सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
DEVELOPMENT COMMISSIONER
MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES
MSME TECHNOLOGY CENTRE

QUALIFICATION FILE

JUNIOR DESIGNER CAD/CAM

☒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: 4.5

Submitted By:

MSME TECHNOLOGY CENTRE

O/o DC MSME, Ministry of Micro, Small and Medium Enterprises

Govt. of India

A-Wing, 7th Floor, Nirman Bhawan, Maulana Azad Road

New Delhi-110108

Contact No. +91-674-2654700, Email- msmetcab@gmail.com

Table of Contents

Section 1: Basic Details

1.	**Qualification Name**	**JUNIOR DESIGNER CAD/CAM**	
2.	**Sector/s**	**Capital Goods & Manufacturing**	
3.	**Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options** **☐OEM**	**NQR Code & version of existing/previous qualification:** *(change to previous, once approved)* **QG-4.5-CG-02404-2024-V1-MSME**	**Qualification Name of existing/previous version:** **Master Certificate Course in CAD CAM (MCCCC)**
4.	**a. OEM Name** b. **Qualification Name,** (Wherever applicable)	**NA** -	
5.	**National Qualification Register (NQR) Code & Version** (*Will be issued after NSQC approval)*	QG-4.5-CG-02404-2024-V1-MSME	**6. NCrF/NSQF Level:** 4.5
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**	The qualification containing different modules which is required for the job role CAD/CAM Engineer, this qualification ultimately helps learner in the following: • To be expertise in CAD/CAM/CAE Software Application • To get an employment in Engineering/ Manufacturing industries • To become an entrepreneur	

9. **Eligibility Criteria for Entry for Student/Trainee/Learner/Employee**

a. **Entry Qualification & Relevant Experience:** Qualification & Relevant Experience in the field of Mechanical, Production and Automobile Engineering & it's Equivalent.

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1	10th + 3-year diploma in relevant field *	-
2	Pursuing 3rd year of 3-year diploma after10th and continuing education(internship)	-
3	Previous relevant Qualification of NSQF Level 4 in the field of CNC	1.5 year relevant experience
4	Previous relevant Qualification of NSQF Level 2 in the field of CNC	2 year relevant experience

b. Age: 17 Years

10. **Credits Assigned to this Qualification, Subject to Assessment***(as per National Credit Framework (NCrF))*

20

11. Common Cost Norm Category (I/II/III) *(wherever applicable)***: I**

12. **Any Licensing requirements for Undertaking Training on This Qualification***(wherever applicable)*

NA

13. **Training Duration by Modes of Training Delivery** *(Specify **Total Duration** as per selected training delivery modes and as per requirement of the qualification)*

☐ **Offline** ☐**Online** ☒ **Blended**

Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)
Classroom (offline)	**89**	**330**	**60**	**-**	**479**
Online	**121**	**-**	**-**	**-**	**121**
Total	**210**	**330**	**60**		**600**

		(Refer Blended Learning Annexure for details)
14.	**Aligned to NCO/ISCO Code/s** *(if no code is available mention the same)*	***2144.02 (Designer - Mechanical)***
15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	***Professional / Career Progress:*** *Designer CAD/CAM* **Academic *Progress:*** Designer Tool & Die Making
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	**Hindi**
17.	**Is similar Qualification(s) available on NQR-if yes, justification for this qualification**	**☐Yes ☒No URLs of similar Qualifications:**
18.	**Is the Job Role Amenable to Persons with Disability**	**☒ Yes ☐ No** **If "Yes", specify applicable type of Disability: As per Govt. norms.**
19.	**How Participation of Women will be Encouraged**	**Seats are reserved as per government Norms.**
20.	**Are Greening/ Environment Sustainability Aspects Covered** *(Specify the NOS/Module which covers it)*	**☒Yes ☐No**

		The said aspect is covered in the module name Employability **skills.**	
21.	**Is Qualification Suitable to be Offered in Schools/Colleges**	**Schools☒ Yes ☐ No Colleges ☒ Yes ☐ No** **Subject to availability of resources.**	
22.	**Name and Contact Details of Submitting / Awarding Body SPOC** *(In case of CS or MS, provide details of both Lead AB & Supporting ABs)*	**Name: Sh. Vijay Mahipatrao Bankar** **Contact No. +0755 3501078** **Email-msmetcab@gmail.com**	
23.	**Final Approval Date by NSQC:30.04.2024**	**24. Validity Duration:3years**	**25. Next Review Date30.04.2027**

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*

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.	Create & Modify Part Model using CAD Software	MSME/MCCCC/ 01 & Version 1.0	Core	**4.5**	**3**	**30**	**60**	**-**	**-**	**90**	-	**100**	**-**	**-**	**100**	
2.	Generate Part Program Using CAM Software (CAM)	MSME/MCCCC/ 02 & Version 1.0	Core	**4.5**	**3**	**30**	**60**	**-**	**-**	**90**	-	**100**	**-**	**-**	**100**	
3.	Analyze Part Model	MSME/MCCCC/ 03 & Version 1.0	Core	**4.5**	**3**	**30**	**60**	**-**	**-**	**90**	-	**100**	**-**	**-**	**100**	

