QUALIFICATION FILE

Operator (CNC Turning Machine)

☒ 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: 3

Submitted By:

Karnataka Skill Development Corporation

3rd Floor, Kaushalya Bhawan

Dairy Circle, Bangalore - 560029

Table of Contents

Section 1: Basic Details

1.	**Qualification Name**	**Operator (CNC Turning Machine)**	
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/KSDC/05930**	**Qualification Name of existing/previous version: Operator (CNC Turning Machine)-V1**
4.	**a. OEM Name** **b. Qualification Name** (*Wherever applicable)*	**Operator (CNC Turning Machine)**	
5.	**National Qualification Register (NQR) Code &Version** (*Will be issued after NSQC approval)*	**QG-03-CG-05930-2025-V2-KSDC**	**6. NCrF/NSQF Level:3**
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**	This course is designed to develop skills in operations & programing of CNC Turning Machines. It provides hands on experience on machining of various components by considering required parameters such as feed, depth of cut, cutting speed, Tool selection, Tool nose radius compensation, Tool wear compensations, parametric programming, sister tool concept etc. After successfully completing the course and obtaining requisite certification, the students will have career opportunities to work as 'CNC Turning operator / Programmer in manufacturing roles across machine tool manufacturing companies automotive, defense, aerospace, locomotive, construction, consumer goods, etc. Industries.	
9.	**Eligibility Criteria for Entry for Student/Trainee/Learner/Employee**	**a. Entry Qualification & Relevant Experience:** Grade 10 pass OR Grade 8 pass with two years of (NTC/ NAC) after 8th OR 9th Grade pass with 1.5 -year relevant experience OR 8th Grade pass with 3 -year relevant experience OR 5th grade pass with 7.5-year relevant experience OR Previous relevant Qualification of NSQF Level 2.5 with 1.5-year relevant experience OR Previous relevant Qualification of NSQF Level 2 with 1.5-year relevant experience	

<table>
<tr><td></td><td></td><td colspan="2">b. Age: Minimum Age: 15 Years</td></tr>
<tr><td>10.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>10</td><td>11. Common Cost Norm Category (I/II/III) (wherever applicable):</td></tr>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">NA</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 colspan="2">☐Offline ☐Online ☐Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>95</td><td>175</td><td>30</td><td></td><td>300</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 colspan="2">7223.5001 - Machining Technician/CNC Operator</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td colspan="2">• Operator (CNC Turning Machine) → Sr. Operator (CNC Turning Machine) → Supervisor (CNC Turning Machine)
• Entrepreneurship</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td colspan="2">No</td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td colspan="2">☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>18.</td><td>Is the Job Role Amenable to Persons with Disability</td><td colspan="2">☐ 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 colspan="2"></td></tr>
<tr><td>20.</td><td>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</td><td colspan="2">☐ Yes ☐ No</td></tr>
<tr><td>21.</td><td>Is Qualification Suitable to be Offered in Schools/Colleges</td><td colspan="2">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 colspan="2">Name: Nagaraja NM, IAS
Managing Director,
Karnataka Skill Development Corporation
Email: md.ksdc@karnataka.gov.in Contact No.: 080 2952 2222
Website: https://kaushalkar.karnataka.gov.in/en</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*

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.	Comply with workshop health and safety guidelines		Non – Core	3	1	5	0			5	2	4		3	9	9
2.	Understand and apply fundamental principles of engineering design, mathematics, measurement systems, machining, and material science to solve practical industrial problems.		Core	3		5	20			25	2	4		3	9	9
3.	Understand the manufacturing drawings, GD&T, Manufacturing Processes & Importance of Quality in Manufacturing.		Core	3	1	10	20			30	1	2		2	5	5
4.	Understand the basic functions and components of a turning centre and apply essential safety practices while operating the machine.		Core	3	1	10	20			30	1	2		3	6	6
5.	Operate machines using control panel functions to execute programs and carry		Core	3	1	10	20			30	2	4		3	9	9

