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QUALIFICATION FILE

< CNC Turning Operator>

☒ Short Term Training (STT) ☐ Long Term Training (LTT) ☐ Apprenticeship

☐ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA

☒General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

NCrF/NSQF Level: 4

Submitted By:

< Capital Goods and Strategic Skill Council >
< 39, 1st Floor, Samyak Tower, Pusa Road, New Delhi-110005 >

Table of Contents

Section 1: Basic Details

1.	**Qualification Name**	**CNC Turning Operator**	
2.	**Sector/s**	**Capital Goods and Manufacturing**	
3.	**Type of Qualification: ☐ New ☒ Revised ☐ Has Electives/Options** **☐OEM**	**NQR Code & version of existing/previous qualification:** *(change to previous, once approved) 2022/CCM/CGSC/06601 V3.0*	**Qualification Name of existing/previous version:** CNC Operator Turning
4.	**a. OEM Name** **b. Qualification Name** (*Wherever applicable)*		
5.	**National Qualification Register (NQR) Code &Version** (*Will be issued after NSQC approval)*	QG-04-CG-03927-2025-V2-CGSSC V4.0	**6. NCrF/NSQF Level: 4**
7.	**Award (Certificate/Diploma/Advance Diploma/ Any Other** *(Wherever applicable specify multiple entry/exits also & provide details in annexure)*	**Certificate**	
8.	**Brief Description of the Qualification**	A CNC Operator - Turning is responsible for setting up the CNC turning machine, workholding devices, and tooling, loading the machine operating programs, conducting trial runs and correcting faults to ensure the machined components meet the required specifications and quality standards.	
9.	**Eligibility Criteria for Entry for Student/Trainee/Learner/Employee**	**a. Entry Qualification & Relevant Experience:**	

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1	12th grade pass	No Experience required.
2	Completed 2nd year of 3-year diploma (after 10th)	No Experience required.
3	Pursuing 2nd year of 3-year regular Diploma (after 10th)	No Experience required.

			4	10th grade pass with two years of any combination of NTC/NAC/CITS or equivalent.	No Experience required.
			5	8th pass plus 2-year NTC plus 1-Year NAC plus 1-Year CITS	No Experience required.
			6	10th grade pass and pursuing continuous schooling (for 2 year program)	No Experience required.
			7	11th Grade Pass and pursuing continuous schooling	No Experience required.
			8	11th Grade Pass	1 year relevant experience
			9	10th Grade Pass	2 year relevant experience
			10	Previous relevant Qualification of NSQF Level 3.5	1.5 year relevant experience
			11	Previous relevant Qualification of NSQF Level 3.0	3 year relevant experience
		b. Age: <18 Years>			
10.	**Credits Assigned to this Qualification, Subject to Assessment** *(as per National Credit Framework (NCrF))*	15	**11. Common Cost Norm Category (I/II/III)** *(wherever applicable)*: **I**		
12.	**Any Licensing requirements for Undertaking Training on**	NA			

<table>
<tr><td></td><td>This Qualification (wherever applicable)</td><td></td></tr>
<tr><td>13.</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td>☒Offline ☐Online ☐Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>Viva (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>132</td><td>258</td><td>60</td><td>-</td><td>450</td></tr>
<tr><td>Online</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
(Refer Blended Learning Annexure for details)</td></tr>
<tr><td>14.</td><td>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</td><td>NCO-2015/ 7223.40</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td>• CNC Programmer – 5
• Multi Axis CNC Machine Engineer – 6</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td>Hindi</td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td>☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>18.</td><td>Is the Job Role Amenable to Persons with Disability</td><td>☐ Yes ☒ No
If “Yes”, specify applicable type of Disability:</td></tr>
<tr><td>19.</td><td>How Participation of Women will be Encouraged</td><td>Yes via Industry or College Engagement</td></tr>
<tr><td>20.</td><td>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</td><td>☐ Yes ☒ No To be incorporated later</td></tr>
<tr><td>21.</td><td>Is Qualification Suitable to be Offered in Schools/Colleges</td><td>Schools ☐ Yes ☐ No Colleges ☒ Yes ☐ No</td></tr>
<tr><td>22.</td><td>Name and Contact Details of Submitting / Awarding Body SPOC
(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</td><td>Name: Ridhima Sharma
Email : technicaladvisors@cgssc.org Contact No.: +91-8882907092
Website: www.cgssc.org</td></tr>
<tr><td>23.</td><td>Final Approval Date by NSQC:</td><td>24. Validity Duration: 3 Years</td><td>25. Next Review Date</td></tr>
</table>