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)*
4.	Design Surfaces using Higher end CAD Software	MSME/MCCCC/ 04 & Version 1.0	Core	4.5	4	30	90	-	-	120	-	100	-	-	100	
5.	Generate CNC Program	MSME/MCCCC/ 05 & Version 1.0	Core	4.5	3	30	60	-	-	90	100	100	-	-	200	
6.	Employability Skills	MSME/ES /02	Non-Core	4.5	2	60	-	-	-	60	100	-	-	-	100	
7.	OJT	NA			2			60		60						
Duration (in Hours) / Total Marks					20	210	330	60		600	200	500			700	

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																

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																

Assessment - Minimum Qualifying Percentage

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

Minimum Marks to pass Theory Exam: 40%
Minimum Marks to pass Practical Exam: 60%

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.)*

Minimum Marks to pass Theory Exam: 40%
Minimum Marks to pass Practical Exam: 60%

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)***(as per NCVET guidelines)*	Diploma/ Degree in Mechanical Engineering or Equivalent with Practical skills and knowledge required in the relevant job role at least one level higher i.e. level 5 and above in related field and minimum 2 years of experience in Tool Room/ Technology Centre of MSME or any reputed industry will become a trainer, Or in accordance with the TOT guideline of NCVET
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Degree in Engineering (Mechanical/ Production/ Manufacturing Technology) or equivalent with 3 to 5 years of experience in Production/ Training/ Design Department from Tool Room/ Technology Centre of MSME or any reputed industry will become as a Master Trainer, Or in accordance with the TOT guideline of NCVET
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**	Yes

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Diploma / Degree in Engineering (Mechanical/ Production/ Manufacturing Technology) or equivalent with 3 years of experience in Production/ Training/ Design Department from Tool Room/ Technology Centre of MSME or any reputed industry. Only certified assessors will be able to conduct assessments.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Degree in Engineering (Mechanical/ Production/ Manufacturing Technology) or equivalent With 5 years of experience in Production/ Training/ Design Department from Tool Room/ Technology Centre of MSME or any reputed industry.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Post Graduate in the relevant discipline with minimum 5 years of experience in Production/ Training/ Design Department from Tool Room/ Technology Centre of MSME or any reputed industry.
4.	**Assessment Mode** *(Specify the assessment mode)*	**Blended Type (Online + 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** India Skills Report 2023, " Roadmap to India's Skills and talent Economy 2030"
2.	**Latest Market Research Reports or any other source (not older than 2years) (Yes/No): Yes** Engineering and capital goods industry" (Feb-2023) by India Brand Equity Foundation –IBEF (Trust established by the Department of Commerce, Ministry of Commerce and Industry, Government of India
3.	**Government /Industry initiatives/ requirement (Yes/No): Yes**
4.	**Number of Industry validation provided: 55**
5.	**Estimated nos. of persons to be trained and employed: Approx. 6000 per year**
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)*	*Annexure-I*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Annexure-II*
3.	**Annexure:** Industry Validations Summary	*Annexure-III*

4.	**Annexure:** Training & Employment Details	*Annexure-IV*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*Annexure-V*
6.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Annexure-VI*
7.	**Annexure:** Assessment Strategy *(Mandatory)*	*Annexure-VII*
8.	**Annexure:** Acronym and Glossary *(Optional)*	*Annexure- VIII*
9.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	*NA*
10.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	*Annexure- IX*
11.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	*This aspect mentioned in point no. 15*
12.	**Supporting Document:** Occupational Map *(Mandatory)*	*Annexure-X*
13.	**Supporting Document:** Assessment SOP *(Mandatory)*	*Annexure- XI*
14.	Any other document you wish to submit:	*NA*

Annexure I: 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	• Design and Development of CAD model using CAD software • Create production Drawing sheet using CAD software • Analyze and optimize the CAD Design	The job holder Can do the modeling, analysis and manufacturing activities before starting them, use appropriate sources to obtain the required information, access and use the correct modeling, analysis and manufacturing software and tools, check that all the equipment is correctly connected and in a safe and usable working condition, set up the modeling environment and select a suitable template/folder, set the drawing datum at a convenient point to create a	Level 4.5

