Skills for Employment Investment Program (SEIP)

COMPETENCY STANDARD

FOR

CAD-CAM DESIGN AND PROGRAMMING

(LIGHT ENGINEERING SECTOR)

Finance Division, Ministry of Finance
Government of the People's Republic of Bangladesh

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Skills for Employment Investment Program (SEIP) Project
Finance Division
Ministry of Finance
Probashi Kallyan Bhaban (Level – 16)
71-72 Old Elephant Road
Eskaton Garden, Dhaka 1000
Telephone: +8802 551 38598-9 (PABX), +8802 551 38753-5
Facsimile: +8802 551 38752
Website: www.seip-fd.gov.bd

List of Abbreviations

General	
BMET	Bureau of Manpower Employment and Training
B-SEP	Bangladesh Skills for Employment and Productivity
BTEB	Bangladesh Technical Education Board
DTE	Directorate of Technical Education
ILO	International Labor Organization
ISC	Industry Skills Council
NPVC	National Pre-Vocation Certificate
NTVQF	National Technical and Vocational Qualifications Framework
PPP	Public Private Partnership
SCDC	Standards and Curriculum Development Committee
SEIP	Skills for Employment Investment Program
TVET	Technical Vocational Education and Training
UoC	Unit of Competency
Occupation Specific	
CAD	Computer Aided Drawing
CAM	Computer Aided Manufacturing
CNC	Computer Numerical Control
OHS	Occupational health and safety
PPE	Personal protective equipment
RPM	Revolutions Per Minute
SOP	Standard operating procedure

Introduction

The Skills for Employment Investment Program (SEIP) Project of the Finance Division of the Ministry of Finance has embarked on a project which aims to qualitatively and quantitatively expand the skilling capacity of identified public and private training providers by establishing and operationalising a responsive skill ecosystem and delivery mechanism through a combination of well-defined set of funding triggers and targeted capacity support.

Among the many components of the project, one is to promote a Market Responsive Inclusive Skills Training Delivery programme. Key priority economic growth sectors identified by the government have been targeted by the project to improve current job skills along with up-skilling of the existing workforce to ensure 'required skills to industry standards'. Training providers are encouraged and supported to work with industry to address identified skills and knowledge to enable industry growth and increased employment through the provision of market responsive inclusive skills training programmes. Priority sectors were identified to adopt a demand driven approach to training with effective inputs from Industry Skills Councils (ISC's), employer associations and employers.

This document is developed to improve skills and knowledge in accordance with the job roles, duties and tasks of the occupation and ensure that the required skills and knowledge are aligned to industry requirements.

The document also details the format, sequencing, wording and layout of the Competency Standard for an occupation which is comprised of Units of Competence and its corresponding Elements.

Overview

A **competency standard** is a written specification of the knowledge, skills and attitudes required for the performance of an occupation, trade or job corresponding to the industry standard of performance required in the workplace.

The purpose of a competency standards is to:

- provide a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enable industry recognised qualifications to be awarded through direct assessment of workplace competencies
- encourage the development and delivery of flexible training which suits individual and industry requirements
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes

Competency standards are developed by a working group comprised of national and international subject-matter experts, SEIP, BTEB, ISC, and industry experts to identify the competencies required of an occupation in a particular sector.

Competency standards describe the skills, knowledge and attitude needed to perform effectively in the workplace. Competency standards acknowledge that people can achieve technical and vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it.

With competency standards, training and assessment may be conducted at the workplace or at training institute or any combination of these.

Competency standards consist of a number of units of competency. A unit of competency describes a distinct work activity that would normally be undertaken by one person in accordance with industry standards.

Units of competency are documented in a standard format that comprises of:

- unit title
- nominal duration
- unit code
- unit descriptor
- elements and performance criteria
- variables and range statement
- curricular content guide
- assessment evidence guide

Together, all the parts of a unit of competency:

- describe a work activity
- guide the assessor to determine whether the candidate is competent or not yet competent

Approval Sheet

Identification and validation of units of competency and elements for this occupation were made by experts within this sector. A series of meetings were held to accurately capture industry and employer needs and expectations, and develop the competency framework that would help to enhance the employability of the youth trained. This process started on 11 June 2018 and concluded with a validation workshop with working group on 2 August 2018.

Experts Involved

Industry and subject-matter experts who provided their valuable inputs to develop this competency standard [May - August 2018]:

Name	Organisation	Designation
Md. Abdul Halim	UCEP Mirpur Technical School	Instructor - CNC Unit
Md. Lavlu Mia	UCEP Mirpur Technical School	Instructor - CNC Unit
Md. Masud Rana	BITAC (Dhaka)	Executive Engineer
Md. Abdur Razzaque	Sunrise Engineering (Dhaka)	Chairman - ISC
Md. Faruk Hossen	BCSIR	Engineer
Mozammel Mia	AUST (Dhaka)	Assistant Professor
Dr. N. R. Dhar	British Council - SD03	National Subject Matter Consultant - Light Engineering Sector

Development Workshop

Working group formation and competency standard development workshop participants [held on 16 July 2018]:

Name	Organisation	Designation
Enamul Haque Khan	BEIOA	Co-coordinator – Monitoring and Evaluation
Rupak Kanti Biswas	BTEB	Quality Assurance Officer
Md. Abdul Halim	UCEP Mirpur Technical School	Instructor - CNC Unit
Md. Lavlu Mia	UCEP Mirpur Technical School	Instructor - CNC Unit
Md. Masud Rana	BITAC - Dhaka	Executive Engineer
Md. Faruk Hossen	BCSIR - Dhaka	Engineer
Md. Abdur Razzaque	Sunrise Engineering (Dhaka)	Chairman - ISC
Uttam Kumar Das	BKTTC - Chittagong	Instructor

Name	Organisation	Designation
Mozammel Mia	AUST (Dhaka)	Assistant Professor
Syed Nasir Ershad	SEIP	AEPD (Public-1)
Md. Ahsan Habib	SEIP	TVET Specialist
Mr. Mohiuzzaman	SEIP	Course Specialist
David King	British Council - SD03	Team Leader
Dr. N. R. Dhar	British Council - SD03	National Subject Matter Consultant - Light Engineering Sector

Validation Workshop

Competency standard validation workshop participants [held on 2 August 2018]:

Name	Organisation	Designation
Md. Masud Rana	BITAC - Dhaka	Executive Engineer
Md. Abdur Razzaque	Sunrise Engineering (Dhaka)	Chairman - ISC
Uttam Kumar Das	BKTTC - Chittagong	Instructor
Mozammel Mia	AUST (Dhaka)	Assistant Professor
Md. Faruk Hossen	BCSIR – Dhaka	Engineer
Biplob Halder	MAWTS - Dhaka	Instructor
S.M. Shameem Ahsan	LEISC-SEIP	Trainer
Md. Rafiqul Islam Bhuiyan	LEISC-SEIP	CEO
Rupak Kanti Biswas	BTEB	Quality Assurance Officer
Md. Abdur Razzaque	BTEB-SEIP	Specialist-1 (Competence Standards)
Syed Nasir Ershad	SEIP	AEPD (Public-1)
Md. Ahsan Habib	SEIP	TVET Specialist
Mr. Mohiuzzaman	SEIP	Course Specialist
David King	British Council - SD03	Team Leader
Dr. N. R. Dhar	British Council - SD03	National Subject Matter Consultant – Light Engineering Sector

The ensuing sections of this document comprise of a description of the relevant occupation, trade or job with all the key components of a unit of competency, including:

- a chart with an overview of all Units of Competency for the relevant occupation, trade or job including the Unit Codes and the Unit of Competency titles and corresponding Elements

- the Competency Standard that includes the Unit of Competency, Unit Descriptor, Elements and Performance Criteria, Range of Variables, Curricular Content Guide and Assessment Evidence Guide

Committee Workshop

The National competency standards for National Skills Certificate in CAD-CAM Design and Programming**, NTVQF Level [INSERT LEVEL]** qualification is a document developed by the Skill for Employment Investment Programme (SEIP), Finance Division, Ministry of Finance. This standard has been developed by an industry expert group under guidance of SEIP. The standard was approved by the SCDC [BTEB to insert date] at NTVQF Cell, BTEB.