Section 2: Module Summary

NOS/s of Qualifications
(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

***Th.**-Theory **Pr.**-Practical **OJT**-On the Job **Man.**-Mandatory Training **Rec.**-Recommended **Proj.**-Project **Vi**-*Viva

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	Bridge Module & Follow the health and safety practices at work	CSC/N1335 NOS Version- 2.0	Non-Core	3	2	25	35	-	-	60	30	70	-	-	100	15
2.	Coordinate with co-workers to achieve work efficiency.	CSC/N1336 : Version No. – 2.0	Non-Core	3	1	10	20	-	-	30	30	70	-	-	100	15
3.	Set up the CNC turning machine for operations	CSC/N0120: : Version No. – 2.0	Core	4	5	40	80	30		150	30	70	-	-	100	30
4.	Carry out turning operations using the Advanced CNC machine with Real Time Monitoring System.	CSC/N0115 , v3.0	Core	4	6	45	105	30		180	30	70	-	-	100	35
5.	DGT/VSQ/N0101-Employability Skills (30 hours)	NOS Version No. – 1.0	ES	4	1	12	18	-	-	30	20	30	-	-	50	5
Duration (in Hours) / Total Marks					**15**	**132**	**258**	**60**		**450**	**140**	**310**	**-**	**-**	**450**	**100**

Elective NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.																
2.																
Duration (in Hours) / Total Marks																

Optional NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.																
2.																
Duration (in Hours) / Total Marks																

Assessment - Minimum Qualifying Percentage

*Please specify **any one** of the following:*

Minimum Pass Percentage – Aggregate at qualification level: 70 % *(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)*

Minimum Pass Percentage – NOS/Module-wise: 70 % *(Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)*

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*		**Trainer Prerequisites**

Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	*Specialization*	*Years*	*Specialization*	
Diploma	Diploma	4	CNC Operator-Vertical Machining	0		Practical skills and knowledge required in the relevant job role

						Centre			
			Degree	Degree in Mechanical Engineering		CNC Operator- Vertical Machining Centre	0		Practical skills and knowledge required in the relevant job role

2. **Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*

Master Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E/B.Tech	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	6	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	2	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	NA
B.E/B.Tech	Mechanical/ Electrical/Electronics/ Automobile/ Instrumentation	7	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	1	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	NA
M.E/M.Tech	Mechanical/ Electrical/Electronics/ Automobile/ Instrumentation	4	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	2	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	NA

3.	**Tools and Equipment Required for Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	NA

Section 4: Assessment Related

Assessor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma	Diploma /Degree	4	CNC Operator-Vertical Machining Centre	1		Practical skills and knowledge required in the relevant job role
Degree	Degree in Mechanical Engineering		CNC Operator-Vertical Machining Centre	1		Practical skills and knowledge required in the relevant job role

Proctor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*

Proctor's Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E/B.Tech	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	6	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	2	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	NA
B.E/B.Tech	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	7	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	1	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	NA
M.E/M.Tech	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	3	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	2	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	NA

Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*

Proctor's Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E/B.Tech	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	7	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	2	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	NA
B.E/B.Tech	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	8	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	1	Mechanical/Electrical/ Electronics/ Automobile/ Instrumentation	NA
M.E/M.Tech	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	4	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	2	Mechanical/ Electrical/ Electronics/ Automobile/ Instrumentation	NA

	Assessment Mode *(Specify the assessment mode)*	**Formative, Summative & Skill Assessment**
	Tools and Equipment Required for Assessment	☒ Same as for training ☐ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** No
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** No (Industry driven)
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes
4.	**Number of Industry validation provided:** NA
5.	**Estimated nos. of persons to be trained and employed:** 15258
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments: Yes** If "No", why:

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF level/NSQF descriptors *(Mandatory)*	*Q File*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Q File*
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Q File*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Q File*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	
7.	**Annexure:** Acronym and Glossary *(Optional)*	
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	
10.	**Supporting Document:** Occupational Map *(Mandatory)*	

11.	**Supporting Document:** Assessment SOP *(Mandatory)*	
12.	**Any other document you wish to submit:**	

Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	**Wide-ranging specialized theoretical learning requirements** • Process of preparing for setting the CNC turning machine • Process of setting the CNC turning machine • Process of preparing for carrying out turning operations • Process of carrying out turning operations • Process of checking for safe resting of the component on resting pads and clamping load of fixture • Process of loading and unloading component(s) using the appropriate fixtures or work holding devices. • Process of selecting the appropriate work holding/ fixturing device	The job involves a range of theoretical understanding and practical skills as can be seen from the job requirements given in the adjacent cell. The skills include setting up CNC turning machine for carrying out turning operations and operating the Computer Numerically Controlled (CNC) lathe machines to perform turning operations	4
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Understand the concepts and benefits of Industry 4.0 and the Industrial Internet of Things (IIoT). • Knowledge of carrying out relevant documentation. • Knowledge of operating a CNC turning machine in closed-door conditions • Understand the applications of CNC Turning machines • Know how to set the workholding devices.	As indicated by the knowledge and understanding requirements mentioned in the adjacent cell, the job holder needs to have a wide range of information for operating the Computer Numerically Controlled (CNC) lathe machines to perform turning operations	4

	• Understand the applications of CNC Turning machines • Knowledge of fitting and adjusting machine guards • Know how to read and interpret first and third angle component drawings		
Employment Readiness & Entrepreneurship **Skills & Mind-set/Professional Skill**	• check the process sheet and match it with the received drawings • identify the tool requirements from the tooling layout and assess their suitability • check the availability of required cutting, measuring and hand tools • select the appropriate work holding/ fixturing device as per the job requirement • ensure the correct and latest part program is uploaded onto the CNC system • check the runout of chuck and the taper of tailstock are as recommended • pre-set the tooling appropriately using setting jigs/fixtures • check the measuring equipment to ensure they are calibrated and approved for use • check the tools and fixtures to ensure they are calibrated appropriately, and free from damage • check that tools have the required tool number in relation to the operating program • check the process sheet and match it with the received drawings and other specifications • check the availability of the required tools and measuring instruments • check for safe resting of the component on resting pads and clamping load of fixture	As indicated by the performance criteria in the adjacent cell, the job holder needs to have wide-ranging practical skills for operating the Computer Numerically Controlled (CNC) lathe machines to perform turning operations	4

Broad Learning Outcomes/Core Skill	**Logical and mathematical skills** • Follow the technical specification and appropriate procedures. • Perform work-related calculations **Collecting and organising information** • Use the standard templates and tools for documenting work • Collect the relevant information concerning the operation of Computer Numerically Controlled (CNC) lathe machines to perform turning operations in the instrumentation system and carry out the appropriate documentation.	The job holder requires logical and relevant mathematical skills for instruments and faulty components in the instrumentation system. As indicated by the performance criteria in the adjacent cell, the job involves setting up CNC turning machine for carrying out turning operations and operating the Computer Numerically Controlled (CNC) lathe machines to perform turning operations	4
Responsibility	• Responsible for determining the job requirements • Responsible to mount tools in the correct position in the tool holder. • Responsible to carry out the necessary documentation • Responsible for following the appropriate troubleshooting steps to resolve issues. • Responsible for selecting the appropriate Personal Protective Equipment (PPE) for the turning operations • Responsible for carrying out minor repair and maintenance on the CNC turning machine. • Responsible for carrying out first part cutting trial by setting tool offsets to get oversize part	A CNC Operator - Turning is responsible for setting up the CNC turning machine, workholding devices, and tooling; loading the machine operating programs; conducting trial runs and correcting faults to ensure the machined components meet the required specifications and quality standards.	4

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 20-25 Nos

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Chairs/Tables		25
2	Computer with internet		25
3	LCD projector with screen		1
4	Trainer chair and Table		1
5	Demonstration table pin up boards		1
6	White board with marker		1
7	CNC Turning Machines	(2- Axis CNC Lathe Machine)	1
8	Turning Tools	Cutting Tools Measuring Tools, Hand Tools, Power Tools	1 Each
9	Hand Grinders		1
10	GD&T Instruments		1 Set
11	Work Pieces		1 Set
12	Fire Extinguisher		1
13	Safety Gloves (Rubber)		25
14	Ear Plugs		25
15	Safety Shoes & Helmet		25
16	Goggles		25
17	First-Aid Kit		2

Classroom Aids
The aids required to conduct sessions in the classroom are:

