



QUALIFICATION FILE

Senior Technician - Digital Manufacturing & Tool Engineering

- ☐ 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:

NETTUR TECHNICAL TRAINING FOUNDATION
23/24, II PHASE, PEENYA INDUSTRIAL AREA,
BENGALURU – 560058, KARNATAKA

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Section 1: Basic Details

1.	Qualification Name	Senior Technician - Digital Manufacturing & Tool Engineering								
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)	Qualification Name of existing/previous version: Senior Technician - Digital Manufacturing & Tool Engineering							
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-01031-2023-V1-NTTF	6. NCrF/NSQF Level: 4.5							
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other) (Wherever applicable specify multiple entry/exits & provide details in annexure)	Certificate								
8.	Brief Description of the Qualification	The Candidate will be able to Design, Estimate, Process Plan, Manufacture, Assemble and Try out Press tool, Mould and Jigs and Fixture. Will have Exposure on the use of Industrial Automation - Pneumatics and Hydraulics, PLC, Robotics, IIoT, Additive Manufacturing The subjects covered in this programme are - Mould Technology, Press Tool Technology, Additive Manufacturing, Tool Design Drawing, Automation - Digital Manufacturing, 3D Printing Lab, CAD/CAM, CNC Technology, Production technology, Metrology, Jigs and Fixtures, Material Technology and Heat Treatment, Strength of Materials, Industrial Management, Production Management Control, Estimation and Costing, Automation - Pneumatics and Hydraulics.								
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Academic/Skill Qualification (With Specialization - if applicable)</th> <th>Required Experience (with Specialization)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Advance Certificate - Assistant Tool Maker (Level 4.0) from NTTF.</td> <td>NA</td> </tr> </tbody> </table>			Sl. No.	Academic/Skill Qualification (With Specialization - if applicable)	Required Experience (with Specialization)	1	Advance Certificate - Assistant Tool Maker (Level 4.0) from NTTF.	NA
Sl. No.	Academic/Skill Qualification (With Specialization - if applicable)	Required Experience (with Specialization)								
1	Advance Certificate - Assistant Tool Maker (Level 4.0) from NTTF.	NA								

10.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	Total Credit – 46				11. Common Cost Norm Category (I/II/III) (Wherever applicable): NA	
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/Project Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)
		Classroom (offline)	270	650	300	NIL	1220
		Online	90	70			160
		(Refer Blended Learning Annexure for details)					
14.	Aligned to NCO/ISCO Code/s (if no Code is available mention the same)	NCO Code – 2015.2144.0300, 2015.7222.0200, 2015.7222.0500 & 2015.2144.0401					
15.	Progression path after attaining the qualification (Please show Professional and Academic progression)	Professional Progression: After Completion of 3 years of Full Time Programme and after 3 years of Industry Experience the Job Holder can work as Tool and Die Engineer, Process Engineer, Product Design Engineer, Tool Designer, Digital Manufacturing engineer, Digital Quality engineer and Additive Manufacturing Engineer. Academic Progression: Post Diploma, B. VoC and B.Tech Degree Course in Relevant areas.					
16.	Other Indian languages in which the Qualification & Model Curricula are being submitted	Hindi					
17.	Is similar Qualification(s) available on NQR-if yes, justification for this qualification	☐ Yes ☒ No URLs of similar Qualifications: NA					
18.	Is the Job Role Amenable to Persons with Disability	☐ Yes ☒ No If “Yes”, specify applicable type of Disability:					
19.	How Participation of Women will be Encouraged	Yes - Admission open to women candidates (30% seats reserved)					

20.	Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)	☒ Yes ☐ No Industrial Management Module Code: CP01602T	
21.	Is Qualification Suitable to be Offered in Schools/Colleges	Schools ☐ Yes ☒ No Colleges ☐ Yes ☒ No	
22.	Name and Contact Details of Submitting / Awarding Body SPOC <i>(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</i>	Name: Mr. R Rajagopalan Position in the Organization: Joint Managing Director Email: rg@nttf.co.in Tel number: 080 - 28390215 Contact Number: 9844013448 Website: nttftrg.com	
23.	Final Approval Date by NSQC: 29 Sep 2023	24. Validity Duration: 3 years	25. Next Review Date: 29 Sep 2026

Section 2: Module Summary**NOS/s of Qualifications** (In exceptional cases these could be described as components)**Mandatory Module/ NOS/s:** Specify the training duration and assessment criteria at NOS/ Module level. For further details refer to the curriculum document. – In Annexure**Th.-Theory Pr.-Practical OJT-On the Job Man.-Mandatory Training Rec.-Recommended Proj.-Project**