	using CAE Software ● Create tool path using CAM Software ● Create CNC programming Using Simulator and CNC Machine ● Execute manufacturing operation using CNC Machine	modeling template with title, file number, material, date, establish coordinate system, orientation and views as per the job, create entities in 3D space as per job requirement, modify entities in 3D space as per job requirement, analyze and achieve optimum design and result of simulation using CAE Software ,planning the best feasible manufacturing process and tool selection in manufacturing CAM software. Simulate the manufacturing process and plan the process and tool selection. Design or create 3-D views on the screen by manipulating drawing planes and inserting 3-D geometric shapes, identify and use key features of solid modeling, analysis and manufacturing software package to produce reliable model and manufacturing process planning. In this qualification Job Holder has to carry out design and development of CAD model and production using CAD. Which includes Design and development of 2D Component Drawing and 3D Model? Analyze and optimum design using CAE software and CNC program generation using CAM software. Execute machining process using CNC Machines. Selection of tool for respective material has to machine. Read the production drawing and execute the programming accordingly. Debug the CNC program. Calculation of different machining parameter i.e. feed, depth of cut, tool material, speed, coolant selection etc.	
Professional and Technical Skills/ Expertise/ Professional Knowledge	● Demonstrate & Describe the use of CAD software for modeling and Drafting ● Demonstrate & Describe the use of CAE software to analyze and optimize a design. ● Describe the use of CAM Software to generate towpath and CNC program for manufacturing ● Describe the use and work with CNC simulator to generate and simulate the CNC programming.	Job holder will possess professional knowledge of organizational procedures and information systems for retrieving and storing drawing data, applicable drafting standards/procedures, procedures and need for customizing menus and system defaults, appropriate projection for the drawing purpose, reasons for selecting the chosen projection, reasons for including auxiliary views in drawings, layout and/or assembly drawings, drawing specifications, common symbols used in drawings, Job holder will also have knowledge of types of drawings that may be produced by the software, selection of standard components, functionality of the component being drawn, and its interrelationship with other components and assemblies, how to set up the viewing screen to show multiple views of the drawing to help with drawing creation, standards and conventions that are used for the drawings, how to set up the drawing template parameters, application and use of drawing tools and modeling tools, how to access, recognize and use a wide range of standard	Level 4.5

	• Describe the use and work with CNC machine with different controller to execute manufacturing process • Identify customer's requirement and create 2D and 3D model using CAD model • Develop and plan the production Drawing using CAD software • Analyze and optimize the design using CAE software • Generate, simulate and modify the tool path and CNC programming using CAM software • Plane and execute the manufacturing process using CNC machine	components and symbol libraries from the CAD equipment, Job holder will have knowledge of various commands under different toolbars in Sketcher, Solid modeling, surface modeling, Assembly Design and Drafting Environment. Job holder will have the knowledge of FEM/FEA. They will be able to understand the design requirement and knowledge of preprocess, have skills of import the CAD model and clean up geometry, mesh generation, establish the boundary condition as per the design requirement, assigning the material to model establish the factor of safety. Selection of solver during processor, knowledge of post processor. Run the simulation using CAE software, Interpretation of result, create the report, and verify the result accordingly optimize design. Job holder will have factual knowledge and skills in CAM programming as well as knowledge of how to apply facts, principles, processes and general concepts in the CAM programming which includes: Knowledge about limitation & advantages of CAM, Use working of CAM software. Create CNC programming and execute CNC machining using different CNC machine and different controller. Knowledge of tool selection, machining parameter and its calculation. Job holder will carry out the design and development of tool through following professional skill: gather accurate information on the requirements of the customer or tool designer, create conceptual design, analysis the design and generate the manufacturing program and execute the program on CNC machine. Confirm the customer's objectives for the engineering products or processes, Using standard unit system as customer's requirement. Job Holder will design and develop CAD model using various CAD software like AutoCAD, UGCAD, and SOLIDWORKS. Job Holder will prepare design standard design and classify the appropriate procedure to Explain various theoretical and practical aspect of analysis of design using CAE Software ANSYS. Job Holder shall develop CAM program using UGCAM etc. Job holder will Plane and execute different types of machining process lathe, milling, grinding on different machine controlled by different type of controller. Job holder will be able to set job, establish coordinate system	

Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	• Understand Personal Strengths \ Value, Digital Literacy, Money Matters and Preparing for Employment & Self Employment • Develop entrepreneurship skills • Exercise self- management within the work contexts	Learner can Develop communication competence, report writing skills & preparation of Resumes or Curriculum Vitae, Learner can be able to Interact effectively with co-workers and can apply the Engineering Ethics and Human Values at workplace. Leaner can understand the basic process of becoming an entrepreneur & start up and can get benefits from various government schemes applicable. Learner can Analyze and clarify task-related information, Meaning and importance of entrepreneurship, Enterprise Registration, Business Skills - Motivation and Leadership Learner can develop Effective Communication, Interpersonal Relationships, and Compliances & Marketing plan. Learner can do the required Time Management for successful completion of the project & develop Time Management within the team.	Level 4.5
Broad Learning Outcomes/Core Skill	• Use basic health and safety practices at the workplace • Work on project • Communicate effectively • Mathematical Calculation skills • Maintain & prepare reports as per standard / check sheet. • identify job-site hazardous work and state possible causes of risk or accident.	Job holder shall work on project where he/she shall gather accurate information on project, organize logically. e.g. concept and requirements, Confirm the project objectives, preparation of conceptual plan, selection of CAD/CAM/CAE software based on capabilities of modelling, use Presentation skills, utilize CAD & CAM Software, communicate clearly about the project requirement to the group members through written /verbal/e mail etc. as per organizational standard, identify different design options which will meet requirements and design specification. Job holder will use mathematical calculations while designing and analyzing the CAD model through: calculate stain stress value for standard mechanical component. Calculate the geometry of component on the basis of given parameter. Calculate the bulking stress, calculate the pressure, and calculate the factor of safety. Calculation of machining parameter feed speed, depth of cut, spindle speed. Job holder shall use protective equipment while working on computers and during working on shop floor, wear helmet, state the name and location of people responsible for health and safety in the workplace, state the names and location of documents that refer to health and safety in the workplace, identify job-site hazardous work and state possible causes of risk or accident. Learners will have the knowledge of evaluating the components with the standards	Level 4.5

