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| Title | **Insert surfaces** |
| Level | **3** | **Credits** | **9** |

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| Purpose | The competency standard is designed to study, and analyze basic and complex 3D surfaces. |

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| Classification ISCED | 0611 Computer use |

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| Available grade | Competent / Not yet competent |

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| Modification history | N/A |

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| **Competency Unit** | **Performance Criteria** | **Knowledge and Understanding** |
| **G1: Draw basic 3D surfaces** | **The trainee will be able to:****P1.** Locate Mesh tab from 3D Modelling dropdown option of solids panel* Primitive panel,
* Drop-down

**P2.** Apply different Mesh primitive options including;* Box
* Cone
* Cylinder
* Pyramid
* Sphere
* Wedge
* Tours

**P3.** Apply smoothness and refinement on Meshes (even legacy 2D drawings) with following commands;* MESHSMOOTHMORE
* MESHSMOOTHLESS
* MESHSMOOTHREFINE

**P4.** Add or Remove Mesh Creases using;* MESHCREASE
 | **The trainee will be able to:****K1.** Identify different Mesh primitive options.**K2.** Define how to create smooth and refine Meshes.**K3.** Explain the process of editing existing Meshes. |

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|  | * MESHUNCREASE

**P5.** Enable Mesh editing using;* MESHEXTRUDE
* MESHSPLIT (mid point)
* MESHMERGE
* MESHCAP (close hole)

**P6.** Perform convert Meshes using the command:* CONVTOSURFACE
 | **K4.** Identify how to convert Meshes. |
| **G2: Comprehend complex 3D surfaces** | **The trainee will be able to: P1.** Develop following Surfaces;* Revolved Surface (REVSURF)
* Tabulated Surface (TABSURF)
* Ruled Surface (RULESURF) using “Surftab” variables
* Edge Surface (EDGESURF)
* Plane Surface (PLANESURF)
* Extrude Surface (EXTRUDE)

**P2.** Create 3D solid or surface in the space between several cross sections:* Using “LOFT” command.
* Sweeping a 2D or 3D curve along a path using “SWEEP” command.

**P3.** Build Surface Network.**P4.** Create a blend surface between two existing surfaces | **The trainee will be able to: K1.** Identify different Surfaces**K2.** Remember how to Edit Surfaces.**K3.** Explain Surface Network. |

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|  | using “SURFBLEND” command.**P5.** Create a new surface or cap to close an open edge of an existing surface using “SURFPATCH” command.**P6.** Create a parallel surface at a specified distance from the original surface using “SURFOFFSET” command.**P7.** Edit the existing surfaces through:* Fillet
* Trim
* Untrim
* Extend
* Sculpt

**P8.** Add and edit control vertices on a NURBS surface or spline using Surface CV edit bar.**P9.** Convert object to NURBS using “CONVTONURBS” command.**P10.** Apply following NURB Vertex Controls;* Surface CV-Show
* Surface CV-Hide
* Surface CV-Rebuild
* Surface CV-Add
* Surface CV-Remove

**P11.** Distinguish surface analysis via:* Analysis Zebra
* Analysis Curvature
* Analysis Draft

**P12.** Develop Surface associatively. | **K4.** Describe how to apply NURB controls on Surfaces.**K5.** Analyse Surfaces.**K6.** Describe Surface associativity. |