Respectable members of the SCDC:

CAD-CAM Design and Programming - Level [INSERT LEVEL]		

Course Structure

SL	Unit Code and Title		Level	Nominal Duration (Hours)
Generic Competencies (4 units of competency required)				
1	SEIP-LE-CAD-01-G	Use basic mathematical concepts		24
2	SEIP-LE-CAD-02-G	Carry out workplace interaction in English		8
3	SEIP-LE-CAD-03-G	Operate in a team environment		16
4	SEIP-LE-CAD-04-G	Apply basic IT skills		12
Sub-Total				**60**
Sector-specific Competencies (4 units of competency required)				
1	SEIP-LE-CAD-01-S	Apply occupational health and safety (OHS) practice in the workplace		12
2	SEIP-LE-CAD-02-S	Read and interpret sketches and drawings		16
3	SEIP-LE-CNC-03-S	Use hand and power tools		16
4	SEIP-LE-CAD-04-S	Apply quality system		16
Sub-Total				**60**
Occupation-specific Competencies (5 units of competency required)				
1	SEIP-LE-CAD-01-O	Create mechanical drawing		20
2	SEIP-LE-CAD-02-O	Carry out CNC lathe machine operations		20
3	SEIP-LE-CAD-03-O	Carry out CNC milling machine operations		20
4	SEIP-LE-CAD-04-O	Develop 3D model using CAD software		100
5	SEIP-LE-CAD-05-O	Perform CAM programming		80
Sub-Total				**240**
Total Nominal Learning Hours				**360**

Competency Chart

Units of Competency	Elements		
Generic Specific (Basic) Competencies			
Use basic mathematical concepts SEIP-LE-CAD-01-G	Identify calculation requirements in the workplace	Select appropriate mathematical methods/concepts for the calculation	Use tools and instruments to perform calculations
Carry out workplace interaction SEIP-LE-CAD-02-G	Interpret workplace communication and etiquette	Read and understand workplace documents	Participate in workplace meetings and discussions
	Practice professional ethics at work		
Operate in a team environment SEIP-LE-CAD-03-G	Identify team goals and work processes	Identify own role and responsibilities within team	Communicate and co-operate with team members
	Practice problem solving within the team		
Apply basic IT skills SEIP-LE-CAD-04-G	Identify and use most commonly used IT tools	Understand use of computer	Work with word processing application
	Work with spreadsheets	Access email and search the internet	

Sector-specific (Common) Competencies

Apply occupational health and safety (OHS) practice in the workplace SEIP-LE-CAD-01-S	Identify OHS policies and procedures	Apply personal health and safety practices	Report hazards and risks
	Respond to emergencies		
Read and interpret sketches and drawings SEIP-LE-CAD-02-S	Interpret information and specifications	Read and interpret sketches and drawings	
Use hand and power tools SEIP-LE-CAD-03-S	Identify and inspect hand and power tools	Use hand tools properly and safely	Operate power tools properly and safely
	Clean and maintain hand and power tools		
Apply quality system SEIP-LE-CAD-04-S	Work within quality system	Apply and monitor quality improvement system	Apply standard procedures for each job

Occupation-specific (Core) Competencies

Create mechanical drawing SEIP-LE-CAD-01-O	Identify drawing	Create drawing	
Carry out CNC lathe machine operations SEIP-LE-CAD-02-O	Set-up CNC lathe machine	Download and input programme	Perform CNC lathe machine operations
	Check and measure work piece		
Carry out CNC milling machine operations SEIP-LE-CAD-03-O	Set-up CNC milling machine	Download and input programme	Perform CNC milling machine operations
	Check and measure work piece		
Develop 3D model using CAD software SEIP-LE-CAD-04-O	Prepare CAD environment	Produce 2D drawing	Create 3D model
	Save and print drawing		
Perform CAM programming SEIP-LE-CAD-05-O	Perform CAM programming	Carry out CAM programming	Load and run programme

Units and Elements Table

Generic – Compulsory (4 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-LE-CAD-01-G	Use basic mathematical concepts	1. Identify calculation requirements in the workplace. 2. Select appropriate mathematical methods/concepts for the calculation. 3. Use tools and instruments to perform calculations.	24
SEIP-LE-CAD-02-G	Carry out workplace interaction	1. Interpret workplace communication and etiquette. 2. Read and understand workplace documents. 3. Participate in workplace meetings and discussions. 4. Practice professional ethics at work.	8
SEIP-LE-CAD 03-G	Operate in a team environment	1. Identify team goals and work processes. 2. Identify own role and responsibilities within team. 3. Communicate and co-operate with team members. 4. Practice problem solving within the team.	16
SEIP-LE-CAD-04-G	Apply basic IT skills	1. Identify and use most commonly used IT tools. 2. Understand use of computer. 3. Work with word processing application. 4. Work with spreadsheets. 5. Access email and search the internet.	12
Total Hours			**60**

Sector-specific – Compulsory (4 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-LE-CAD-01-S	Apply occupational health and safety (OHS) practice in the workplace	1. Identify OHS policies and procedures. 2. Apply personal health and safety practices. 3. Report hazards and risks. 4. Respond to emergencies.	12
SEIP-LE-CAD-02-S	Read and interpret sketches and drawings	1. Interpret information and specifications. 2. Read and interpret sketches and drawings.	16
SEIP-LE-CAD-03-S	Use hand and power tools	1. Identify and inspect hand and power tools. 2. Use hand tools properly and safely. 3. Operate power tools properly and safely. 4. Clean and maintain hand and power tools.	16
SEIP-LE-CAD-04-S	Apply quality system	1. Work within quality system. 2. Apply and monitor quality improvement system. 3. Apply standard procedures for each job.	16
Total Hours			**60**

Occupation-specific – Compulsory (5 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-LE-CAD-01-O	Create mechanical drawing	1. Identify drawing. 2. Create drawing.	20
SEIP-LE-CAD-02-O	Carry out CNC lathe machine operation	1. Set-up CNC lathe machine. 2. Download and input programme. 3. Perform CNC lathe machine operations. 4. Check and measure work piece.	20
SEIP-LE-CAD-03-O	Carry out CNC milling machine operation	1. Set-up CNC milling machine. 2. Download and input programme. 3. Perform CNC milling machine operations. 4. Check and measure work piece.	20
SEIP-LE-CAD-04-O	Develop 3D model using CAD software	1. Prepare CAD environment. 2. Produce 2D drawing. 3. Create 3D model. 4. Save and print drawing.	100
SEIP-LE-CAD-05-O	Perform CAM programming	1. Prepare CAM environment. 2. Carry out CAM programming. 3. Load and run programme.	80
Total Hours			**240**