1. Computer / Laptop
2. Whiteboard and marker
3. Projector

Annexure: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
FY2025-2026	0	0	0	0	0	0
FY2026-2027	3390	2003	339	200	34	20
FY2027-2028	3373	1993	337	199	34	20

Data to be provided year-wise for next 3 years

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
	FY2022-2023	2215	1867	1724	1440	222	187	187	144	22	19	17	14
	FY2023-2024	3082	2420	2201	2003	308	242	220	157	31	24	22	20
	FY2024-2025	3066	1680	1442	1993	307	168	144	109	31	17	14	20

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented:

1. PMKVY 4.0 CSM STT
2. Non PMKVY
3. TNSDC
4. Fee Based
5. NABARD
6. MSSDS
7. GSDM
8. SDIS Orissa State Skilling Scheme
9. NULM
10. SDIS DDU GKY

Content availability for previous versions of qualifications: PH, FG

☐ Participant Handbook ☐ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available: Hindi

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:
https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf

Annexure: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

CSC/N1335: Follow the health and safety practices at the work

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain personal health and safety	**7**	**12**	**-**	**-**
PC1. follow the recommended practices to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask	2	3	-	-
PC2. check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them	1	2	-	-
PC3. select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions	1	2	-	-
PC4. follow the recommended techniques while lifting and moving heavy objects to avoid injury	1	3	-	-
PC5. follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment	2	2	-	-

Assist in hazard management	**4**	**10**	**-**	**-**
PC6. identify existing and potential hazards at work	1	1	-	-
PC7. assess the potential risks and injuries associated with the identified hazards	1	3	-	-
PC8. coordinate with the supervisor or other relevant personnel to prevent or minimise the identified hazards	1	3	-	-
PC9. handle hazardous materials safely and store them in the designated storage	1	3	-	-
Check the first aid box, firefighting and safety equipment	**3**	**7**	**-**	**-**
PC10. check the first aid box to ensure it is updated with the relevant first aid supplies	1	2	-	-
PC11. check and test the firefighting and various safety equipment to ensure they are in usable condition	1	3	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
PC12. coordinate with the supervisor for the repair and replacement of firefighting and safety equipment	1	2	-	-
Assist in waste management	**3**	**8**	**-**	**-**
PC13. segregate waste into appropriate categories	1	3	-	-
PC14. recycle the recyclable waste appropriately	1	3	-	-
PC15. dispose of the non-recyclable waste in an environment-friendly manner, complying with the applicable regulations	1	2	-	-
Follow the fire safety guidelines	**3**	**12**	**-**	**-**
PC16. use the appropriate type of fire extinguisher to extinguish different types of fires safely	1	4	-	-

PC17. follow the recommended practices for a safe rescue during a fire emergency	1	4	-	-
PC18. coordinate with the fire department to request assistance to extinguish a serious fire	1	4	-	-
Follow the emergency and first-aid procedures	**7**	**12**	**-**	**-**
PC19. follow the organisational health and safety guidelines during workplace emergencies to ensure own and co-workers' safety	1	2	-	-
PC20. follow the recommended practices to minimise loss to organisational property during an emergency	1	3	-	-
PC21. follow the recommended procedure to free a person from electrocution	1	2	-	-
PC22. administer appropriate first aid to the injured personnel	1	2	-	-
PC23. perform Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest	1	2	-	-
PC24. coordinate with the emergency services to request medical assistance for seriously injured/ ill personnel requiring professional medical attention or hospitalisation	2	1	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
Carry out relevant documentation and review	**3**	**9**	**-**	**-**
PC25. carry out appropriate documentation following a health and safety incident at work, including all the required information	1	3	-	-
PC26. coordinate with the relevant personnel to review health and safety conditions at work regularly or following an incident	1	3	-	-
PC27. assist in implementing appropriate changes to improve the health and safety conditions at work	1	3	-	-

NOS Total	**30**	**70**	**-**	**-**

CSC/N1336: Coordinate with co-workers to achieve work efficiency

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work effectively with co-workers	**20**	**43**	**-**	**-**
PC1. plan daily tasks at work to ensure their timely completion and efficient use of time	2	4	-	-
PC2. carry out work responsibilities adhering to the limits of authority	2	4	-	-
PC3. follow the supervisor's instructions to ensure adherence to the applicable quality standards and timescales	2	4	-	-
PC4. coordinate with the co-workers to achieve the work objectives efficiently	2	4	-	-
PC5. prepare the relevant documents and reports as per the supervisor's instructions, providing appropriate information clearly and systematically	2	4	-	-
PC6. coordinate with the supervisor or relevant personnel to deal with out of authority tasks and concerns	2	4	-	-