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)*
	out basic settings adjustments.															
6.	Set up workpieces and maintain machines effectively while applying absolute and incremental positioning systems, along with cutter compensation techniques for accurate machining.		Core	3	1	10	20			30	2	4		3	9	9
7.	Understand and create different CNC program such as canned cycles, scaling, mirroring, rotation and use of VPS (Visual Programming System)		Core	3	1	10	20			30	2	4		3	9	9
8.	Understand the concept of CNC machine tool probing systems, live tools and industry 4.0 technologies in machining industry.		Core	3	1	10	20			30	2	4		3	9	9
9.	Assignments (Based on case studies and Industrial application)		Core	3	1	10	20			30	2	5		6	13	13
10.	OJT (Mini Project -Based on Industrial application)		Core	3	1			30		30	2	5		7	14	14
11.	Employability Skills		Non - Core		1	15	15			30	2	2		4	8	8
Duration (in Hours) / Total Marks					**10**	**95**	**175**	**30**	**0**	**300**	**20**	**40**	**0**	**40**	**100**	**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: ___% *(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)*	Graduate in Engineering with 2-year experience in relevant field and domain certification.
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Graduate in Engineering with 4-year experience in relevant field and domain certification.
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**	

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Graduate in Engineering with 4-year experience in relevant field.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Graduate in Engineering with 2-year experience in relevant field.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Graduate in Engineering with 6-year experience in industry or training experience.
4.	**Assessment Mode** *(Specify the assessment mode)*	**Offline**
5.	**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):** Yes
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** Yes
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes
4.	**Number of Industry validation provided:**
5.	**Estimated nos. of persons to be trained and employed:**
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** *NA* 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)*	*Annexure 1*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Annexure 2*
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Annexure 6*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Annexure 7*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*NA*
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	*NA*
7.	**Annexure:** Acronym and Glossary *(Optional)*	*Annexure 8*
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	*Model Curriculum*
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 1: 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	• Machine operator or machine programmer is expected to have competency on operating the machine, prepare CNC program using G and M codes end product, use of correct process parameters. • Maintenance of the machine to be carried out using standard procedures, perform minor repair. Maintain the work area, tools and instruments and ensure good working condition of required tools.	• During the duration of this course, the students are imparted the knowledge on CNC Machining, Engineering Drawing, Workshop Practices, and employability skills related to the job role and trained on Skills related to CNC Machining. The students shall undertake live projects and are expected to engage in extracurricular activities so that his morale and confidence is built up. • Practical skills are imparted on the Advanced CNC Machines and the theory related to this subject is taught in a way that the students are able to use their cognitive skills and use it while executing the task assigned to them. • This basic CNC lathe machine has two linear axes that can perform outer diameter/inner diameter, basically cylindrical machining, and facing operations, or drilling and tapping at the centre of the part. It has an X and Z axis and does not allow for milling.	NSQF Level 3
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Machine operator / machine programmer is expected to have a basic knowledge of the lathe machine, its parts, control panels and functioning of electrical and electronic systems. • Machine operator / machine programmer is expected to have the knowledge in CNC programming using the CAD design / engineering drawing of the component. Machine operator / machine programmer is expected to familiarize with the standard operating procedure for machine, Generic knowledge of Common Engineering standards, symbols, GD & T to read the Industrial Drawing.	• Machine Operator has basic knowledge of machining operations such as Turning, taper Turning, Grooving, Threading, drilling, facing, boring etc. which are performed on a CNC Turning centre. • He/she has basic knowledge of different types of cutting tools and their material (HSS/Carbide/Cobalt etc.), work piece material (Cast Iron/MS/Work Hardening steels) and their machining parameters, various measuring instrument, engineering drawings – first angle/third angle projections, symbols, GD&T.	NSQF Level 3
Employment Readiness & Entrepreneurship **Skills & Mind-set/Professional Skill**	• Working as a member of a team/ within a team. Display Personal Motivation. Positive Attitude & Passion for Work • Good skills in written and oral communication with some clarity, basic knowledge of Language to support such communication. • Intermediate literacy and Numeracy skills	• The applications used in industries are forming, contour turning, machining of cams, ultra-precision machining, and hard turning. The lathe for these purposes is built by lathe manufacturers with high precision and spindle speed and work holding device stiffness. • The lathe machine suppliers ensure they are made from structural materials that have characteristics with low thermal expansion and good dimensional stability. Machines are equipped with high	NSQF Level 3