Generic Competencies

Unit Title:	Use basic mathematical concepts
Unit Code:	SEIP-LE-CAD-01-G
Nominal Hours:	24 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to perform computations using basic mathematical concepts in the workplace. It specifically includes identifying general calculation requirements, selecting appropriate mathematical method/concept, and forming and solving mathematical problems in the workplace using appropriate tools and instruments.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Identify calculation requirements in the workplace	**1.1.** **Calculation requirements** are identified from **workplace information.** **1.2.** Mathematical problems are constructed from workplace information.
2. Select appropriate mathematical methods/concepts for the calculation	**2.1.** **Appropriate method** is selected to carry out calculation requirements. **2.2.** Constructed mathematical problems are solved with appropriate method.
3. Use tools and instruments to perform calculations	**3.1.** **Tools and instruments** required for computation are identified. **3.2.** Calculation is performed using appropriate tools and instruments accurately.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Calculation requirements	**1.1.** Unit **1.2.** Area **1.3.** Height/ length/ breadth/ thickness **1.4.** Diameter **1.5.** Weight **1.6.** Capacity **1.7.** Time **1.8.** Temperature **1.9.** Material/data usage **1.10.** Speed **1.11.** Costing

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
2. Workplace information	**2.1.** Floor environment **2.2.** Design sheet **2.3.** Specification sheet **2.4.** Working chart/drawing **2.5.** Standard operating procedure (SOP) **2.6.** Job order
3. Appropriate method	**3.1.** Addition **3.2.** Subtraction **3.3.** Division **3.4.** Multiplication **3.5.** Conversion **3.6.** Percentage and ratio calculation **3.7.** Simple equation
4. Tools and instruments	**4.1.** Calculator **4.2.** Cell phone **4.3.** Computer **4.4.** Ruler

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Identified calculation requirements from workplace information **1.2.** Selected appropriate method to carry out the calculation requirements **1.3.** Completed calculations using appropriate tools and instruments
2. Underpinning knowledge	**2.1.** Numerical concepts **2.2.** Basic mathematical methods such as addition, subtraction, multiplication, division and percentage **2.3.** Mathematical language, symbols and terminology **2.4.** Measuring units
3. Underpinning skills	**3.1.** Constructing simple problems from workplace information **3.2.** Solving problems using appropriate method, tools and instruments **3.3.** Using appropriate tools and instruments

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
4. Underpinning attitudes	**4.1.** Prompt in carrying out activities **4.2.** Tidy and punctual **4.3.** Respectful of peers, subordinates and seniors in the workplace **4.4.** Safely use tools and equipment **4.5.** Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Calculator **5.3.** Cell phone **5.4.** Computer/laptop/notebook **5.5.** Measuring tape **5.6.** Ruler **5.7.** Projector **5.8.** Stationary **5.9.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Carry out workplace interaction
Unit Code:	SEIP-LE-CAD-02-G
Nominal Hours:	8 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to carry out workplace interaction. It specifically includes workplace communication, etiquette, understanding workplace documents, workplace meetings and discussions, and professional ethics at work.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Interpret workplace communication and etiquette	**1.1.** Workplace codes of conduct are interpreted as per organisational guidelines. **1.2.** Appropriate lines of communication are maintained with supervisors and colleagues. **1.3.** Workplace interactions are conducted in a **courteous manner** to gather and convey information. **1.4.** **Workplace procedures and matters** are comprehended.
2. Read and understand workplace documents	**2.1.** Workplace documents are interpreted correctly. **2.2.** Visual information/symbols/signage are understood correctly and followed. **2.3.** Specific and relevant information are accessed from **appropriate sources.** **2.4.** Appropriate medium is used to transfer information and ideas.
3. Participate in workplace meetings and discussions	**3.1.** Team meetings are attended on time. **3.2.** Meeting procedures and etiquette are followed. **3.3.** Active participation is ensured, opinions are expressed and heard. **3.4.** Inputs are provided and interpreted in line with the meeting purpose.
4. Practice professional ethics at work	**4.1.** Responsibilities as a team member are performed. **4.2.** Tasks are performed in accordance with workplace procedures. **4.3.** Confidentiality is maintained. **4.4.** Inappropriate and conflicting situations are avoided.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Courteous manner	**1.1.** Effective questioning **1.2.** Active listening **1.3.** Speaking skills **1.4.** Writing skill **1.5.** Email etiquette
2. Workplace procedures and matters	**2.1.** Notes **2.2.** Arranging a meeting **2.3.** Agenda **2.4.** Simple reports such as progress and incident reports **2.5.** Job sheets **2.6.** Operational manuals **2.7.** Brochures and promotional material **2.8.** Visual and graphic materials **2.9.** Standards **2.10.** OHS information **2.11.** Signs
3. Appropriate sources	**3.1.** Human Resources (HR) Department **3.2.** Managers **3.3.** Supervisors **3.4.** Management Information System (MIS)

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Interpreted workplace communication and etiquette **1.2.** Interpreted workplace instructions and symbols **1.3.** Performed active participation in workplace meetings
2. Underpinning knowledge	**2.1.** Workplace communication and etiquette **2.2.** Workplace documents, signs and symbols **2.3.** Meeting procedure and etiquette **2.4.** Professional ethics
3. Underpinning skills	**3.1.** Demonstrating workplace communication and etiquette **3.2.** Interpreting workplace instructions and symbols **3.3.** Demonstrating active participation in workplace meeting **3.4.** Applying professional ethics at work

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
4. Underpinning attitudes	**4.1.** Prompt in carrying out activities **4.2.** Tidy and punctual **4.3.** Respectful of peers, subordinates and seniors in the workplace **4.4.** Concerned about the work environment **4.5.** Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Workplace procedures **5.3.** Standard operating procedure **5.4.** Workplace documents, signs and symbols **5.5.** Codes of conduct **5.6.** Projector **5.7.** Stationary **5.8.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

Unit Title:	Operate in a team environment
Unit Code:	SEIP-LE-CAD-03-G
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to operate in a team environment. It specifically includes team goals and work processes, roles and responsibilities, team communication and problem solving within the team.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Identify team goals and work processes	**1.1.** Roles and objectives of the team are identified and interpreted. **1.2.** Roles and responsibilities of team members are identified and interpreted.
2. Identify own role and responsibilities within team	**2.1.** Personal role and responsibilities are identified within the team environment. **2.2.** Reporting relationships are interpreted within team and external to team.
3. Communicate and co-operate with team members	**3.1.** Other teammates' tasks are identified and support provided when requested. **3.2.** The team is encouraged through **sharing information** or expertise, working together to solve problems, and putting team success first. **3.3.** Views and opinions of other team members are interpreted and respected.
4. Practice problem solving within the team	**4.1.** Problems faced at the individual and team level are identified and showed insight into the root-causes of the problems. **4.2.** A range of solutions and courses of action are identified together with benefits, costs, and risks associated with each. **4.3.** The good ideas of others to help develop solutions are recognised and advice sought from those who have solved similar problems. **4.4.** It is looked beyond the obvious and not stopped at the first answers.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Sharing information	**1.1.** Agenda **1.2.** Minutes **1.3.** Progress and incident reports **1.4.** Operational manuals **1.5.** Visual and graphic materials **1.6.** Emails and SMS **1.7.** Phone directory **1.8.** Policy, procedure and standards **1.9.** OHS information