		drawing for the given job, Use of GD&T symbols. Learners are capable of taking decision for the quality output and productivity enhancement	
Responsibility	• Learner is highly skilled in CAD & CAM Programming and responsible for achieving tangible outcomes, managing change, building teams, and mentoring the Co-workers and subordinates	Job holder shall be responsible for own work of design and development. After completing the concept job holder work with time line and with job responsibilities of team members like designing and development CAD model, analyze the design, optimize the design and generate production drawing, bill of material, verification and release of final drawings, plan the manufacturing process. Supervise and execute the machining process in shop floor. Job holder will encourage team members for continues learning and development by time to time discussing with them various issues of project like tool / die suitability to specified machine, new development in machines, selection of material, new development in the materials and manufacturing processes. Job holder will follow work standard, specific norms and procedures laid down by the organization. Job holder will develop moral, values and ethical practices in business operation.	Level 4.5

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

List of Tools and Equipment Batch Size: 20

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	CNC Lathe Machines	Industry Standard	2
2	CNC Milling Machines – MILLING		2

3	**Cutting tools & Inserts** **Turning:** Single Point brazed turning tool, Boring bars, Twist Drills: Parallel & taper shank types (MT-1 / MT-2/ MT-3/MT-4), Knurling and threading tools. **Milling:** End mill, Face mill, Ball nose cutter, Slab mill.		1 set
4	**Tool Holders:** Turning tool holders for OD/ID turning, Profile turning, Grooving/Parting, Drilling, Boring, Threading, Sleeves, Set of Spring collets (ER-16, ER-25,ER-32, ER-40) and Collet adopters. BT-40 for milling		1 set
5	Desk top / Computer system With LAN		20 Seats
6	CAD Software – AUTOCAD, Solid works, UNIGRAPHICS/ NX, CREO PARAMETRIC, CATIA	Latest Version	20 Seats
7	CAM SOFTWARE –NX CAM/Master CAM/ Dell CAM	Latest Version	20 Seats
8	CAE SOFTWARE – ANSYS	Latest Version	20 seats
9	**General Equipment for Classroom:** White Board, Smart Board, Duster, Marker, Multimedia /LCD Projector, Audio Video Aids, Pen drive and Practice exercise etc.	As per standard and availability	1 Set

Annexure III: 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)*
1	HARYANA FASTNERS	SERARIT SINGH	PROPRIETER	166, KAILASH NAGAR, SHERPUR, NEAR CANCER HOSPITAL,	98140903	HARYANAFASTENERS@GMAIL.COM	

				LUDHIANA-141010			
2	VISHESH ELECTRO SYSTEM	AVOTAU SINGH	PROPRIETER	KAILASH NAGAR, BEHIND CANCER HOSPITAL, LUDHIANA-141010. (LNDLA)	98145-00470	VISHESH.SYSTEM@GMAIL.COM	
3	KALSI MACHINE TOOLS INDUSTRY	HARINDU MOHAN KALSHI	PROPRIETER	17611, KAILASH NAGAR, SHERPUR ROAD, LUDHIANA	98888 96488	KIMTON.001@GMAIL.COM	
4	AXOM FARM MACHINERY PVT. LTD.	SWAKSHAR CHAKRAVARTY	MANAGING DIRECTOR	60, MRD ROAD, GUWAHATI, ASSAM - PIN 781020	7086099788	SWAKSHAR@HOTMAIL.COM	
5	ADD CONSTRUCTION	DURKUV HATB	PARTNER	COLLEGE NAGAR, ABHOYPUR, NORTH GUWAHATI GUWAHATI-781031 (ASSAM)	9435119042	ADDCONSTRUCTION38@GMAIL.COM	
6	THE SUPREME INDUSTRIES LIMITED.	MR. SIROMANI RAJKHOWA	PLANT HEAD	E. P. I. P. COMPLEX, AMINGAON.	+91 7578-012031	SIROMANI_RAJKHOWA@SUPREME.CO.IN	
7	JAY AMBAY POLYMERS	NAGEUDU LIALODIS	PROPRIETER	ROAD FANCY,GUWAHATI-781001			
8	CAMA ELECTRICALS PRIVATE LIMITED	NISHAD AZMI BOKTH	H.R MANAGER	2ND FLOOR, E1 AND E2 BLOCK, BRAHMAPUTRA INDUSTRIAL PARK, PLOT NO 21, CHANGSARI, SILA, AMINGAON, NORTH GUWAHATI, KAMRUP, ASSAM,	7099065843	HR@HMCASSAM.IN	
9	VISKALTAB(INDIA) PVT. LTD.	MR. PRADEEP TIWARI	H.R MANAGER	SANWER ROAD INDOOR	9789998959	HR@VISKALFAB.COM	
10	RUDRA MAGNETS LLP	M. P. SHALDA	MANAGER	625, BADAM ROAD, SATYAVEDU MANDAL, SRICITY - 517 646, ANDHRA PRADESH,	98858 77000	CONTACTUS@RUDRAMAGNETS.COM	
11	EAST COAST MAGNETS PVT. LTD.	NIRMALA	MANAGER	44/1/6; PHASES; 1DA:, JEEDIMETIA,HYDRABAD-500055	8048989786	DIRECTOR.EASTCOASTMAGNET.COM	
12	AZAD ENGINEERING LIMITED,	K.SATHIRAJU	GENERAL MANAGER	PLOT NO: 90/C, 90/D, PHASE-I IDA JEEDIMETLA, HYDERABAD 500 055	78931 77300	SATHIRAJU.K@AZAD.IN	
13	ASACO PRIVATE LIMITED	N. ELMURTI	MANAGER OPERATIONS	SAMUHA AEROSPACE, PARK ADIBATLAI BRAHIMPATNAMRANGAREDDYDISTRICT TAMELGANA STATE, INDIA- 501510.	7799 787 747	ASACOLTD@ASACO.IN	
14	HITESH CORPORATION LIMITED	VINAYAK SAWKAR	GENERAL MANAGER	UNIT NO. 201-203, 2ND FLOOR, WELSPUN HOUSE, KAMALA CITY, SENAPATI BAPAT MARG, LOWER PAREL (W), MUMBAI - 400013	86230-34808	VINAY.SAWKAR@HITECHGROUP.COM	
15	SURAJ TOOLS AND ENGINEERING WORKS	DEIM	CEO	MIDC CHIKATHANA AURANGABAD	7447375273	SURAJTOOLS@GMAIL.COM	
16	ALLWIN UNITED ASSOCIATION PVT.LTD	MI PANKAJ	DIRECTOR	ALLWIN UNITED ASSOCIATION PVT.LIMITED	7588537412	CONTACT@TECHNOCADDAPL.COM	
17	MIS ANNA BLOCK BORING CENTER	MASIT KHAN	PROPRIETOR	MIS ANNA BLOCK BORING CENTER	9767375083		