	• Skills for workshop calculations and basic of arithmetic and algebraic principles. • Good logical and analytical reasoning skills.	control systems and error compensating features. • Can use precision measuring instruments, inspect machine parts for conformance to product specifications. • Machine operator required management for safety protocols, speed and accuracy of production parts. • Measured and inspected machine parts to ensure conformance to product specifications. • Operate a Computerized Numerical Control machine to produce machine parts.	
Broad Learning Outcomes/Core Skill	• Machine operator / Machine programmer is expected to set up the work piece on machine, read the 2d / 3d drawing, assess the proper process parameters such as proper orientation of the work piece, selection of proper tools, spindle speed, feed, coolant operation if required etc. & ensure the product quality with the help of measuring instruments. • If any support needed follow superior's instructions, expected to be good in communication skills. Job holder is expected to conduct themselves in ways, which show a basic understanding of the social and professional environment of working at workshops and on field visits.	• The machine operator should be able to communicate with the part designer/programmer/process designer via the media of engineering drawings. • He / She must be able to communicate clearly with his supervisor if he foresees errors in quality of the finished part. He must also appreciate the requirement of finish machining the part within the stipulated hours and the repercussions from top management in case of delays. He / she must be work with his / her supervisor as one team and not try to show him down.	NSQF Level 3
Responsibility	The jobholder is responsible to: • Assist to identify the needs of the job. • Assist to setting up of the work piece on the machine. • Assist in assessing the geometry (2D / 3D design), sequence the various machining operations. • Assist to write programs using G and M codes to enable the machining operations. • Assist in day-to-day maintenance of the machine & minor repairs. • Maintain tools and work area • He has the limited Responsibility for own work and majorly function in close supervision • In his routine activity he is responsible for his own work.	• Set-up and manage CNC machines to perform different jobs including drilling, grinding, and milling. • Translate engineering drawings and requirements into dimensions for production. • Ensure the CNC machine operates in accordance with the guidelines of the company. • Oversee the machines while they execute the tasks and make the necessary changes to produce improved results. • Check machinery on a daily basis to guarantee functionality. • Record all machine actions by completing production and quality logs. • Provide timelines to clients. • Communicate logistics issues that arise in the process of creating a part. • Ensure that results of machining process align with client expectations. • Conduct regular CNC machine assessments.	NSQF Level 3

Annexure 2: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size:

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Computer Aided Manufacturing Software		10 Nos
2	Industrial Workstation	Capable of running CAM Software	20 Nos
3	UPS		1 No
4	SIMULATOR	-	1 No
5	CNC Tool room Lathe	-	1 No
6	4-Station Automatic Tool Turret	-	1 No
7	CPK Coolant Pump Kit,	-	1 No
8	MTS Manual Tailstock	-	1 No
9	Manual 3-Jaw Scroll Chuck hard top reversible jaws	-	1 No
10	Tool trolley	-	1 No
11	Coolant concentrate	-	1 No
12	Steel rule	30 cm & 60 cm graduated both in English & Metric units	20 Nos
13	Micrometer Outside	0 – 50 mm outside	10 Nos
14	Vernier Caliper	0- 15 cm	10 Nos
15	Micrometer Inside	up to 20 mm	10 Nos
16	Hand Gloves	_	10 Nos
17	Safety Shoes	_	10 Nos
18	Helmet	_	10 Nos
19	" V " block	V-Block pair 7 cm with clamps	10 Nos
20	" V " block	V-Block 15 cm with clamps	10 Nos
21	Card file.	----	10 Nos
22	Vernier Caliper	0- 15 cm	10 Nos
23	Micrometer outside.	0 – 50 mm	10 Nos
24	Micrometer Inside	0 to 20 mm	10 Nos

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Laptop
2. Whiteboard and Markers
3. Projector
4. Screen
5. Stationary

Annexure 3: Industry Validations Summary

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

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*

Annexure 4: 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

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

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.
2.

Content availability for previous versions of qualifications:

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

Languages in which Content is available:

Annexure 5: 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

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☐Theory/ Lectures - Imparting theoretical and conceptual knowledge		
2	☐Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners		
3	☐Showing Practical Demonstrations to the learners		
4	☐Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		
5	☐Tutorials/ Assignments/ Drill/ Practice		
6	☐Proctored Monitoring/ Assessment/ Evaluation/ Examinations		
7	☐On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training		