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Identified own role and responsibilities within team **1.2.** Communicated and co-operated with team members **1.3.** Demonstrated problem solving within the team
2. Underpinning knowledge	**2.1.** Team goals and work processes **2.2.** Roles and responsibilities **2.3.** Finding problems and solving them
3. Underpinning skills	**3.1.** Identifying own role and responsibilities within team **3.2.** Communicating and co-operating with team members **3.3.** Demonstrating problem solving within the team
4. Underpinning attitudes	**4.1.** Active on teamwork **4.2.** Prompt in carrying out activities **4.3.** Tidy and punctual **4.4.** Respectful of peers, subordinates and seniors in the workplace **4.5.** Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Projector **5.3.** Stationary **5.4.** Learning manual

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Apply basic IT skills
Unit Code:	SEIP-LE-CAD-04-G
Nominal Hours:	12 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to apply basic IT skills in the workplace. It specifically includes identifying common IT tools, using computer, using word processing and spreadsheet applications, emailing and searching on internet.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Identify and use most commonly used IT tools	**1.1.** History of information technology (IT) is identified and summarised. **1.2.** Commonly used **IT tools** are identified and described.
2. Understand use of computer	**2.1.** Basic parts of a computer are identified. **2.2.** Turning on and off technique of a computer is performed. **2.3.** Working environment, functions and features of operating system is interpreted. **2.4.** Simple trouble-shooting techniques are applied.
3. Work with word processing application	**3.1.** Word processing application appropriate to perform activity is operated. **3.2.** Basic typing technique to document is applied. **3.3.** Word processing techniques to document are employed. **3.4.** Personal CV writing using suitable word processing techniques is practiced. **3.5.** Saving and retrieving technique of a document is used.
4. Work with spreadsheets	**4.1.** Spreadsheet working environment, functions and features are identified and interpreted. **4.2.** Data entry on spreadsheet appropriate to perform activity is performed. **4.3.** **Data manipulation techniques** to spreadsheet document are applied. **4.4.** Spreadsheet document is created and saved.
5. Access email and search the internet	**5.1.** Use of email account in online environment is explained. **5.2.** Writing and sending of workplace emails is completed. **5.3.** Different **browsers** to work online are identified and selected. **5.4.** Browse different web portals and apply proper search techniques.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. IT tools	**1.1.** Cell phone **1.2.** Tablets **1.3.** Computers, laptops, notebooks **1.4.** Internet **1.5.** Software **1.6.** Satellite
2. Data manipulation techniques	**2.1.** Sum **2.2.** Average **2.3.** Count **2.4.** Max **2.5.** Min **2.6.** If **2.7.** Sort **2.8.** Fill **2.9.** Header **2.10.** Footer **2.11.** Print
3. Browsers	**3.1.** Internet Explorer **3.2.** Firefox **3.3.** Google Chrome **3.4.** Opera **3.5.** Safari **3.6.** Omni Web **3.7.** Microsoft Edge

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Identified commonly used IT tools **1.2.** Performed simple trouble-shooting with computer **1.3.** Performed typing on word processing software, saved and retrieved documents **1.4.** Performed data entry with spreadsheet **1.5.** Used email account for different online purposes
2. Underpinning knowledge	**2.1.** IT and IT tools **2.2.** Computer trouble-shooting **2.3.** Techniques to access internet

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
3. Underpinning skills	**3.1.** Demonstrating simple trouble-shooting with computer **3.2.** Demonstrating typing on word processing software **3.3.** Demonstrating data entry with spreadsheet **3.4.** Opening email account and using it for different purposes
4. Underpinning attitudes	**4.1.** Active on teamwork **4.2.** Prompt in carrying out activities **4.3.** Tidy and punctual **4.4.** Respectful of peers, subordinates and seniors in the workplace **4.5.** Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** IT tools **5.3.** Computer/laptop/notebook **5.4.** Software **5.5.** Internet **5.6.** Stationary **5.7.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

Sector-specific Competencies

Unit Title:	Apply occupational health and safety (OHS) practice in the workplace
Unit Code:	SEIP-LE-CAD-01-S
Nominal Hours:	12 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to apply occupational health and safety (OHS) practices in the workplace. It specifically includes identifying OHS policies and procedures, applying personal health and safety practices, reporting hazards and risks, and responding to emergencies.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Identify OHS policies and procedures	**1.1.** **OHS policies** and safe operating procedures are interpreted. **1.2.** Safety signs and symbols are identified and followed. **1.3.** Response, evacuation procedures and other contingency measures are interpreted correctly.
2. Apply personal health and safety practices	**2.1.** OHS policies and procedures are applied in the workplace including **personal protective equipment (PPE)**. **2.2.** Common health issues are recognised. **2.3.** Common safety issues are identified.
3. Report hazards and risks	**3.1.** Hazards and risks are identified. **3.2.** Hazards and risks assessment and controls are interpreted.
4. Respond to emergencies	**4.1.** Respond to alarms and warning devices. **4.2.** **Emergency response plans and procedures** are responded to. **4.3.** **First aid procedures** during emergency situations are identified.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. OHS policies	**1.1.** Organisational OHS polices **1.2.** International OHS requirements **1.3.** Fire safety rules and regulations
2. Emergency response plans and procedures	**2.1.** Firefighting procedures **2.2.** Earthquake response procedures **2.3.** Emergency response plans and procedures **2.4.** Medical and first aid

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
3. First aid procedure	**3.1.** Washing of open wound **3.2.** Washing chemically infected area **3.3.** Applying bandage **3.4.** Taking appropriate medicine
4. Personal protective equipment	**4.1.** Safety glasses **4.2.** Ear plugs **4.3.** Gloves **4.4.** Apron **4.5.** Helmet **4.6.** Mask **4.7.** Safety shoes

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Identified OHS policies and procedures **1.2.** Applied personal health and safety practices (including PPE) **1.3.** Reported hazards and risks **1.4.** Responded to emergencies
2. Underpinning knowledge	**2.1.** Workplace OHS policies and procedures **2.2.** Work safety procedures **2.3.** Emergency response procedures: **2.3.1.** Fire fighting **2.3.2.** Earthquake response **2.3.3.** Accident response **2.4.** Types of hazards (biological, chemical and physical) and their effects **2.5.** OHS awareness **2.6.** Personal protective equipment (PPE)
3. Underpinning skills	**3.1.** Identifying OHS policies and procedures **3.2.** Applying personal health and safety practices **3.3.** Reporting hazards and risks **3.4.** Responding to emergencies

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
4. Underpinning attitudes	**4.1.** Committed to occupational health and safety practices **4.2.** Communicates well with peers, subordinates and seniors in workplace **4.3.** Prompt in carrying out activities **4.4.** Tidy and punctual **4.5.** Sincere and honest concerning duties **4.6.** Responsible during emergencies
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Personal protective equipment (PPE) **5.3.** Firefighting equipment **5.4.** Emergency response manual **5.5.** First aid kits **5.6.** Stationary **5.7.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Read and interpret sketches and drawings
Unit Code:	SEIP-LE-CAD-02-S
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to read and interpret sketches and drawings. It specifically includes interpreting information and specifications, and reading and interpreting sketches and drawings.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Interpret information and specifications	**1.1.** Appropriate **manuals** for work activity are identified and collected. **1.2.** Information and **specifications** in the manuals is interpreted and applied.
2. Read and interpret sketches and drawings	**2.1.** Relevant **sketches and drawings** are identified for job requirement. **2.2.** Key **terms and abbreviations** are identified and interpreted. **2.3.** **Signs and symbols** are identified and interpreted. **2.4.** Schedules, dimensions, sketches, drawings and specifications are correctly read and interpreted.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Manuals	**1.1.** Buyers specification **1.2.** Compliance **1.3.** Maintenance procedure **1.4.** Periodic maintenance **1.5.** Quality assurance **1.6.** Standard operating procedure (SOP)
2. Sketches and drawings	**2.1.** Technical **2.2.** Measurement **2.3.** Design
3. Specifications	**3.1.** Product **3.2.** Performance **3.3.** Method
4. Terms and abbreviations	**4.1.** Refers to all terms and abbreviations associated with the Light Engineering Sector
5. Signs and symbols	**5.1.** Include all signs and symbols associated with the Light Engineering Sector