18	LAXMI ENTERPRISES	RANJANA BHAYYA SAHEB PAWAR	MI.MANAGER	SAINAGAR GHANEGAON MIDC WALUJ, AURANGABAD	7387431128		
19	M/S HR INDUSTRIES	VASPUT JAUGELE	PROPRIETOR	SAJAPUR, AURANGABAD	9637384737		
20	GAYATRJ AUTO COMPONENTS, AURANGABAD	MR. RANJEET METE	MANAGER	AURANGABAD	7385613842	INFO@GAYATRIAUTO.IN	
21	SHARP TOOLS	MAHESH DORLE	SR.MANAGER		9689574563		
22	CHANCHAL ENGINEERING WORKS AURANGABAD	DRYHAEBHWAR	PROPRIETOR	AURANGABAD	9765499939	CHANCHALENGINEERINGWORKS@GMAIL.COM	
23	AKSHARA ENGINEERING WORKS	SHIVAJI GAIKWAD		WALUJ MIDC AURANGABAD	9096420857		
24	ARUSHI ENGINEERING AND BREEZING	VIJAYA PARADE	MANAGER	WALUJ MIDC AURANGABAD	9049596736		
25	SR INDUSTRIES AURANGABAD	RAJENDRA SAUDAGAR MARE	SR. MANAGER	AURANGABAD	8698145607		
26	DEVA ENGINEERING AURANGABAD	ASHOK MOTINAM VEOR	SR. MANAGER	AURANGABAD	8459567793		
27	MAULI PATTERN AURANGABAD	MR.PANCHAL	PROFESSOR	AURANGABAD	9673067755		
28	NAVARATNA INDUSTRIES			WALUJ MIDC AURANGABAD			
29	PRANAW ENTERPRISES AURANGABAD	PANDRINATH DEVKAR	PROPRIETOR	AURANGABAD	9371671146	PRANAVENT@GMAIL.COM	
30	R.P INDUSTRIES	PRASHANT PATIL	CEO	MIDC CHIKATHANA AURANGABAD	8007222251	PRASHANTPATIL@GMAIL.COM	
31	TECHNO MOULD SOLUTION	MR.PANDA	PROPRIETOR	AURANGABAD	7774077907	TECHNOMOULD.SOLUTIONS@GMAIL.COM	
32	SANJAY THCHNO PRODUCTS	HEMANT CHAUDHURY	VP-MANUFACTURING	AURANGABAD	9158898090	HEMANT.CHAUDHARI@SANJAYTECHNOPRODUCTS.IN	
33	SPECIAL PRECISION	ASHIWINI TADHAV	PROPRIETOR	AURANGABAD		SPECIALASHIWIN@GMAIL.COM	
34	PARASON MACHINERY (INDIA) PVT LTD	GHAHU	GM	AURANGABAD	9325202860	AMOIL.MOGAL@PASASEN.COM	
35	PADMA INDUSTRIES	VITTHALKADOM	CEO	MIDC AURANGABAD	9421688212	VITTHALKADOM2525@GMAIL.COM	
36	VANI ENGINEERING CO.PVT LTD	SUBH	GENERAL MANAGER	AURANGABAD	9730729991	SKAPE@GMAIL.COM	
37	GLANCE ENGINEERING -6 PVT.LIMITED CHIKALTHANA	SUBH SK	GENERAL MANAGER	CHIKALTHANA	9730729991	S.KALE@GMAIL.COM	
38	JAI BHAVANI ENGINEERING WORKS		GENERAL MANAGER		9370251815		
39	S N ENGINEERINGWORKS	SNEHA	CEO	CH SAMBHAJINAGAR	9822859974	SNEHAG858@GMAIL.COM	
40	MIKRONIX GAUGES PVT LTD		MD	B-25 MIDC , CHIKALTHANA, CH. SAMBHAJINAGAR	9822004674	MGPLAY@GMAIL.COM	
41	R N INDUSTRIES	TLC	CEO	KAIAGRAM, AURANGABAD	9890718928	R.N.INDUSTRIES01@GMAIL.COM	
42	MADURA DIE CAST PVT LIMITD	MADHURA	CEO	SHENDRA AURANGABAD	9422204622	MADHRADIECAST@GMAIL.COM	
43	SWAGATI ENGINEERING WIS2		CEO	CHIKALTHNA,AURANGABAD	9763714369	SWAGATIENGG@GMAIL.COM	

