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| Title | **Carry out basic CNC machine operations** |
| Level | **3** | **Credits** | **36** |

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| Purpose | This competency standard identifies the competencies you need to Computerized Numerical Control (CNC) Machine operations in accordance with approved procedures. You will be expected to set CNC machine to perform milling and turning operations. You will be required to operate the milling machine safely by complying the organizational safety policy and approved procedures.Your underpinning knowledge regarding CNC 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** |
| **G1. Set CNC machine according to job requirements** | ***You must be able to:*****P1.** Mount and set the work-piece and cutting tool according to procedures.**P2.** Set up and adjust machine according to parameters to achieve work specification.**P3.** Report uncertainties and deviations to person concerned for timely action.**P4.** Observe safety and workplace precautions to avoid any injuries. | ***You must know and understand:*****K1.** Basic knowledge of CNC machine.**K2.** Machine process standards and functions.**K3.** Methods and techniques of adjusting operating parameters of machine.**K4.** Interpreting work specifications.**K5.** Techniques for checking quality of components produced.**K6.** Basic knowledge of G-Code and M-Code.**K7.** Basic computer operations.**K8.** Procedure for reporting uncertainties and deviations to person concerned for timely action.**K9.** X, Y, and Z axis.**K10.** Safety precautions and guidelines. | **T1**. CNC machine**T2**. CNC Manual |

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| **Unit of Competency** | **Performance Criteria** | **Knowledge and Understanding** | **Tools & Equipment** |
| **G2. Perform Milling Operations Using CNC Machine** | ***You must be able to:***P1. Match work piece data with CAD data through software simulation.P2. Execute program on CNC milling to perform milling operations (e.g. surfacing, drilling, slotting, tapping, key ways, step cutting etc.) to achieve work specifications.**P3.** Follow correct specifications for the component to be produced.**P4.** Report uncertainties and deviations to person concerned for timely action.**P5.** Observe safety and workplace precautions to avoid any injuries. | ***You must know and understand:*****K1.** Use of control panel.**K2.** Quality check points with standards.**K3.** Basic knowledge of machine margins and alignments.**K4.** Interpret drawing and work specifications.**K5.** Reporting procedures in case of uncertainties and deviations.**K6.** G-Code and M-Code.**K7.** Safety precautions and guideline**K8.** Use of coordinate system | **T1**. CNC milling machine with all accessories**T2**. Cutting Tools**T3**. Tool Kit**T4**. Gauges**T5**. Measuring Instruments |

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| **Unit of Competency** | **Performance Criteria** | **Knowledge and Understanding** | **Tools & Equipment** |
| **G3. Perform turning operations using CNC machine** | ***You must be able to:*****P1**. Match work piece data with CAD data through software simulation.**P2**. Execute program on CNC Lathe to perform turning operations to achieve work specifications.**P3.** Follow correct specifications for the component to be produced.**P4.** Report uncertainties and deviations to person concerned for timely action.**P5.** Observe safety and workplace precautions to avoid any injuries. | ***You must know and understand:*****K1.** Use of control panel.**K2.** Functions of CNC Lathe Machine and range of turning operations which include facing, grooving, tapering, taper turning, step turning, form turning, threading, knurling, drilling, boring, reaming.**K3.** Quality check points with standards.**K4.** Basic knowledge of machine margins and alignments.**K5.** Interpret drawing and work specifications.**K6.** Reporting procedures in case of uncertainties and deviations.**K7.** Use of coordinate systems.**K8.** Interpreting machine check sheet.**K9.** G-Code and M-Code.**K10.** Safety precautions and guidelines. | **T1**. CNC Lathe machine with all accessories**T2**. Cutting Tools**T3**. Tool Kit**T4**. Gauges**T5**. Measuring Instruments |