Annexure 6: Detailed Assessment Criteria

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

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Comply with workshop health and safety guidelines	• PC 1. Comply with safety, health, security and environment related regulations/ guidelines as per organizational/ manufacturer's policy.				
	Total Marks	**2**	**4**		**3**
Understand and apply fundamental principles of engineering design, mathematics, measurement systems, machining, and material science to solve practical industrial problems.	• PC 1. Fractions, Decimals, Cartesian Geometry and Order of Operations on Conversions from Metric to Imperial and vice versa, Reading Instruments like Vernier Calipers, Micrometer, Height Gauge, etc.				
	• PC 2. Exercises on Drilling, Reaming, Tapping, Turning, facing, grooving, parting, Threading.				
	• PC 3. Exercises on various types of material used in industries.				
	Total Marks	2	4		3
Understand the manufacturing drawings, GD&T, Manufacturing Processes & Importance of Quality in Manufacturing.	• PC 1. Exercises on reading component drawings				
	• PC 2. Exercises on GD&T				
	• PC 3. Exercises on different Engineering Materials & their properties.				
	• PC 4. Exercises on how to cycles various operation like boring, turning, threading etc.				
	• PC 5. Exercise on product surface quality by selecting various tool radius & federate.				
	Total Marks	**1**	**2**		2
Understand the basic functions and components of a turning centre and apply essential safety practices while operating the machine.	• PC 1. Identify the component of CNC Turning Centre.				
	• PC 2. Demonstrate the CNC Turning Control panel Information.				
	• PC 3. Identify and perform moment on coordinate System for Turning Centre.				
	• PC 4. Calculate and setting of cutting parameters, cutting tools, material properties and choosing the right parameters.				
	Total Marks	**1**	**2**		3
Operate machines using control panel functions to execute programs and carry out basic settings adjustments.	• PC 1. Understand the standard machine operating procedure.				
	• PC 2. Perform basic setting and verifying the machine condition as per check sheet before starting the machine.				
	• PC 3. Identify the inspection tools.				
	Total Marks	**2**	**4**		3
Set up workpieces and maintain machines effectively while applying absolute and incremental positioning systems, along with cutter compensation techniques for accurate machining.	• PC 1. Use of G Codes and M Codes to run in MDI Mode				
	• PC 2. Setting up workpiece in fixture in machine.				
	• PC 3. Enable and disable the Cutter Compensation by code.				
	• PC 4. Check the oil level.				
	• PC 5. Check the coolant level.				

	• PC 6. Check for leakage if any				
	• PC 7. Check the coolant for refractive index				
	Total Marks	**2**	**4**		**3**
Understand and create different CNC program such as canned cycles, scaling, mirroring, rotation and use of VPS (Visual Programming System)	• PC 1. Create and run linear and circular interpolation program and Canned Cycle program.				
	• PC 2. Create and run program for Scaling Mirroring and Rotation.				
	• PC 3. Use of VPS Visual Programming System.				
	• PC 4. Identify the step-by-step CNC Program Sequence.				
	• PC 5. Use advanced G Codes to optimize the tool life and machining time.				
	Total Marks	**2**	**4**		**3**
Understand the concept of CNC machine tool probing systems, live tools and industry 4.0 technologies in machining industry.	• PC 1. Use of Probing tool				
	• PC 2. Understand the working of live tools and turret types.				
	Total Marks	**2**	**4**		**3**
Assignments	• PC1 Based on case studies and Industrial application				
	Total Marks	**2**	**5**		**6**
Mini Projects (Based on case studies and Industrial application)	• PC 1. Machining of Auto Component				
	• PC 2. Case study of tool Room Industry				
	• PC 3. Case study of Mold and Die Industry				
	• PC 4. Machining of Aerospace components for: aero engines, aero structure, space etc.				
	• PC 5. Machining if defense industry component: R&D, weapons, ammunition, drones etc.				
	• PC 6. Machining of Heavy equipment Industry: Construction equipment, Earth moving, Cranes, conveyors, ship building etc.				
	• PC 7. General Engineering: Fittings, Fasteners, Pumps & Valves				
	• PC 8. Addressing of nearby machining Industry component				
	Total Marks	**2**	**5**		**7**
Employability Skills	• PC1 Understanding the Significance of Employability skills				
	• PC2 Identification the Constitutional values				
	• PC3 Explaining Becoming a professional in the 21st century				
	• PC4 Speak with Others in Basic English skills				
	• PC5 Significance of Career development and goal setting				
	• PC6 Etiquette of Communication skills				
	• PC7 Use Various Financial and legal literacy				
	• PC8 Awareness to Essential Digital Skills				
	Total Marks	**2**	**2**		**4**
Grand Total		**20**	**40**		40

Annexure 7: 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 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 8: 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