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

QUALIFICATION FILE

TECHNICAL SUPERVISOR -ADDITIVE MANUFACTURING

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

☐ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA
☐General ☐ Multi-skill (MS) ☒ Cross Sectorial (CS) ☒ Future Skills ☐ OEM

NCrF/NSQF Level: 5.0

Submitted By:

MSME TECHNOLOGY CENTRE

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

Govt. of India

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Table of Contents

Section 1: Basic Details

1.	**Qualification Name**	**TECHNICAL SUPERVISOR -ADDITIVE MANUFACTURING**	
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-05-CG-02410-2024-V1-MSME**	**Qualification Name of existing/previous version:**
4.	**a. OEM Name** **b. Qualification Name** (Wherever applicable)	**NA** **-**	
5.	**National Qualification Register (NQR) Code & Version** (*Will be issued after NSQC approval)*	QG-05-CG-02410-2024-V1-MSME	**6. NCrF/NSQF Level:** 5.0
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**	Qualified learner will be competent in future skills and get employment in following area. • To be expertise in Additive Manufacturing 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 Engineering & its Equivalent)**	

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1	BE/ B.Tech perusing in relevant Trade	Nil

2	Completed 3-year diploma after 10th	2 Years relevant experience
3	Previous relevant Qualification of NSQF Level 4.5	1.5-year relevant experience
4	Previous relevant Qualification of NSQF Level 4	3-year relevant experience

b. Age: 18 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)	**72**	**300**	**120**	**-**	**492**
Online	**108**	**-**	**-**	**-**	**108**
Total	**180**	**300**	**120**		**600**

(Refer Blended Learning Annexure for details)

14.	**Aligned to NCO/ISCO Code/s** *(if no code is available mention the same)*	*2144.01 (Mechanical Engineer, General)*
15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	*Professional Progress: Technical Supervisor Additive Manufacturing → Technical Manager*
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	None

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", 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:**	**24. Validity Duration:**	**25. Next Review Date**

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.	Introduction to Additive Manufacturing (AM) Process	MSME/MCCAM/01 & Version 1.0	Core	5	2	60	-	-	-	60	100	-	-	-	100	
2.	Design of Product using Design software tools	MSME/MCCAM/02 & Version 1.0	Core	5	6	30	150	-	-	180		100	-	-	100	
3.	Develop new product using 3D Printing machine	MSME/MCCAM/03 & Version 1.0	Core	5	10	30	150	120	-	300		100	-	-	100	
4.	Employability skills	MSME/ES/02	Non-Core	5	2	60	-	-	-	60	100	-	-	-	100	
Duration (in Hours) / Total Marks					20	180	300	120		600	200	200			400	

Elective NOS/s: NA

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)*

Optional NOS/s: NA

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)*

Assessment - Minimum Qualifying Percentage

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

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 6 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: 30**
5.	**Estimated nos. of persons to be trained and employed: Approx. 1000 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	• Design & develop the product using CAD Software. • Design the 3D Part for Additive Manufacturing	• In this qualification Job Holder has to carry out Designing activity of product by using the CAD software. In case 2D model received	Level 5.5

Knowledge/Process	• Prepare the 3D Part for Additive Manufacturing • Provide the Different Solution with different AM Technique. • Provide the 3D Printing Solution for Industrial Application	convert into 3D model and quality check of the 3D model against inspection sheet. • Job holder shall be responsible for CAD modeling provided by team members. • Job holder shall use Computer Aided Design software for 3D modeling by using competent software as per requirement and which will be suitable for the Additive Manufacturing application. • Job holder shall use different Additive Manufacturing Techniques used for the various rapid prototyping application. • Job Holder shall have detail knowledge of advance Manufacturing Technology I.e. Additive Manufacturing or 3D printing with clear concept. • Job Holder shall use best AM Machine setup for the given problems.	
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Understand the Various Manufacturing technology. • Identify customer's requirement for the additive Manufacturing Application. • Identify & Select the Standard Parameters of Additive Manufacturing techniques. • Design & Develop the process plan for various technique available for 3D Printing. • Set the Standard parameters for individual process and print the 3D Model as per the requirement of application. • Understand the concept & principle of additive Manufacturing process. • Understand the various types of material available for additive Manufacturing process. • Understand the various Application of additive	• Job holder shall carry out the following professional skill: Gather accurate information on the requirements of the customer, confirm the customer's objectives for the engineering products or processes, Using standard unit system as customer's requirement. • Job Holder shall prepare and set the parameter for the AM solution and test against the standards. • As job holder is dealing with design and development of product, it is required that job holder should possess factual and theoretical knowledge in the field of Product design and development like 3D scanning. 3D printing technology like • Job Holder shall understand the various Additive Manufacturing process like Solid base additive Manufacturing, Liquid Base Additive Manufacturing and Powder Base Additive Manufacturing etc. • Job Holder shall understand the various Additive Manufacturing process like SLA, FDM, SLM, DLP, SLS, DMLS, Binder Jetting, Material	Level 5.5