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Identified information and specifications **1.2.** Read and interpreted sketches and drawings
2. Underpinning knowledge	**2.1.** Manuals **2.2.** Units of measurement **2.3.** Units of conversion **2.4.** Sketches, drawings and specifications
3. Underpinning skills	**3.1.** Reading and identifying information and specifications (from manual) **3.2.** Reading and interpreting sketches and drawings
4. Underpinning attitudes	**4.1.** Eager to learn **4.2.** Tidy and punctual **4.3.** Concerned about proper use of computer and peripherals **4.4.** Concerned for other's rights **4.5.** Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Computer/laptop/notebook **5.3.** Software **5.4.** Stationary **5.5.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

Unit Title:	Use hand and power tools
Unit Code:	SEIP-LE-CAD-03-S
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to use hand and power tools in the workplace. It specifically includes identifying and inspecting hand and power tools for usability, using and operating tools properly and safely, and cleaning and maintaining hand and power tools after use.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Identify and inspect hand and power tools	**1.1.** Appropriate hand and power tools are identified. **1.2.** Application of hand and power tools is recognized. **1.3.** Usability of hand and power tools is checked and verified.
2. Use hand tools properly and safely	**2.1.** Appropriate **hand tools** are selected. **2.2.** Safety precautions are ensured before using hand tools. **2.3.** Unsafe or faulty hand tools are identified and marked for repair. **2.4.** **Measuring tools** are checked and calibrated before use. **2.5.** Use hand tools properly and safely to perform work activity.
3. Operate power tools properly and safely	**3.1.** Appropriate **power tools** are selected. **3.2.** Power supply outlet and electrical cord are inspected and confirmed safe for use in accordance with established workplace safety requirements. **3.3.** Safety precautions are ensured before using power tools in accordance with manufacturer's operating specification. **3.4.** Proper sequence of operation applied for using power tools. **3.5.** Unsafe or faulty power tools are identified and marked for repair. **3.6.** Operate power tools properly and safely to perform work activity.
4. Clean and maintain hand and power tools	**4.1.** Dust and foreign matter is removed from hand and power tools in accordance to workplace standards. **4.2.** Condition of hand and power tools is checked after use and reported. **4.3.** Appropriate lubricant is applied after use and prior to storage. **4.4.** Measuring tools are checked and calibrated after use. **4.5.** Defective hand and power tools are inspected and repaired or replaced. **4.6.** Hand and power tools are stored and secured in accordance with workplace requirements.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Hand tools	**1.1.** Hammer **1.2.** Bench vice **1.3.** Files **1.4.** Punches **1.5.** Chisels **1.6.** Wrenches **1.7.** Pliers **1.8.** Scriber **1.9.** Screwdrivers **1.10.** Hacksaw **1.11.** Socket spanners **1.12.** Spanners **1.13.** Vice grip **1.14.** Wire cutters **1.15.** Drill **1.16.** Grinder **1.17.** Clamps **1.18.** Jacks
2. Power tools	**2.1.** Drills **2.2.** Rivet gun **2.3.** Grinders **2.4.** Saws **2.5.** Glue guns **2.6.** Soldering iron
3. Measuring tools	**3.1.** Meters **3.2.** Testers **3.3.** Megger **3.4.** Measuring tape **3.5.** Hose level **3.6.** Water level **3.7.** Caliper **3.8.** Steel rule **3.9.** Protractor **3.10.** Tri-square

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Identified and selected appropriate hand and power tools for work to be performed **1.2.** Identified and used measuring and testing tools appropriate to work activity **1.3.** Followed safety precautions when using hand and power tools **1.4.** Operated power tools safely and pursuant to manufacturer's operating specification **1.5.** Performed cleaning and maintenance of hand and power tools after use and prior to storing
2. Underpinning knowledge	**2.1.** Information on types of hand and power tools, their functions and use **2.2.** Procedures for safely using hand and power tools
3. Underpinning skills	**3.1.** Identifying hand, power and measuring tools **3.2.** Following safety precautions when using hand, power and measuring tools **3.3.** Using hand and measuring tools correctly and safely in accordance with manufacturer's operating specification **3.4.** Operating power tools correctly and safely in accordance with manufacturer's operating specification **3.5.** Cleaning and maintaining hand and power tools after use **3.6.** Applying appropriate lubricant on hand and power tools after use and prior to storing
4. Underpinning attitudes	**4.1.** Commitment to occupational health and safety **4.2.** Promptness in carrying out activities **4.3.** Sincere and honest to duties **4.4.** Environmental concerns **4.5.** Tidiness and timeliness **4.6.** Concerned for proper use of tools
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Personal protective equipment (PPE) **5.3.** Hand tools **5.4.** Power tools **5.5.** Measuring tools **5.6.** Projector **5.7.** Stationary **5.8.** Learning manual

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Unit Title:	Apply quality system
Unit Code:	SEIP-LE-CAD-04-S
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the knowledge, skills and attitudes required to apply quality systems and procedures in the workplace. It specifically includes the tasks of identifying general quality procedures within a manufacturing environment, applying and monitoring improvement and the application of standard procedures to each job tasks.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Work within quality system	**1.1.** Instructions and procedures are strictly followed in accordance with **quality improvement system**. **1.2.** Duties are performed in accordance with quality improvement system. **1.3.** Defects are detected and reported as per standard operating procedures. **1.4.** Quality service is delivered to customer in providing a product or service.
2. Apply and monitor quality improvement system	**2.1.** Performance measurement systems are identified. **2.2.** Specifications and standard operating procedure are identified and established. **2.3.** Performance is assessed at regular intervals. **2.4.** Defects are detected and reported to authority according to standard operating procedure. **2.5.** Process improvement procedures are contributed to and implemented. **2.6.** Improvement of internal/external customer and supplier relationships is contributed to. **2.7.** Performance of operation or quality of product or service is monitored to ensure customer satisfaction.
3. Apply standard procedures for each job	**3.1.** Concept of supplying product or service to meet the customer's requirements is understood and applied accordingly. **3.2.** Responsibility is taken for quality of own work. **3.3.** Quality system procedures for each job are followed. **3.4.** Conformance to specification is ensured in every case at all situations.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Quality improvement system	**1.1.** Quality inspection **1.2.** Quality control **1.3.** Quality improvement **1.4.** Total quality control **1.5.** Quality assurance