PC7. mentor and assist subordinates in the execution of their work responsibilities	2	4	-	-
PC8. identify possible disruptions to work through coordination with the relevant stakeholders and take appropriate preventive measures	2	4	-	-
PC9. use various resources efficiently to ensure maximum utilisation and minimum wastage	2	4	-	-
PC10. follow the recommended practices to avoid and resolve conflicts at work	1	4	-	-
PC11. follow the relevant organisational policies to ensure disciplined behaviour with maximum productivity at work	1	3	-	-
Communicate effectively with co-workers	**6**	**15**	**-**	**-**
PC12. follow the organisational policy for the efficient and timely dissemination of information to the authorised personnel	2	5	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
PC13. communicate clearly and politely to ensure effective communication with co-workers	2	5	-	-
PC14. follow the appropriate techniques for active listening during interactions	2	5	-	-
Practice inclusion at work	**4**	**12**	**-**	**-**
PC15. empathise with Persons with Disabilities (PwD)	2	6	-	-

PC16. adopt gender-neutral behaviour at work	2	6	-	-
NOS Total	**30**	**70**	**-**	**-**

CSC/N0120: Set up the CNC turning machine for operations

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for setting the CNC turning machine	**11**	**30**	**-**	**-**
PC1. use the relevant information from engineering drawings concerning the work to be undertaken for setting up the CNC machine	1	4	-	-
PC2. determine the job specifications by referring to job instruction sheet/job card, component drawing, work drawing, planning documentation; quality control documents; operation sheets, component drawings; approved sketches/illustrations, process drawing, etc.	1	4	-	-
PC3. analyse the component drawings and approved sketches/ illustrations/ reference charts/ tables/ graphs/ machining/ assembly drawings to determine the machining requirements	1	4	-	-
PC4. extract the relevant information such as tapping sizes and threads; feeds and speeds; component ratings; machining symbols and tolerances from reference charts, tables, graphs	1	4	-	-
PC5. check the process sheet and match it with the received drawings and other specifications	1	2	-	-

PC6. identify the tool requirements from the tooling layout and assess their suitability	1	2	-	-
PC7. check the availability of required cutting, measuring and hand tools	1	2	-	-
PC8. select the appropriate work holding/ fixturing device as per the job requirement	1	2	-	-
PC9. ensure the correct and latest part program is uploaded onto the CNC system	1	2	-	-
PC10. check the runout of chuck and the taper of tailstock are as recommended	1	2	-	-
PC11. pre-set the tooling appropriately using setting jigs/fixtures	1	2	-	-
Set the CNC turning machine	**19**	**40**	**-**	**-**
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
PC12. check the measuring equipment to ensure they are calibrated and approved for use	1	2	-	-
PC13. check the tools and fixtures to ensure they are calibrated appropriately, and free from damage	1	2	-	-
PC14. mount tools in the correct position in the tool holder, turrets, magazine or carousel	1	2	-	-
PC15. check that tools have the required tool number in relation to the operating program	1	2	-	-

PC16. enter all the relevant tool data in the operating program and also part-program for cutting parts using the appropriate commands	1	2	-	-
PC17. set tool datum, position, length, offset and radius compensation, maintaining the recommended margin for error rectification	1	2	-	-
PC18. mount the work holding device/fixture onto the machine and set it according to the machine datum and reference points	1	2	-	-
PC19. set the machine tool operating parameters such as hydraulic pressure and clamping according to the component requirements	1	2	-	-
PC20. set the CNC machine in the correct operating mode, and enter the tooling data by accessing the program edit facility	1	2	-	-
PC21. conduct trial runs using single block run, dry run, and feed and speed override controls	1	2	-	-
PC22. check the geometrical accuracies of component such as diameter on multiple points, taper, surface finishing, grove depths and widths, drill depth, Outer Diameter (OD)/Inner Diameter (ID), threading quality and dimensions	1	2	-	-
PC23. check the allowable grinding margin on OD and ID	1	2	-	-
PC24. prove the program tool in single block mode and transfer the program to the machine	1	2	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**