44	IDEAL ENTERPRISE		GENERAL MANAGER	CHIKALTHANA AURANGABAD	9763785199	IDEAL1993@GMAIL.COM	
45	INDEXABLE CUTTING TOOL	TOR	PROPRIETOR	BAJAJNAGAR,AURANGABAD			
46	INDOTURAN INDUSTRIES	USHAL SHINDE	PROPRIETOR	MIDC AURANGABAD WALUJ	9595280808		
47	CREATIVE CASTING INDUSTRIES	MR. SANJAY RANDIRE	PARTNER	K-30, MIDC WALUJ , AURANGABAD	9011001671	CREATIVECAST@REDIFFMAIL.COM	
48	PYRAMID INDUSTRIES	MR. RAJENDRA KALE	PROPRIETOR				
49	RMG INDUSTRIES	RAOUAL	CEO	MIDC AURANGABAD WALUJ	9766699611	EAJUQANDA@RMGINDUSTRIES.COM	
50	SUDHIR AUTOMATOVE INDUSTRIES PVT LTD	LALIT VATS	DY. MANAGR	HSIIDC, Rohtak Haryana	9671365042	sai@saifasteners.com	
51	NIRMAL AUTOTECH INDUSTRIES PVT LTD	MR. SOURABH	DGM	Plot No 24 near jind railway crossing by pass Rohtak, Haryana	8527307221	operations@nirmalautotech.com	
52	SHIV TOOL INDUSTRIES	MR. ANKIT	MANAGER	HSIIDC, Rohtak Haryana	9138383963	Sainiankit436@gmail.com	
53	REAL CUT ENGINEERING	MR. SANJAY KAUSHIK	MD	New Hissar Bhiwani Link Road IDC Rohtak 124001, Haryana	9896172121	Sanjaykaushik95@gmail.com	
54	AREO FASTENERS PVT LTD	JAISMER SINGH LATHAR	MD	Plot No 29 sector 31 B IMT Delhi Road, Rohtak 124001, Haryana	11256334810	sales@aerofpl.com	
55	HI TECH COORPORATION LTD	VINAY SAWKAR	GM	Sector 30 IMT Rohtak, Haryana	8623034808	Vinay.sawkar@hitechgroup.com	

Annexure IV: 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
2023-24	6000	4800	600	480	-	-
2024-25	9000	7200	900	720	-	-

2025-26	12000	9600	1200	960	-	-

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
1.0	2020-21	281	281	281	253	10	10	10	6	-	-	-	-
1.0	2021-22	1004	1004	1004	933	33	33	33	25	-	-	-	-
1.0	2022-23	986	986	986	936	32	32	32	23	-	-	-	-

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. Fee based Training Program under the Ministry of MSME.
2. ESDP Scheme under the Ministry of MSME.
3. PM Dakshta Aur Kushalta Sampann Hitgrahi Yojana under M/o SJE, GOI
4. Capacity building Training program under National SC/ST Hub, M/o MSME, GOI
5. Schemes under the different state Government.

Content availability for previous versions of qualifications:

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

Languages in which Content is available:

Engl

Annexure V: 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	Books/ e-books, Presentations, Reference Material , Audio / Video Modules with 2D and 3D animation Self-Learning Videos /Broadcasts /Mobile Learning /Curated Digital content	40:60
2	☐Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Self-Learning Videos , Broadcasts, Mobile Learning , Curated Digital content	40:60
3	☐Showing Practical Demonstrations to the learners	CNC Simulators/ CAD Software, Video Content , E-Resource library	100:0
4	☐Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	CNC Simulators, CNC Lathe Machines, Grinding Machines, Measuring, instruments, Cutting Tools, Hand Tools / CAD Software	100:0
5	☐Tutorials/ Assignments/ Practice	Online Question Bank, Mobile Quick test app, MCQ based tests, Practical Test on Machines	40:60
6	☐Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Assessment engine for Essays, Up-loadable file examinations, Mock test sessions	50:50
7	☐On the Job Training (OJT)	Live Project on CNC Machines, Measuring Instruments at concern Industry/ Institution	100:0