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Followed quality system instructions and procedures **1.2.** Maintained proper specifications and standards of product **1.3.** Checked product for quality assurance **1.4.** Detected defects and took corrective action **1.5.** Applied and monitored quality improvement system **1.6.** Applied standard procedures for each job **1.7.** Ensured customer satisfaction
2. Underpinning knowledge	**2.1.** Quality system procedures **2.2.** Product specifications **2.3.** Quality assurance process **2.4.** Performance measurement systems **2.5.** Standard operating procedures **2.6.** Record keeping
3. Underpinning skills	**3.1.** Identifying and explaining quality improvement system **3.2.** Identifying product and process specifications and standards **3.3.** Applying and monitoring quality improvement system **3.4.** Detecting defects and faults in product **3.5.** Implementing corrective action **3.6.** Keeping records in accordance with standard operating procedure **3.7.** Identifying and meeting customer requirements

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
4. Underpinning attitudes	**4.1.** Promptness in carrying out activities **4.2.** Sincere and honest to duties **4.3.** Tidy and punctual **4.4.** Active on teamwork **4.5.** Eager to learn **4.6.** Communicate with peers and seniors in the workplace **4.7.** Environmental concerns **4.8.** Concerned for proper use of tools **4.9.** Commitment to occupational health and safety
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Tools and equipment **5.3.** Measuring instruments **5.4.** Drawings and specifications **5.5.** Manuals, codes, standards and reference material **5.6.** Projector **5.7.** Stationary **5.8.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Occupation-specific Competencies

Unit Title:	Create mechanical drawing
Unit Code:	SEIP-LE-CAD-01-O
Nominal Hours:	20 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to create mechanical drawing. It specifically includes identifying drawing and, creating drawing.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Identify drawing	**1.1.** Job specification and instructions are identified and followed. **1.2.** Symbols in **technical drawing** are identified and interpreted**.** **1.3.** Technical drawing is read and interpreted. **1.4.** Dimensions are identified as appropriate. **1.5.** Components, assemblies, objects and materials are identified. **1.6.** **Tolerance**, limits and fits are identified in technical drawing.
2. Create drawing	**2.1.** Drawing is created accurately. **2.2.** Objects or parts are drawn appropriately. **2.3.** Dimensions are clearly specified in drawing. **2.4.** Base line or datum points are specified, as required. **2.5.** Instructions are included in drawing.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Technical drawing	**1.1.** Drawing technique includes: **1.1.1.** Perspective **1.1.2.** Exploded view **1.1.3.** Hidden view
2. Tolerance	**2.1.** General **2.2.** Angular **2.3.** Geometric

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Interpreted technical drawing **1.2.** Interpreted job specifications and instructions **1.3.** Created drawing **1.4.** Identified and interpreted drawing
2. Underpinning knowledge	**2.1.** Alphabet of lines **2.2.** Drawing symbols **2.3.** Dimensioning techniques **2.4.** Tolerance, limits and fits **2.5.** Engineering materials **2.6.** Drawing tools and supplies
3. Underpinning skills	**3.1.** Interpreting technical drawing **3.2.** Creating drawing **3.3.** Identifying and interpreting sketch
4. Underpinning attitudes	**4.1.** Tidy and punctual **4.2.** Prompt in carrying out activities **4.3.** Sincere and honest concerning duties **4.4.** Active on teamwork **4.5.** Eager to learn **4.6.** Concerned for proper use of tools **4.7.** Concerned about the work environment **4.8.** Committed to occupational health and safety practices **4.9.** Respectful of peers, subordinates and seniors in the workplace **4.10.** Communicate with peers and seniors in the workplace
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Drawing tools and equipment **5.3.** Measuring tools **5.4.** Specimen parts and components **5.5.** Drawings, sketches and blueprints (samples) **5.6.** Projector **5.7.** Stationary **5.8.** Learning manual

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Carry out CNC lathe machine operations
Unit Code:	SEIP-LE-CAD-02-O
Nominal Hours:	20 hours
Unit Descriptor:	This unit of competency covers the skills, knowledge and attitudes required to carry out CNC lathe machine operations. It specifically includes setting-up CNC lathe machine, downloading and inputting programme, performing CNC lathe machine operations and, checking and measuring work piece.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Set-up CNC lathe machine	**1.1.** Oil and coolant is checked as per manufacturer's specification. **1.2.** Air and hydraulic pressure is checked as per manufacturer's specification. **1.3.** Machine zero point is set to the required position. **1.4.** **Cutting tools** are set according to required sequence of operation. **1.5.** **Clamping devices** are set and tightened according to standard operating procedures. **1.6.** **Tool set-up** is performed as per standard operating procedures. **1.7.** Work piece is mounted and centred on clamping device to required level of accuracy as per workplace procedures.
2. Download and input programme	**2.1.** Programme is downloaded and inputted into the machine using appropriate device. **2.2.** Programme is simulated to determine the correctness of the tool path and other work parameters.
3. Perform CNC lathe machine operations	**3.1.** Work piece is mounted as per standard operating procedures. **3.2.** **CNC lathe operations** are performed to produce component as per programme. **3.3.** **Corrective measures** are performed, if necessary.
4. Check and measure work piece	**4.1.** Work piece is checked and measured against specification using appropriate methods and measuring tools. **4.2.** Defective work pieces are marked, recorded and reported for proper action.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Cutting tools	**1.1.** Turning **1.2.** Grooving **1.3.** Drilling **1.4.** Threading **1.5.** Parting-off **1.6.** Boring **1.7.** Taping **1.8.** Finishing
2. Clamping devices	**2.1.** Three jaw chuck **2.2.** Collect chuck **2.3.** Live centre **2.4.** Bar feeder **2.5.** Part catcher **2.6.** Tool centre
3. Tool set-up	**3.1.** Scratch method **3.2.** Tool-setting device method
4. CNC lathe operations	**4.1.** Facing (transversal) **4.2.** Straight turning (longitudinal/plain) **4.3.** Contour turning (circular, taper) **4.4.** Recess, shoulders, grooves, fillets and chamfers **4.5.** Thread cutting **4.6.** Parting-off **4.7.** Drilling **4.8.** Boring **4.9.** Taping
5. Corrective measures	**5.1.** Replacement of cutting tools **5.2.** Adjustment of tool offset **5.3.** Adjustment of cutting speed and feed rate

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Established job requirements and work piece specifications **1.2.** Identified and selected correct tools and equipment **1.3.** Set-up work using appropriate tools, equipment and clamping device **1.4.** Selected, calculated and used appropriate speed, feed rate and depth of cut **1.5.** Performed CNC lathe machine operations **1.6.** Checked and measured work piece against specifications **1.7.** Performed any necessary corrective measures to work piece
2. Underpinning knowledge	**2.1.** Job requirements and work piece specifications **2.2.** Tools, equipment and materials **2.3.** Set-up of CNC lathe machine **2.4.** Setting of cutting tools **2.5.** Procedure for checking oil and coolant **2.6.** Procedure for checking air and hydraulic pressure **2.7.** Procedure for setting machine zero point **2.8.** CNC lathe machine operations **2.9.** Measuring tools and corrective measures
3. Underpinning skills	**3.1.** Establishing job requirements and work piece specifications **3.2.** Identifying and selecting correct tools and equipment **3.3.** Setting-up work to using appropriate tools, equipment and clamping device **3.4.** Setting work to avoid distortion on release of clamping devices **3.5.** Selecting, calculating and using appropriate speed, feed and depth of cut **3.6.** Planning and sequencing of operations **3.7.** Checking conformance to specifications **3.8.** Performing CNC lathe machine operations using precision measuring equipment **3.9.** Checking and measuring work piece against specifications within specified tolerances **3.10.** Performing any necessary corrective measures