PC25. conduct multiple trial runs before allowing the machine to operate in full program run mode, and make appropriate adjustments to offsets to ensure accuracy in the critical parameters of the components to be machined	1	2	-	-
PC26. carry out necessary documentation as per the organisational procedure for the handover of the machine	1	2	-	-
PC27. follow the appropriate troubleshooting steps to resolve issues experienced with setting up of the tooling, work holding devices and proving the program	1	2	-	-
PC28. check if the CNC turning/lathe machine responds to emergency commands and actions	1	2	-	-
PC29. check the tools/ fixtures for damage during the prove-out	1	2	-	-
PC30. carry out appropriate documentation with respect to the setting of the machine and checks conducted	1	2	-	-
PC31. coordinate with an expert to resolve any issues encountered while setting up the CNC machine	-	2	-	-
NOS Total	**30**	**70**	**-**	**-**

CSC/N0115: Carry out turning operations using the CNC machine

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for carrying out turning operations	**12**	**32**	**-**	**-**
PC1. select the appropriate Personal Protective Equipment (PPE) for the turning operations	1	2	-	-
PC2. assess the hazards at the worksite and coordinate with the supervisor or relevant personnel to deal with them	1	2	-	-
PC3. check the process sheet and match it with the received drawings and other specifications	1	2	-	-
PC4. check the availability of the required tools and measuring instruments	-	1	-	-
PC5. select the relevant hand and mechanised tools and equipment and check them to ensure they are safe to be used	1	2	-	-
PC6. repair or replace the worn-out PPE, tools and equipment, as appropriate	-	1	-	-
PC7. determine the job specifications by referring to job instruction sheet/job card, component drawing, work drawing, planning documentation; quality control documents; operation sheets, component drawings; approved sketches/illustrations, process drawing, etc.	1	2	-	-

PC8. select the appropriate raw materials or components for the turning operations after checking it to ensure it has the required characteristics	-	1	-	-
PC9. check the post-machining sheet to determine if the component meets the applicable quality standards from previous machining operations	1	2	-	-
PC10. coordinate with the supervisor or relevant personnel for the correction of incorrect and inconsistent information in the job specification documents, following the applicable organisational procedure	-	1	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
PC11. prepare the work area for the turning operations as per the applicable procedure or operational specifications	1	2	-	-
PC12. check for safe resting of the component on resting pads and clamping load of fixture	-	1	-	-
PC13. carry out daily maintenance of turning machine, following the maintenance checklist and applicable procedures	1	2	-	-
PC14. check the availability of required workpieces/raw materials, consumables, cutting, measuring and hand tools as per the job requirements	-	1	-	-
PC15. check the components before use to ensure they are free from foreign objects, dirt or other contamination	1	2	-	-

PC16. conduct the appropriate preliminary checks on the CNC turning machine as per the relevant checklist to ensure its readiness for use	1	2	-	-
PC17. carry out minor repair and maintenance on the CNC turning machine and coordinate with an expert to resolve any complex issues	-	1	-	-
PC18. check to ensure all the measuring instruments are calibrated and approved for use	-	1	-	-
PC19. set workpieces as per the job requirements using appropriate positioning or holding devices and support mechanisms	1	2	-	-
PC20. check that the operating program is at the correct start point and the tool is at a safe position, clear of the part	1	2	-	-
Carry out turning operations	**16**	**36**	**-**	**-**
PC21. load and unload component(s) using the appropriate fixtures or work holding devices as appropriate	1	2	-	-
PC22. check the correctness of the program by conducting a dry run and single block check	-	1	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
PC23. carry out first part cutting trial by setting tool offsets to get oversize part	-	1	-	-
PC24. identify abnormal noises coming from the machine and component, and adjust the feed and Revolutions Per Minute (RPM), as required	-	1	-	-

PC25. measure the critical parameters of the machined components without removing them from the machine, such as linear dimensions, slots, flatness, surface finish, etc	-	1	-	-
PC26. correct the offsets based on the measurements by accessing the program edit facility and enter the tooling data	-	1	-	-
PC27. adhere to the information provided in the reference charts, tables, graphs, component drawing, engineering drawing, dimensioning and labelling data drawing	-	1	-	-
PC28. check the messages shown on the CNC machine's visual display regularly and take appropriate action	1	2	-	-
PC29. restart the program from the correct restart point when the machine is been stopped before the completion of the program	1	2	-	-
PC30. carry out a range of turning operations to ensure the machined components have the required features, faces, undercuts, profiles, holes, parting-off and threads, etc.	1	2	-	-
PC31. follow the appropriate machining sequence and procedures as per the job specifications	1	2	-	-
PC32. follow the manufacturer's instructions and organisational guidelines to deal with machine alarms and errors	1	2	-	-
PC33. inspect the machine and machined components as per recommended frequency given in the inspection plan	1	2	-	-