	Manufacturing used in various industries. ● Identify the Various defect in additive Manufacturing Technology. ● Prepare the 3D Model and get it convert in to the suitable file format for additive manufacturing machine through post processing software. ● Demonstrate the Different Additive Manufacturing Technology like SLA, FDM, SLS, DLP etc.	Jetting, MJM, & LOM etc. ● Job Holder shall deep knowledge of various 3D printer parameters, Warping, Layer Adhesive, Support Structure, Infill Parameters, Support angle etc. as per the process requirement ● Job Holder shall able to develop the various end user product by using the different additive manufacturing technology techniques. ● Job holder shall have a deep knowledge of material properties used in additive manufacturing. ● Job holder shall understand the various application of additive manufacturing Domains like Aerospace, Electronics, Health Care, Defense, Automotive, Construction, Food Processing, Machine Tools, Arts & jewellery etc.	
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, Compliances & Marketing plan. ● Learner can do the required Time Management for successful completion of the project & develop Time Management within the team.	Level 5.5

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 software based on capabilities of modelling, use Presentation skills, utilize CAD 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 the geometry of component on the basis of given parameter. • 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 drawing for the given job, Use of GD&T symbols. • Learners are capable of taking decision for the quality output and productivity enhancement.	Level 5.5
Responsibility	• Responsibility for own work and learning and full responsibility for other's works and learning • Team Building • Manages processes and procedures within broad parameters for defined activities.	• 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 and optimize the Product printing. • Job holder will encourage team members for continues learning and	Level 5.5

		development by time to time discussing with them various issues of project. • 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.	

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	Desk top / Computer system With LAN	Industry Standard	20
2	3D CAD Software		20 seats
3	3D Printing Machine		1

4	3D Scanning Machine		1
5	**General Equipment for Classroom:** White Board, Smart Board, Duster, Marker, Multimedia /LCD Projector, Audio Video Aids, Pen drive and Practice exercise etc.		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	MOLDTEK INDIA	Miss. PRIYA	HR	Aditya Enclave, Hyderabad Telangana-33	8143872733	jobs@moldtekindia.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
2024-25	1000	800	100	60	-	-
2025-26	1500	1200	150	120	-	-
2026-27	2000	1600	200	160	-	-

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:

NA

Content availability for previous versions of qualifications:

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

Languages in which Content is available:

English

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 Videos /Broadcasts.	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	CAD Software, Video Content , E-Resource library	100:0
4	☐Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	CAD Software, Post Processing Software for AM	100:0
5	☐Tutorials/ Assignments/ Drill/ Practice	Online Question Bank, MCQ based tests, CAD / 3D Printing Practice	50:50
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)/ Project Work Internship/ Apprenticeship Training	NA	-

Annexure III: 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
NOS / Module: **MSME/MCCAM/01**	PC 1. Explain the different Type of Manufacturing Technology. PC 2. Explain the advantages of Additive Manufacturing. PC 3. Explain the limitation of additive manufacturing.	100	-	-	-