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
4. Underpinning attitudes	**4.1.** Prompt in carrying out activities **4.2.** Tidy and punctual **4.3.** Eager to learn **4.4.** Active on teamwork **4.5.** Sincere and honest concerning duties **4.6.** Concerned for proper use of tools **4.7.** Concerned about the work environment **4.8.** Committed to occupational health and safety practices **4.9.** Respectful of peers, subordinates and seniors in the workplace **4.10.** Communicates well with peers, subordinates and seniors in workplace
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Computer/laptop/notebook **5.3.** Software **5.4.** Personal protective equipment (PPE) **5.5.** Tools and equipment **5.6.** CNC lathe machine **5.7.** Drawings, specifications and work instructions **5.8.** Materials **5.9.** Projector **5.10.** Stationary **5.11.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

Unit Title:	Carry out CNC milling machine operations
Unit Code:	SEIP-LE-CAD-03-O
Nominal Hours:	20 hours
Unit Descriptor:	This unit of competency covers the skills, knowledge and attitudes required to carry out CNC milling machine operations. It specifically includes setting-up CNC milling machine, downloading and inputting programme, performing CNC milling machine operation and, checking and measuring work piece.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Set-up CNC milling machine	**1.1.** Oil and coolant is checked as per manufacturer's specification. **1.2.** Air and hydraulic pressure is checked as per manufacturer's specification. **1.3.** Machine zero point is set to the required position. **1.4.** **Cutting tools** are set according to required sequence of operation. **1.5.** **Clamping devices** are set and tightened according to standard operating procedures. **1.6.** **Tool set-up** is performed as per standard operating procedures. **1.7.** Work piece is mounted and centred on clamping device to required level of accuracy as per workplace procedures.
2. Download and input programme	**2.1.** Programme is downloaded and inputted into the machine using appropriate device. **2.2.** Programme is simulated to determine the correctness of the tool path and other work parameters.
3. Perform CNC milling machine operations	**3.1.** Work piece is mounted as per standard operating procedures. **3.2.** **CNC milling operations** are performed to produce component as per program. **3.3.** Corrective measures are performed, if necessary.
4. Check and measure work piece	**4.1.** Work piece is checked and measured against specification using appropriate methods and measuring tools. **4.2.** Defective work pieces are marked, recorded and reported for proper action.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Cutting tools	**1.1.** Face milling **1.2.** End milling **1.3.** Drilling **1.4.** Boring **1.5.** Threading **1.6.** Side milling **1.7.** Form milling **1.8.** Profile milling
2. Clamping devices	**2.1.** Angle plate **2.2.** V-Block, U-Clamp and C-Clamp **2.3.** Step-Block **2.4.** Bent-Tail machine clamp **2.5.** Finger machine clamp **2.6.** Machine strap clamp **2.7.** T-Slot bolt **2.8.** Machine vice **2.9.** Toggle clamps **2.10.** Pneumatic fastening clamps **2.11.** Jig and fixtures
3. Tool set-up	**3.1.** Scratch method **3.2.** Tool-setting device method
4. CNC milling operations	**4.1.** Face (transversal) **4.2.** Side **4.3.** Shoulder facing **4.4.** Recess, shoulders, grooves, fillets and chamfers **4.5.** Gear cutting **4.6.** Sprocket **4.7.** Profile **4.8.** Form relieved **4.9.** Staggered tooth **4.10.** Double angle

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Established job requirements and work piece specifications **1.2.** Identified and selected correct tools and equipment **1.3.** Set-up work using appropriate tools, equipment and clamping device **1.4.** Selected, calculated and used appropriate speed, feed rate and depth of cut **1.5.** Carried out CNC milling machine operations **1.6.** Checked and measured work piece against specifications **1.7.** Performed any necessary corrective measures to work piece **1.8.** Carried out proper shutdown procedure **1.9.** Carried out basic file maintenance and data security **1.10.** Performed cleaning and maintenance procedures
2. Underpinning knowledge	**2.1.** Job requirements and work piece specifications **2.2.** Tools, equipment and materials **2.3.** Set-up of CNC milling machine **2.4.** Setting of cutting tools **2.5.** Procedure for checking oil and coolant **2.6.** Procedure for checking air and hydraulic pressure **2.7.** Procedure for setting machine zero point **2.8.** CNC milling machine operations **2.9.** Measuring tools and corrective measures **2.10.** Quality assurance processes **2.11.** Shutdown procedure **2.12.** Data security and basic file maintenance **2.13.** Cleaning and maintenance procedures

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
3. Underpinning skills	**3.1.** Establishing job requirements and work piece specifications **3.2.** Identifying and selecting correct tools and equipment **3.3.** Setting-up work to using appropriate tools, equipment and clamping device **3.4.** Setting work to avoid distortion on release of clamping devices **3.5.** Selecting, calculating and using appropriate speed, feed and depth of cut **3.6.** Planning and sequencing of operations **3.7.** Checking conformance to specifications **3.8.** Carrying out CNC milling machine operations using precision measuring equipment **3.9.** Applying 4th axis operation **3.10.** Checking and measuring work piece against specifications within specified tolerances **3.11.** Performing any necessary corrective measures **3.12.** Carrying out proper shutdown procedure **3.13.** Carrying out basic file maintenance and data security **3.14.** Performing cleaning and maintenance procedures
4. Underpinning attitudes	**4.1.** Prompt in carrying out activities **4.2.** Tidy and punctual **4.3.** Eager to learn **4.4.** Active on teamwork **4.5.** Sincere and honest concerning duties **4.6.** Concerned for proper use of tools **4.7.** Concerned about the work environment **4.8.** Committed to occupational health and safety practices **4.9.** Respectful of peers, subordinates and seniors in the workplace **4.10.** Communicates well with peers, subordinates and seniors in workplace

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Computer/laptop/notebook **5.3.** Software **5.4.** Personal protective equipment (PPE) **5.5.** Tools and equipment **5.6.** CNC milling machine **5.7.** Drawings, specifications and work instructions **5.8.** Materials **5.9.** Projector **5.10.** Stationary **5.11.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

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Unit Title:	Develop 3D model using CAD software
Unit Code:	SEIP-LE-CAD-04-O
Nominal Hours:	100 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to develop 3D model using CAD Software. It specifically includes preparing CAD environment, creating 2D drawing, developing 3D model and, saving and printing drawing.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Prepare CAD environment	**1.1.** **Instructions for developing CAD environment** are identified and followed. **1.2.** CAD package is installed as per standard operating procedure. **1.3.** Screen display areas and **basic parameters** are set as per job specification.
2. Produce 2D drawing	**2.1.** **Sketch tools** are identified and selected for 2D drawing. **2.2.** **Sketch modified tools** are identified and selected for 2D drawing. **2.3.** 2D **sketch relations** are identified and explained. **2.4.** 2D drawing is created. **2.5.** CAD drawing is reviewed and modified, as necessary.
3. Create 3D model	**3.1.** **Features tools** are identified and selected for 3D model. **3.2.** **Direct editing tools** are identified and selected for 3D model. **3.3.** 3D model is created. **3.4.** 3D model is reviewed and modified, as necessary.
4. Save and print drawing	**4.1.** 2D drawing is generated from 3D model. **4.2.** Drawing file is saved in designated folder as per standard operating procedure. **4.3.** Drawing file is printed as per standard operating procedure. **4.4.** Software program and computer are shut-down as per standard operating procedure.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. Instructions for developing CAD environment	**1.1.** Hardware **1.2.** Operating system **1.3.** Software (Solidworks, Siemens NX, CATIA etc.) **1.4.** Sample product/work piece **1.5.** Drawings and/or sketches **1.6.** Manual

