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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. |