Sl. No	NOS/Module Name	NOS/Module Code & Version	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)
Semester – 5																
1	Press Tool Technology – 3	CP01501T	Core	4.5	21	20	-	-	-	20	100	-	-	-	100	
2	Mould Technology – 2	CP01502T	Core	4.5		30	-	-	-	30	100	-	-	-	100	
3	Production Management Control	CP01503T	Core	4.5		30	-	-	-	30	100	-	-	-	100	
4	Quality Management System	CP01504T	Core	4.5		15	-	-	-	15	100	-	-	-	100	
5	Automation – Pneumatics and Hydraulics	CP01505T	Core	4.5		15	-	-	-	15	100	-	-	-	100	
6	CAD/CAM -2	CP01506P	Core	4.5		-	80	-	-	80	-	80	-	20	100	
7	Tool Design Drawing -3	CP01507P	Core	4.5		-	60	-	-	60	-	80	-	20	100	
8	Workshop Practical	CP01508P	Core	4.5		-	75	-	-	75	-	80	-	20	100	
9	Automation – Pneumatics and Hydraulics Lab	CP01509P	Core	4.5		-	35	-	-	35	-	80	-	20	100	
10	Project Work	CP01510P	Core	4.5		-	200	-	-	200	-	80	-	20	100	
11	Introduction to Artificial Intelligence & Machine Learning	CP01511T	Core	4.5		40	-			40	100				100	
12	Employability Skill	CP01512T	Core	4.5		30	-	-	-	30	75	-	-	25	100	
Duration (in Hours)/ Total Marks					21	180	450	-	-	630	675	400	-	125	1200	
Semester – 6																
13	Mould Technology -3	CP01601T	Core	4.5	25	30	-	-	-	30	100	-	-	-	100	
14	Industrial Management	CP01602T	Core	4.5		20	-	-	-	20	100	-	-	-	100	
15	Estimation Costing	CP01603T	Core	4.5		20	-	-	-	20	100	-	-	-	100	
16	Automation – Digital Manufacturing	CP01604T	Core	4.5		40	-	-	-	40	100	-	-	-	100	

17	Additive Manufacturing	CP01605T	Core	4.5	40	-	-	-	40	100	-	-	-	100	
18	CAD/CAM -3	CP01606P	Core	4.5	-	20	-	-	20	-	80	-	20	100	
19	Tool Design Drawing -4	CP01607P	Core	4.5	-	40	-	-	40	-	80	-	20	100	
20	Workshop Practical	CP01608P	Core	4.5	-	75	-	-	75	-	80	-	20	100	
21	Project	CP01609P	Core	4.5	-	135	-	-	135	-	80	-	20	100	
22	OJT	CP01612P	Core	4.5	-	-	300	-	300	-	75	-	25	100	
23	Employability Skill	CP01613T	Core	4.5	30	-	-	-	30	75	-	-	25	100	
Duration (in Hours)/ Total Marks					25	180	270	300	-	750	575	395	-	130	1100
Total for 1-year Programme					46	360	720	300	-	1380	1275	795	-	255	2300

Elective Modules/ NOS/s: NA

Sl. 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 Modules/ NOS/s: NA

Sl. 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: (Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear assessment)

Minimum 40% in each Theory module, 50% in each Practical module and 60% in Project.

Section 3: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years) <i>(as per NCVET guidelines)</i>	Diploma in relevant field with 3 years as trainer or industry experience B. Tech or BE with 2 years of trainer or industry experience
2.	Master Trainer's Qualification and experience in the relevant sector (in years) <i>(as per NCVET guidelines)</i>	Diploma in relevant field with 5 years as trainer or industry experience B. Tech or BE with 5 years of trainer + industry experience
3.	Tools and Equipment Required for Training	☒ Yes ☐ No <i>(If "Yes", details to be provided in Annexure)</i>
4.	In Case of Revised Qualification, Details of Any Upskilling Required for Trainer	NA

Section 4: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Diploma with 4 years as trainer or industry experience B. Tech or BE with 3 years as trainer or industry experience
2.	Proctor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Diploma or B. Tech or BE with 2 years of experience
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Diploma with 4 years as trainer or industry experience B. Tech or BE with 3 years as trainer or industry experience
4.	Assessment Mode <i>(Specify the assessment mode)</i>	Blended theory (online and offline in the center) and practical
5.	Tools and Equipment Required for Assessment	Same as for training ☒ Yes ☐ No <i>(details to be provided in Annexure-if it is different for Assessment)</i>

Section 5: Evidence of the need for the Qualification*Provide Annexure/Supporting documents name.*