Annexure VI: 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
		100	**100**	**-**	**-**
NOS / Module: **MSME/MCCCC/01** Create & Modify Part	PC 1. Obtain and review existing information with reference to the specified design requirement like 2D drawing and 3D model, existing sample, etc. PC 2. Prepare outline ideas for the designs by using conceptual design work or collect similar	-	100	-	-

Model using CAD Software	information. PC 3. Carry out the design process, utilizing the appropriate technology e.g. Tool/die is suitable/compliable to specified machines. PC 4. Obtain the tool part can be manufactured and assemble easily. PC 5. Select the suitable material for the design. PC 6. Document all facets of the design activity and communicate the outcomes of the design process. PC 7. Deliver the designs in the appropriate format to the customers PC 8. Confirm and agree understanding of the design requirements PC 9. Deal with problems relating to the design requirements and agreed solutions PC 10. Identify design options which will meet requirements and the design specification PC 11. Create designs that meet the customer's requirements as specified in the design brief for the engineering product or process PC 12. Ensure that the designs comply with all relevant regulations, standards directives or codes of practice PC 13. Deal promptly and effectively with problems within your control and seek help and guidance from the relevant people if you have problems that you cannot resolve PC 14. Ensure that the designs are protected in line with organizational procedures PC 15. Evaluate the design against the established criteria, using appropriate evaluation methods. PC 16. Creating simple parts, assemblies, and drawings establish the responsibilities for developing specific aspects of the design PC 17. Develop a schedule for the design process e.g. works order date, plan date, actual completion date. PC 18. Save and store the design documentation as per organizational guidelines PC 19. Communicate information to the appropriate people using various company specific media.				
	PC 1. Describe various feature in CAD and CAM software.	-	100	-	-

NOS / Module: **MSME/MCCCC/02** Generate Part Program Using CAM Software (CAM)	PC 2. Explain about limitation & advantages of each CAD/CAM PC 3. Explain working of CAD/CAM PC 4. Create and Edit 2D geometric sketches by using Unigraphics NX software. PC 5. Develop 3D modeling by using advanced command. PC 6. Apply assembly constraint & develop different types of assembly design by using CAD Software like Unigraphics NX PC 7. List the CAM software that is use for Tool Path generation PC 8. Plan the machining activities before starting them. PC 9. Access and use the correct CAM software and tools e.g. Using UG-CAM software PC 10. Calculate parameters like speed feed, depth of cut etc. And set a references for the various operations PC 11. Create / import entities in 3D space as per job requirement PC 12. Modify entities in 3D space as per job requirement PC 13. Create 3-D views on the screen by manipulating drawing planes and inserting 3-D geometric shapes PC 14. Perform programming for solid modeling PC 15. Produce a model for export to the following manufacturing systems Manufacturing systems: DNC (Direct Numerically controlled) /CNC (Computer Numerically controlled) machines; 3D printer; other specific system PC 16. Produce CAM program which comply with organizational guidelines; statutory regulations and codes of practice; CAM software standards; national and international standards PC 17. Confirm that the program is as per job specifications and contains all relevant information PC 18. Use appropriate techniques to create program that are sufficiently and clearly detailed PC 19. Use codes and other references that follow the required conventions PC 20. Make sure that programs are checked and approved by the appropriate person PC 21. Save the program in the appropriate file type and location.				

NOS / Module: **MSME/MCCCC/03** Analyze Part Model	PC 1. Understand the need Analysis and need of CAE Software PC 2. Different file format use in CAE Software PC 3. Export and Import of different file format in CAE PC 4. Define the different parameter for analysis PC 5. Generate the mesh file PC 6. Define the load and boundary parameter for the CAD model PC 7. Simulate the result PC 8. Validate the result PC 9. Optimize the result PC 10. Generate the macro file for the analysis PC 11. Generate the different types of graphs PC 12. Publish the graphs PC 13. Generate the report.	-	100	-	-
NOS / Module: **MSME/MCCCC/04** Design Surfaces using Higher end CAD Software	PC 1. Understand advance Computer aided design software (CREO PARAMETRIC & CATIA) as compare to other CAD software. PC 2. Create 2D geometric sketches by using CREO PARAMETRIC software. PC 3. Develop 3D solid & surface modeling by using advanced command. PC 4. Design and develop the mechanical component and product. PC 5. Develop complex CAD geometry using high class surfacing PC 6. Understand assembly constraint & develop different types of assembly design. PC 7. Understand design generative & interactive drafting. PC 8. Use of CATIA and CREO in sheet metal and Tooling industries PC 9. Apply knowledge in create complicated modeling & creative/innovative solution.	-	100	-	-
NOS / Module: **MSME/MCCCC/05**	PC 1. Plan the machining activities before starting them. PC 2. Use appropriate sources to obtain the required information e.g. Numerical control on CNC	100	100	-	-

