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| Title | **Perform lathe machine operations** | | |
| Level | **3** | **Credits** | **36** |

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| Purpose | This Competency Standard identified the competencies required to perform lathe machine operations by a machinist in accordance with the organization’s approved guidelines and procedures. You will be expected to perform facing, turning drilling/boring, taper turning, knurling and threading operations using lathe machine.  Your underpinning knowledge regarding lathe machine operations will be sufficient to provide you with the basis for your work. |

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| Classification ISCED | 0715 Mechanics and metal trades |

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| Available grade | Competent / Not yet competent |

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| Modification history | N/A |

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| **Unit of Competency** | **Performance Criteria** | **Knowledge and Understanding** | **Tools & Equipment** |
| **E1. Perform facing operations** | ***You must be able to:***  **P1.** Select facing tools according to job requirement.  **P2.** Mount and set the required work-holding devices, work piece and cutting tools.  **P3.** Follow the correct specifications for the part or component to be produced.  **P4.** Select safe procedures and tools to accomplish the work.  **P5.** Adjust the operating parameters (e.g. speed and feed) of machine tool to achieve the work specification.  **P6.** Ensure all safety mechanisms are in place. | ***You must know and understand:***  **K1**. Safety precautions involved in work.  **K2**. Methods and techniques of mounting and setting of work-piece.  **K3**. Methods and techniques of adjusting operating parameters of machine tool.  **K4**. Procedure of adjusting speed and feed.  **K5**. Calculation of speed and feed.  **K6**. Use of cutting tools. | **T1.** Lathe Machine  **T2.** Cutting Tools  **T3.** Measuring Tools  **T4.** Personal Protective Equipment |
| **E2. Perform turning operations** | ***You must be able to:***  **P1.** Obtain and follow work specifications, drawings or sketches to accomplish the | ***You must know and understand:***  **K1.** Reading and interpreting work specifications, drawings and sketches. | **T1.** Lathe Machine |

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| **Unit of Competency** | **Performance Criteria** | **Knowledge and Understanding** | **Tools & Equipment** |
|  | work.  **P2.** Set up and adjust the machine as per work specifications and procedures.  **P3.** Ensure the components produced have the required quality and within the specified dimensional accuracy.  **P4.** Shut down the machine and equipment on conclusion of the machining activities. | **K2.** Method and technique of setting up and adjusting the machine.  **K3.** Techniques to check quality of component produced.  **K4.** Procedure of shutting down of machine and equipment after closure of activities.  **K5.** Safety precautions and procedures need to be observed during work. | **T2.** Cutting Tools  **T3.** Measuring Tools  **T4.** Personal Protective Equipment  **T5.** Files |
| **E3. Perform drilling or boring operations** | ***You must be able to:***  **P1**. Select drill or boring tools according to drawings.  **P2**. Mount and set the required work-holding devices, work piece and cutting tools.  **P3**. Adjust the RPM of machine according to the cutting speed.  **P4**. Perform the boring operation according to the drawing.  **P5.** Check quality of the component produced at different intervals.  **P6.** Observe personal and workplace safety. | ***You must know and understand:***  **K1.** Types of drilling or boring tools and their function.  **K2.** Procedure of mounting and setting up of work-holding devices, work pieces and cutting tools.  **K3.** Method and technique of adjusting RPM of lathe machine.  **K4.** Safe boring procedures.  **K5.** Techniques of checking quality of components.  **K6.** Calculation of RPM.  **K7.** Safety precautions and procedures. | **T1**. Drill  **T2**. Drill chuck  **T3**. Vernier caliper  **T4**. Depth gauge  **T5**. Personal Protective Equipment  **T6**. Lathe Machine  **T7**. Dial indicator |

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| **Unit of Competency** | **Performance Criteria** | **Knowledge and Understanding** | **Tools & Equipment** |
| **E4. Perform taper turning operations** | ***You must be able to:***  **P1.** Mount and set the required work-holding devices, work piece and cutting tools.  **P2.** Select and adjust appropriate speeds and feeds of turning machine.  **P3.** Produce a component which matches the work specifications using appropriate methods and techniques.  **P4.** Check quality of the component produced at different intervals.  **P5.** Follow safety precautions to ensure safe work and to avoid any injury. | ***You must know and understand:***  **K1.** Kinds of tapers.  **K2.** Types of taper turning methods.  **K3.** Calculation of tapers.  **K4.** Methods and techniques of adjusting speeds and feeds of turning machine.  **K5.** Method of checking quality of components produced.  **K6.** Specific safety guidelines and precautions. | **T1.** Lathe Machine **T2.** Cutting Tools **T3.** Vernier Caliper  **T4.** Personal Protective Equipment  **T5.** Files  **T6.** Checking gauges |
| **E5. Perform knurling operations** | ***You must be able to:***  **P1**. Select the knurling tool according to drawing.  **P2**. Set the tool and work piece in the machine according to procedure.  **P3**. Adapt methods and techniques to produce proper knurling on work piece.  **P4.** Select and adjust appropriate speeds and feeds of lathe machine. | ***You must know and understand:***  **K1.** Types of knurling tools.  **K2.** Types of knurling.  **K3.** Procedure of setting tools and work piece in the machine.  **K4.** Methods of knurling.  **K5.** Procedure of adjusting speeds and feeds of lathe machine. | **T1.** Lathe Machine  **T2.** Knurling Tools  **T3.** Personal Protective Equipment  **T4.** Files |

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| **Unit of Competency** | **Performance Criteria** | **Knowledge and Understanding** | **Tools & Equipment** |
|  | **P5.** Use coolants during knurling to achieve smooth impression on work piece.  **P6.** Observe personal and workplace safety. | **K6.** Importance of using coolants during knurling.  **K7.** Safety precautions and guidelines. |  |
| **E6. Perform threading operations** | ***You must be able to:***  **P1.** Select and obtain the appropriate tools and equipment for the threading operations and check they are in usable condition.  **P2.** Follow given work specifications for the component to be produced.  **P3.** Shape the materials using appropriate methods and techniques.  **P4.** Ensure all the required threading operations have been completed to the given specification.  **P5.** Check quality of the component produced at different intervals.  ***P6.*** Observe personal and workplace safety. | ***You must know and understand:***  **K1.** Hazards associated with the hand fitting techniques.  **K2.** Use of threading tools.  **K3.** Work specifications and instructions.  **K4.** Procedure for setting up of machine.  **K5.** Methods and techniques for producing different types of threads.  **K6.** Calculations of threading.  **K7.** Safety precautions involved in threading operations. | **K1.** Lathe Machine  **K2.** Threading Tools  **K3.** Personal Protective Equipment  **K4.** Files  **K5.** Thread Pitch Gauge **K6.** Tool Center Gauge **K7.** Vernier Caliper |