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
2. Basic parameters	**2.1.** User interface **2.2.** Units (mm or inch) **2.3.** Colour and text format
3. Sketch tools	**3.1.** Lines **3.2.** Arcs **3.3.** Circles **3.4.** Polygons **3.5.** Ellipses **3.6.** Spline **3.7.** Slot
4. Sketch modified tools	**4.1.** Trim **4.2.** Offset **4.3.** Mirror **4.4.** Linear and circular pattern **4.5.** Move, copy, rotate, scale, extend and stretch
5. Sketch relations	**5.1.** Horizontal **5.2.** Vertical **5.3.** Coincident **5.4.** Intersection **5.5.** Tangent **5.6.** Collinear **5.7.** Parallel **5.8.** Concentric
6. Feature tools	**6.1.** Extruded boss/base **6.2.** Extruded cut **6.3.** Revolved boss/base **6.4.** Revolved cut **6.5.** Swept boss/base **6.6.** Swept cut **6.7.** Lofted boss/base **6.8.** Lofted cut **6.9.** Fillet, rib, draft, shell, wrap and mirror
7. Direct editing tools	**7.1.** Move face **7.2.** Move/copy bodies **7.3.** Delete face **7.4.** Split **7.5.** Combine

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.5.** Identified and interpreted job requirements **1.6.** Prepared CAD environment **1.7.** Produced 2D drawing **1.8.** Created 3D model **1.9.** Saved and printed drawing
2. Underpinning knowledge	**2.1.** CAD software and equipment **2.2.** Software maintenance **2.3.** CAD drawings **2.4.** Sketch tools **2.5.** Feature tools **2.6.** Direct editing tools **2.7.** Drawing interpretation: **2.4.1.** Standard drawing scales, symbols and abbreviations **2.4.2.** Orthographic projection (1st and 3rd angle) **2.4.3.** Perspective **2.4.4.** Sections **2.4.5.** Dimensioning **2.4.6.** Tolerances **2.4.7.** Surface condition (surface finish/texture) **2.4.8.** Limits and fits **2.8.** Mechanical drawing **2.9.** Procedure for saving and printing files
3. Underpinning skills	**3.1.** Operating computer **3.2.** Installing CAD software **3.3.** Using CAD software **3.4.** Drafting mechanical drawings **3.5.** Producing 2D drawing **3.6.** Creating 3D model
4. Underpinning attitudes	**4.1.** Prompt in carrying out activities **4.2.** Tidy and punctual **4.3.** Eager to learn **4.4.** Active on teamwork **4.5.** Sincere and honest concerning duties **4.6.** Concerned for proper use of tools **4.7.** Concerned about proper use of computer and peripherals **4.8.** Committed to occupational health and safety practices **4.9.** Communicates well with peers, subordinates and seniors in workplace

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Computer/laptop/notebook **5.3.** Software **5.4.** Internet **5.5.** Printer/plotter **5.6.** Tools and equipment **5.7.** Measuring instruments **5.8.** Job specifications, drawings or work instructions **5.9.** Projector **5.10.** Stationary **5.11.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.3.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.4.** Assessment must be done by a suitably qualified/certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

Unit Title:	Perform CAM programming
Unit Code:	SEIP-LE-CAD-05-O
Nominal Hours:	80 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to perform CAM programming. It specifically includes preparing CAM environment, carrying out CAM programming and, loading and running programme.
Elements of Competency	**Performance Criteria** (**bold and underlined** terms are elaborated in the Range of Variables)
1. Prepare CAM environment	**1.1.** Materials, instructions and standard operating procedure are obtained according to job requirement. **1.2.** CAM package is installed as per standard operating procedure. **1.3.** **System parameters** are identified and selected according to job requirement.
2. Carry out CAM programming	**2.1.** CAD model is oriented. **2.2.** Reference point is established based on job requirement. **2.3.** Stock set-up is performed. **2.4.** Cutting tools are identified and selected **2.5.** Sequential **toolpaths** are identified, generated and verified. **2.6.** NC programme is generated.
3. Load and run programme	**3.1.** Programme is loaded using appropriate **device**. **3.2.** Dry run/simulation is performed in machine as per standard operating procedure. **3.3.** Programme is executed to produce work piece. **3.4.** **Problems** encountered are recorded and reported to appropriate authority as per standard operating procedure. **3.5.** Equipment is cleaned and maintained as per standard operating procedure.

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
1. System parameters	**1.1.** Metric or English **1.2.** Layers **1.3.** Tool bars (dimensioning, line types, editing, hatching)

Range of Variables	
Variable	**Range** ***(may include but not limited to)***
2. Toolpaths	**2.1.** Facing **2.2.** Drilling **2.3.** Tapping **2.4.** Pocket milling **2.5.** Contour **2.6.** Parallel **2.7.** Scallop **2.8.** Waterline
3. Device	**3.1.** RS-232 **3.2.** Flash card **3.3.** USB drive **3.4.** Memory card
4. Problems	**4.1.** Incorrect machine set-up **4.2.** Incorrect parameter setting **4.3.** Incorrect tool and work offset **4.4.** Defective raw materials

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: **1.1.** Identified and interpreted job requirements **1.2.** Created/imported CAD drawing **1.3.** Set CAM parameters **1.4.** Created and edited CNC program **1.5.** Loaded and ran program

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
2. Underpinning knowledge	**2.1.** CAM software and equipment **2.2.** Software maintenance **2.3.** CAD drawings **2.4.** Direct editing tools **2.5.** Drawing interpretation: **2.5.1.** Standard drawing scales, symbols and abbreviations **2.5.2.** Orthographic projection (1st and 3rd angle) **2.5.3.** Perspective **2.5.4.** Sections **2.5.5.** Dimensioning **2.5.6.** Tolerances **2.5.7.** Surface condition surface finish/texture) **2.5.8.** Limits and fits **2.6.** Mechanical drawing **2.8.** Lathe and milling machine operations **2.9.** Application of G–codes and M–codes
2. Underpinning skills	**3.1.** Identifying cutting tools and equipment **3.2.** Drafting and designing **3.3.** Determining workpiece specifications **3.4.** Setting CAM parameters **3.5.** Using measuring instruments **3.6.** Computing feed, cutting speed and machine RPM **3.7.** Applying G–codes and M–codes
3. Underpinning attitudes	**4.1.** Prompt in carrying out activities **4.2.** Tidy and punctual **4.3.** Eager to learn **4.4.** Active on teamwork **4.5.** Sincere and honest concerning duties **4.6.** Concerned for proper use of tools **4.7.** Concerned about proper use of computer and peripherals **4.8.** Committed to occupational health and safety practices **4.9.** Communicates well with peers, subordinates and seniors in workplace

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5. Resource implications	The following resources must be provided: **5.1.** Workplace (simulated or actual) **5.2.** Computer/laptop/notebook **5.3.** Software **5.4.** Internet **5.5.** Job specifications, drawings or work instructions **5.6.** Projector **5.7.** Stationary **5.8.** Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: **6.1.** Written test **6.2.** Oral test **6.3.** Observation **6.4.** Demonstration **6.5.** Portfolio
7. Context of assessment	**7.1.** Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. **7.2.** Assessment must be done by a suitably qualified/certified assessor.
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