|  |  |  |  |
| --- | --- | --- | --- |
| Title | **Develop solids** | | |
| Level | **3** | **Credits** | **7** |

|  |  |
| --- | --- |
| Purpose | The competency standard is designed to explore the composites of solids and their three dimensional editing. |

|  |  |
| --- | --- |
| Classification ISCED | 0611 Computer use |

|  |  |
| --- | --- |
| Available grade | Competent / Not yet competent |

|  |  |
| --- | --- |
| Modification history | N/A |

|  |  |  |
| --- | --- | --- |
| **Competency Unit** | **Performance Criteria** | **Knowledge and Understanding** |
| **H1: Create Solids** | **The trainee will be able to:**  **P1.** Launch Solid primitives tab from 3D Modeling dropdown option of solids panel.  **P2.** Convert:   * An existing line * 2D polyline * Arc * Circle   to a solid with a rectangular profile using “Polysolid” command.  **P3.** Create unique solid primitives by extruding existing two- dimensional objects using “Extrude” command with   * Taper * Path   **P4.** Execute following commands on Solids;   * Revolve * Sweep * Loft | **The trainee will be able to: K1.** Discover Solid primitives.  **K2.** Explain Extrude  **K3.** Execute commands |
| **H2: Edit 3D Objects** | **The trainee will be able to:**  **P1.** Convert polylines and circles with thickness to 3D solids | **The trainee will be able to:**  **K1.** Explore different methods to convert the |

|  |  |  |
| --- | --- | --- |
|  | using “convtosolid” command.  **P2.** Edit the existing solids through:   * 3D Move * 3D Rotate * 3D Align * 3D Mirror * 3D Rectangular Array * 3D Polar Array   **P3.** Extract edges of a 3D object using “\_xedges” command.  **P4.** Adjust the smoothness of shaded and rendered objects using “FACETRES” command with valid values range.  **P5.** Apply “ISOLINES” and “REGEN” command to regenerate the 3D drawing in 3D view. | object/drawing to Solid or Surface.  **K2.** Discover how to edit the solids  **K3.** Differentiate edge effects or extract edges.  **K4.** Explain how to shade and render objects  **K5.** Define the method of regenerating the 3D drawing in 3D view |

|  |  |  |
| --- | --- | --- |
| **H3: Develop 3D Solid composites** | **The trainee will be able to:**  **P1.** Apply following Composite functions on solids;   * Union * Subtract * Intersect   **P2.** Create 3D solid by thickening a surface using “THICKEN” command.  **P3.** Highlight 3D solids that overlap using “INTERFERE” command. | **The trainee will be able to:**  **K1.** Choose different composite functions applicable to solids  **K2.** Define the method to thicken the Solids.  **K3.** Find interference on solid objects. |