ICDL
The Digital Skills Standard

# ICDL Professional

# 3D DESIGN

Syllabus 1.0

## Syllabus Document

## Purpose

This document details the syllabus for the ICDL 3D Design module. The syllabus describes, through learning outcomes, the knowledge and skills that a candidate for ICDL 3D Design module should possess. The syllabus also provides the basis for the theory and practice-based test in this module.

# ICDL 3D DESIGN

This module sets out essential concepts and skills relating to demonstrating competence in using 3D Design software.

## Module Goals

Successful candidates will be able to:

- Use the 3D design application to create, import and export 3D models.
- Use model view tools like pan, zoom, rotate, and save and recall model views.
- Create, modify, save, and load coordinate systems.
- Carry out the geometric drawing of points, lines, arcs, splines, circles, polygons and use surface modelling for the extrusion of surfaces and the creation of surface revolutions, planes, and edge surfaces.
- Manipulate object/graphic elements and create and modify solids and parametric objects.
- Use orthogonal, axonometric and perspective views.
- Create photorealistic presentations by rendering a model or scene and by creating lights, materials, and background scenes.

| CATEGORY | SKILL SET | REF. | TASK ITEM |
|---|---|---|---|
| **1 Basic Functions** | *1.1 File Management* | 1.1.1 | Create a new model using an existing specified template. |
| | | 1.1.2 | Open a 3D model. |
| | | 1.1.3 | Import a 3D model. |
| | | 1.1.4 | Save a 3D model to a location on a drive. |
| | | 1.1.5 | Export a 3D model. |
| | *1.2 Model View* | 1.2.1 | Use pan, zoom and rotate tools. |
| | | 1.2.2 | Save a model view. |
| | | 1.2.3 | Recall a model view. |
| **2 Main Operations** | *2.1 3D Coordinates systems* | 2.1.1 | Create and modify coordinate systems. |
| | | 2.1.2 | Save a coordinate system. |
| | | 2.1.3 | Load a coordinate system. |
| | *2.2 Geometric Design Aids* | 2.2.1 | Use and modify a grid. |
| | | 2.2.2 | Use Snapping Tools. |
| | | 2.2.3 | Creation and modify layers/levels. |

| CATEGORY | SKILL SET | REF. | TASK ITEM |
|---|---|---|---|
| | *2.3 3D Geometric Drawing* | 2.3.1 | Draw a point. |
| | | 2.3.2 | Draw a line, polyline/smartline. |
| | | 2.3.3 | Draw a spline/point curve. |
| | | 2.3.4 | Draw an arc. |
| | | 2.3.5 | Draw a circle, ellipse. |
| | | 2.3.6 | Draw a polygon. |
| | | 2.3.7 | Draw a spiral, helix. |
| | *2.4 3D Surface Modelling* | 2.4.1 | Create planes. |
| | | 2.4.2 | Create an edge surface. |
| | | 2.4.3 | Extrude a surface. |
| | | 2.4.4 | Create a surface revolution. |
| | | 2.4.5 | Create surface through interpolation. |
| | *2.5 3D Manipulate Object/Graphic Elements* | 2.5.1 | Copy objects/graphical elements. |
| | | 2.5.2 | Delete objects/graphical elements. |
| | | 2.5.3 | Move objects/graphical elements. |
| | | 2.5.4 | Rotate objects/graphical elements. |
| | | 2.5.5 | Scale objects/graphical elements. |
| | | 2.5.6 | Create, modify, ungroup objects/graphical elements. |
| | | 2 5.7 | Cut objects/graphical elements. |
| | | 2.5.8 | Subdivide/explode objects/graphical elements. |
| | | 2.5.9 | Join objects/graphical elements. |
| | | 2.5.10 | Extend objects/graphical elements. |
| | | 2.5.11 | Offset objects/graphical elements. |
| | | 2.5.12 | Fillet objects/graphical elements. |
| | | 2.5.13 | Chamfer objects/graphical elements. |
| | | 2.5.14 | Mirror objects/graphical elements. |
| | | 2.5.15 | Array objects/graphical elements. |

| CATEGORY | SKILL SET | REF. | TASK ITEM |
|---|---|---|---|
| | *2.6 Create Solids* | 2.6.1 | Create a box. |
| | | 2.6.2 | Create a sphere. |
| | | 2.6.3 | Create a cylinder. |
| | | 2.6.4 | Create a tube. |
| | | 2.6.5 | Create a cone. |
| | | 2.6.6 | Create a cone trunk. |
| | | 2.6.7 | Create an ellipsoid. |
| | | 2.6.8 | Create a torus. |
| | | 2.6.9 | Extrude an object to a solid. |
| | *2.7 Modify Solid Objects.* | 2.7.1 | Create a solid using union, subtract, intersection. |
| | | 2.7.2 | Boolean subtract. |
| | | 2.7.3 | Boolean Intersect. |
| | | 2.7.4 | Slice/section a solid. |
| | *2.8 Create and modify Parametric Objects* | 2.8.1 | Create parametric objects. |
| | | 2.8.2 | Modify parametric objects. |
| | | 2.8.3 | Assemble parametric objects. |
| **3 Advanced Operations** | *3.1 3D Views* | 3.1.1 | Use orthogonal views. |
| | | 3.1.2 | Use axonometric views. |
| | | 3.1.3 | Use perspective views. |
| | | 3.1.4 | Layout operations. |
| | *3.2 Photorealistic Presentation* | 3.2.1 | Render model/scene. |
| | | 3.2.2 | Create, modify lights in a model/scene. |
| | | 3.2.3 | Create, apply, modify materials |
| | | 3.2.4 | Create a background scene. |
| | | 3.2.5 | Output scene/model in raster format: bmp, jpg, tga, tif, eps. |