 3D model using the best available method - surface or solid modelling

The learner will be able to:

1. Apply the use of the CAD software to construct and display; a wire frame model, a surface model and /or a solid model
2. Create 2D objects, closed outline shapes and regions whilst using a variety of user co-ordinate systems
3. Create a variety of 3D primitives; either directly or by other methods
4. Extrude a closed outline shape or region to create a new 3D object
5. Revolve an open object, closed outline shape or region about an axis to create a new 3D object
6. Construct a 2D multi segment line as a single entity
7. Extrude an existing 2D object along a 2D path to create a new 3D object
8. Create surface meshes using a variety of methods
9. Dimension a 3D model in at least two planes

5. Apply appropriate commands to modify 3D solid object

The learner will be able to:

1. Perform Boolean operations on 3D solid objects
2. Cut a 3D solid object into two parts or use a command to cut away part of a 3D solid object
3. Construct fillets and chamfers on selected edges of 3D solid objects
4. Modify faces of 3D solid objects using various 3D editing commands
5. Modify the shape of a 3D solid object using imprint and shell
6. Modify individual face and edge colour of a 3D solid object

6. Apply appropriate commands to perform 3D operations on existing objects

The learner will be able to:

1. Create and use a 3D library item
2. Create multiple copies of objects in 3D space
3. Create mirror image of entities or objects in 3D space
4. Apply the use of appropriate commands to rotate objects in 3D space

7. Apply appropriate commands to manipulate a 3D model

The learner will be able to:

1. Produce cut-away views of 3D models
2. Produce cross sectional views of 3D models
3. Obtain mass properties of a 3D solid model
4. Apply the use of a command to send mass property analysis data to an external destination

8. Apply appropriate commands to view 3D model in a variety of display formats

The learner will be able to:

1. View 3D models from various points in 3D space
2. View 3D models in a variety of display modes e.g. hidden, shaded
3. Save and recall views of the 3D model for use within the drawing at a later date
4. Manipulate and save multiple view window layouts to aid in the display of the 3D model

9. Print/plot/export 3D models

The learner will be able to:

1. Produce hardcopy of a 3D model in a variety of display formats
2. Produce hardcopy of a final presentational drawing displaying multiple views, some views to use the hidden line removal feature
3. Plot to devices other than the hardware printer/plotter
4. Export the CAD file in various formats