Generate CNC Program	machine, types of CNC control PC 3. Calculation of technological data for CNC machining. PC 4. Check that all the equipment is correctly connected and in a safe and usable working condition PC 5. Select Appropriate Raw Material as per size of the Parts to be manufactured mentioned in drawing and specification PC 6. Calculate parameters like speed feed, depth of cut etc. and set a references for the various operations PC 7. Use appropriate techniques to create CNC program that are sufficiently and clearly detailed PC 8. Use codes and other references that follow the required conventions PC 9. Make sure that programs are checked and approved by the appropriate person PC 10. Save the program in the appropriate file type and location PC 11. Deal promptly and effectively within your control, and seek help and guidance from the relevant people if you have problems that you cannot resolve PC 12. Prepare correct programs, demonstrate, simulate and operate CNC lathe / milling / EDM / WEDM machines for various machining operations. PC 13. Describe and explain Modern CNC systems and explain its importance in manufacturing. PC 14. Execute program and inspect simple geometrical forms / standard parts.				
NOS / Module: **MSME/ES/02** Employability skills	PC 1. Explain occupational health and Safety. PC 2. Explain about safety rules. PC 3. State the name and location of people responsible for health and safety in the workplace PC 4. Identify employability skills required for jobs in various industries. & Identify and explore learning and employability portals PC 5. Recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc. PC 6. Follow environmentally sustainable practices. & Recognize the significance of 21st Century	100	-	-	-

	Skills for employment PC 7. Practice the 21st Century Skills such as Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life PC 8. Use basic English for everyday conversation in different contexts, in person and over the telephone. PC 9. How to Minimize the team conflicts & Explain Ethics & values? PC 10. Read and understand routine information, notes, instructions, mails, letters etc. written in English PC 11. Write short messages, notes, letters, e-mails etc. in English & Understand the difference between job and career PC 12. Prepare a career development plan with short- and long-term goals, based on aptitude & Discuss the main types of electronic funds transfers PC 13. Follow verbal and non-verbal communication etiquette and active listening techniques in various settings & work collaboratively with others in a team PC 14. Communicate and behave appropriately with all genders and PwD & escalate any issues related to sexual harassment at workplace according to POSH Act. PC 15. Select financial institutions, products and services as per requirement & carry out offline and online financial transactions, safely and securely. PC 16. Identify common components of salary and compute income, expenses, taxes, investments etc & identify relevant rights and laws and use legal aids to fight against legal exploitation PC 17. Operate digital devices and carry out basic internet operations securely and safely & use e- mail and social media platforms and virtual collaboration tools to work effectively PC 18. Use basic features of word processor, spreadsheets, and presentations. PC 19. Identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research & develop a business plan and a work model, considering				

	the 4Ps of Marketing Product, Price, Place and Promotion. PC 20. Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity PC 21. Identify different types of customers & identify and respond to customer requests and needs in a professional manner.				
Grand Total		**100**	**500**		

Annexure VII: 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 are assigned to the MSME NSQF Assessment Agency via email for the assessment.
- MSME NSQF Assessment Agency sends the assessment confirmation to respective TC.
- MSME NSQF Assessment Agency deploys the certified Assessor for executing the assessment at respective TC via online / offline mode.
- MSME NSQF Assessment Agency & respective TC Internal Assessment cell monitors the assessment process & records.

2. Testing Environment:

- MSME NSQF Assessment Agency confirms the Assessment location, date and time
- For number of candidates more than 30 separate assessors are assigned for the assessment.
- MSME NSQF Assessment Agency & respective assessor confirms that the allotted time to the candidates to complete Theory & Practical Assessment is correct.

3. Assessment Quality Assurance levels/Framework:

- Each TC Submits the Question Bank for the individual subject Theory & Practice separately, submits to MSME NSQF Assessment Agency and it is verified by the MSME NSQF Assessment Agency Committee members.
- Questions are mapped to the specified assessment criteria
- All the assessors & Trainers are well qualified & trained to carry out the specified task.

4. Types of evidence or evidence-gathering protocol:

- Online Link is send by MSME NSQF Assessment Agency to respective TC & Assessor. Reporting of the assessor from assessment location is verified by the MSME NSQF Assessment Agency through the online Meeting Link. Students are also required to join for the online link for verification by the MSME NSQF Assessment Agency.
- Assessment Photographs are shared with the MSME NSQF Assessment Agency & are also with the respective TC.

5. Method of verification or validation:

- Online Link is send by MSME NSQF Assessment Agency to respective TC & Assessor. Reporting of the assessor from assessment location is verified by the MSME NSQF Assessment Agency through the online Meeting Link. Students are also required to join for the online link for verification by the MSME NSQF Assessment Agency.

6. Method for assessment documentation, archiving, and access:

- The Assessment records are shared with MSME NSQF Assessment Agency & also stored at respective TC.
- Assessor fills the assessment report and shares with the MSME NSQF Assessment Agency.

On the Job Training:

- Each module will be assessed separately.
- The candidate must score 60% marks to successfully complete the OJT.
- Learner will be assessed on the basis of OJT report followed by Viva
- Assessment will ensure that the Learner is able to:
    - ✓ Effective engagement with the customers / Subordinates and team
    - ✓ Understand the working of various tools and equipment
    - ✓ Understand the working environment of the industry

Annexure VIII: 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