PC34. record the measured values as per the organisational procedure and complete the post- machining inspection sheet	1	2	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
PC35. identify inconsistencies in dimensions due to tool wear and correct the offsets accordingly	-	1	-	-
PC36. adjust various machine settings according to the operations requirements, when required	-	1	-	-
PC37. identify the worn-out and damaged tools and equipment	-	1	-	-
PC38. repair or replace the worn tool and damaged tools and equipment, as appropriate	1	1	-	-
PC39. cut a trial part and adjust the tool offsets after each tool change	1	1	-	-
PC40. handle and store the raw material and finished components as per organisational policy	1	1	-	-
PC41. check the finished components to ensure they conform to the applicable specifications and quality standards	1	2	-	-
PC42. use the relevant Industry 4.0 manufacturing technologies to ensure interconnectivity, automation, machine learning, and real-time data collection and analysis	1	2	-	-
PC43. follow the manufacturer's instructions while operating the CNC turning machine	-	1	-	-

PC44. coordinate with the relevant personnel to resolve issues encountered with turning operations	1	1	-	-
PC45. store the machinery, tools and equipment at the designated location on the completion of turning operations	1	1	-	-
PC46. follow the organisational policy to ensure a safe and hygienic work area, such as safe isolation of machinery, removal and disposal of waste, regular maintenance of machinery, use of relevant PPE	1	1	-	-
Use resources optimally	**2**	**2**	**-**	**-**
PC47. use electricity and other resources optimally in various tasks and processes	1	1	-	-
Assessment Criteria for Outcomes	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
PC48. connect electrical tools and equipment safely and turn them off when they are not in use	1	1	-	-
NOS Total	**30**	**70**	**-**	**-**

DGT/VSQ/N0101- Employability Skills (30 Hrs)

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**

PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**1**	**3**	**-**	**-**
PC3. explain 21st Century Skills such as Self- Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
Communication Skills	**1**	**1**	**-**	**-**
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**1**	**-**	**-**
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-

PC8. report any issues related to sexual harassment	-	-	-	-
Financial and Legal Literacy	**3**	**4**	**-**	**-**
PC9. use various financial products and services safely and securely	-	-	-	-
Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. calculate income, expenses, savings etc.	-	-	-	-
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
Essential Digital Skills	4	6	-	-
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
Entrepreneurship	3	5	-	-
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
Customer Service	2	2	-	-

PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	1	3	-	-
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	20	30	-	-

Assessment Parameters:

Assessment Plan:

1. Components of Assessment:

- Each subject will be assessed in three components: Theory (40% weightage), Practical (40% weightage), and On-job Training (OJT, 20% weightage).

2. Passing Parameters:

- To pass the semester, students must meet both the assessment parameters given below.

Parameter 1 - Weighted Semester Score:

- Students must achieve a minimum of 60% in the weighted average score across all three components (Theory, Practical, and OJT) for each subject.

Parameter 2 - Individual Component Score:

- Students need to score at least 40% in each individual component (Theory, Practical, and OJT) of every subject.

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Mention the detailed assessment strategy in the provided template.

<1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records

2. Testing Environment:

- Check the Assessment location, date and time
- If the batch size is more than 30, then there should be 2 Assessors.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.

3. Assessment Quality Assurance levels/Framework:

- Question bank is created by the Subject Matter Experts (SME) are verified by the other SME
- Questions are mapped to the specified assessment criteria
- Assessor must be ToA certified & trainer must be ToT Certified

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Centre photographs with signboards and scheme specific branding

5. Method of verification or validation:

- Surprise visit to the assessment location

6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored

On the Job:

1. Each module (which covers the job profile of CNC Operator Turning) will be assessed separately.
2. The candidate must score 60% in each module to successfully complete the OJT.
3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and perform Soft Skills effectively:
   • Videos of Trainees during OJT
   •
4. Assessment of each Module will ensure that the candidate is able to:

- Effective engagement with the customers
- Understand the working of various tools and equipment
- …..>

Annexure: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above.

	https://ncvet.gov.in/sites/default/files/NCVET.pdf