Introduction to Additive Manufacturing (AM) Process	PC 4. Explain the history of Additive Manufacturing PC 5. Explain the need of Additive Manufacturing PC 6. Describe the process of Additive Manufacturing PC 7. Explain the Process steps in additive manufacturing. PC 8. Classify the types of Additive Manufacturing Technology PC 9. Design the product as per the customer requirement. PC 10. Explain solid base, liquid base and powder base technology like LOM (Laminated Object Manufacturing) System, FDM (Fuse Deposition Modeling) System, Multi-Jet Modeling (MJM) System, Shape Deposition Manufacturing Process. PC 11. Explain the various printer parameters in solid base, Liquid base and powder base technology. PC 12. Classify the different types material available in additive manufacturing PC 13. Compare the various Additive Manufacturing technology (RP Techniques) PC 14. Explain the defects in additive Manufacturing Technology. PC 15. Explain the various application of additive Manufacturing.				
	Total Marks	**100**	**-**	**-**	-
NOS / Module: **MSME/MCCAM/02** Design of Product using Design software tools	PC 1. Describe various feature in CAD software. PC 2. Explain about limitation & advantages of each CAD Software PC 3. Explain working of CAD PC 4. Create and Edit 2D geometric sketches by using CAD software. PC 5. Explain the Feature base modeling in CAD PC 6. Explain the Types of CAD software PC 7. Develop 3D part modeling by using advanced command. PC 8. Design & Develop the Function Assembly PC 9. Explain the Types of Assembly	-	100	-	-

	PC 10. Apply assembly constraint & develop different types of assembly design by using CAD Software. PC 11. Create the detail drafting of the product / assembly. PC 12. Explain the Difference between Creative & Generative Drafting PC 13. Create / import entities in 3D space as per job requirement PC 14. Create 3-D views on the screen by manipulating drawing planes and inserting 3-D geometric shapes PC 15. Prepare a model for export to the AM Pre Processing Software PC 16. Prepare and Convert the model for Additive Manufacturing process.				
	Total Marks	**-**	**100**	**-**	-
NOS / Module: **MSME/MCCAM/03** Develop new product using 3D Printing machine	PC 1. Explain the 3D Printing Technology PC 2. Explain the Element of 3D Printing Machine PC 3. Explain the various printer parameters PC 4. Explain the use of 3D Printing & Scanning PC 5. Describe 3D Scanning Technology. PC 6. Describe various part of 3D scanning. PC 7. Describe types of 3D scanner. PC 8. Explain Create the CAD model from point cloud data. PC 9. Data preparation. PC 10. Explain the Steps in 3D Printing PC 11. Explain the concept of elastic and plastic deformation PC 12. Design & Develop the 3D Model and Print on 3D Printing Machine PC 13. Design the 3D Model as per the requirement AM. PC 14. Demonstrate the Printing Process. PC 15. Carry out the product development using 3d printing technology.	-	100	-	-
	Total Marks	**-**	**100**	**-**	**-**
	PC 1. Discuss the importance of Employability Skills in meeting the job	100	-	-	-

NOS/Module: MSME/ES/02 **Employability Skills**	requirements. PC 2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. PC 3. Show how to practice different environmentally sustainable practices. PC 4. Discuss 21st century skills. PC 5. Display positive attitude, self -motivation, problem solving, time management skills and continuous learning mindset in different situations. PC 6. Use appropriate basic English sentences/phrases while speaking. PC 7. Demonstrate how to communicate in a well -mannered way with others. PC 8. Demonstrate working with others in a team. PC 9. Show how to conduct oneself appropriately with all genders and PwD PC 10. Discuss the significance of reporting sexual harassment issues in time PC 11. Discuss the significance of using financial products and services safely and securely. PC 12. Explain the importance of managing expenses, income, and savings. PC 13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws. PC 14. Show how to operate digital devices and use the associated applications and features, safely and securely. PC 15. Discuss the significance of using internet for browsing, accessing social media platforms, safely and Securely. PC 16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges. PC 17. Differentiate between types of customers. PC 18. Explain the significance of identifying customer needs and addressing them. PC 19. Discuss the significance of maintaining hygiene and dressing				

	appropriately. PC 20. Create a biodata PC 21. Use various sources to search and apply for jobs PC 22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview PC 23. Discuss how to search and register for apprenticeship opportunities				
	Total Marks	**100**	**-**	**-**	**-**
Grand Total		**200**	**200**		

Annexure IV: 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 VI: 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