1.	Research Reports: The following reports establish the Skilled Resource requirement for the Manufacturing, Capital Goods and Automotive Industries. a. MSDE Annual Report 2021- 2022 predict very high growth on automobile and capital goods sector in India. b. MSDE/ NSDC Human Resources and Skill Requirements in the Auto and Auto Components Sector report (2013- 2017 2017 – 2022) The Report Forecast a Higher growth in Automotive Manufacturing, Automotive Components Manufacture Sector c. Human Resources and Skill Requirements in the Capital Goods Sector report (2012 – 2017 2017 – 2022) The Report Envisages Higher Growth in Capital Goods Sector –Electronic Components, Electrical Components, and Auto Components etc. The above two will lead to Higher requirement in Press tool, Moulds and Jigs and Fixtures This calls for qualified Tool makers in large numbers in the Future. d. Annual reports 2021 – 22 of Ministry of Heavy Industries Government of India The above Studies has found Higher growth in Manufacturing, Capital Goods and Automotive Industries which will require Qualified Technicians in Tool Engineering and Digital manufacturing
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): The following reports establish the Skilled Resource requirement for the Manufacturing, Capital Goods and Automotive Industries. a. Indian Skills Report 2021-22 by Wheebox - partnered CII predicts skill requirement in Engineering and Manufacturing sectors. b. NASSCOM, FICCI and EY report on Future of Jobs in India – 2022 - Perspective predicts higher growth in Component Manufacturing and Automotive sector.
3.	Government /Industry initiatives/ requirement (Yes/No): YES – a. Study on Job Role of the Future by Indian Institute of Skills. b. The Study has found Digital Manufacturing Engineer, Tool Room Technician, 3D Printing Technician has new job roles emerging in the Manufacturing Sector.
4.	Number of Industry validation provided: 47
5.	Estimated nos. of persons to be trained and employed: 1200/ year
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: (Letter to be sent to the concerned ministry and copy attached) If “No”, why: Under Process

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name.

1.	Annexure 1: NCrF/NSQF level justification based on NCrF Level / NSQF descriptors (<i>Mandatory</i>)	Yes
2.	Annexure 2: List of tools and equipment relevant for qualification (<i>Mandatory, except in case of online course</i>)	Yes
3.	Annexure 3: Industry Validations Summary	Yes
4.	Annexure 4: Training & Employment Details	Yes
5.	Annexure 5: Blended Learning (<i>Mandatory, in case selected Mode of delivery is “Blended Learning”</i>)	Yes
6.	Annexure 6: Detailed Assessment Criteria (<i>Mandatory</i>)	Yes
7.	Annexure 7: Assessment Strategy (<i>Mandatory</i>)	Yes
8.	Annexure - 13: Multiple Entry-Exit Details (<i>Mandatory, in case qualification has multiple Entry-Exit</i>)	No
9.	Annexure: Acronym and Glossary (<i>Optional</i>)	Yes
10.	Supporting Document: Model Curriculum (<i>Mandatory – Public view</i>)	Digital content available to trainees through Edusquares ERP (Will be made public after the qualification is approved) (Annexure 8)
11.	Supporting Document: Career Progression (<i>Mandatory – Public view</i>)	Yes (Annexure 9)
12.	Supporting Document: Occupational Map (<i>Mandatory</i>)	Yes (Annexure 11)
13.	Supporting Document: Assessment SOP (<i>Mandatory</i>)	Yes (Annexure 10)
14.	Supporting Document: Key Learning Outcome	Yes (Annexure 12)
15.	Any other document you wish to submit:	No

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	• Identify and integrate Facilities available in a tool room for manufacture of Press tool, Moulds and Jigs and Fixture • Will be able to Design Press Tools, Moulds and Jigs and Fixture • Knowledge of Programming using CAD/CAM software • Knowledge on Additive Manufacturing • Will have Capability to organize and perform by self and/or work with others in the above areas. • Will be able to work in a Digital Manufacturing Facility	• Job Holder Understand Safety and Health aspects and Ensures Compliance with Health and Safety Regulations. • Job Holder Can Design, Manufacture, and try-out Press tool, Moulds and Jigs and Fixture • Can use CAD software for Design and CAM software for Manufacturing. • Job Holder can apply his/her Skill and Knowledge in the Operation of a Digital Manufacturing Facility (CAD, CAM, CNC & CMM)	4.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Able to Execute Different manual metal working Processes. • Able to Execute conventional machining, Nonconventional machining, CNC machining and Additive Manufacturing • Can Perform Measuring/Inspection Equipment used in tooling Industry including CMM • Able to Design Tools/ Moulds /Jigs and Fixture • Demonstrate Professional Knowledge on Design and Manufacturing Procedure for Tools, Moulds and Jigs and Fixtures • Professional Knowledge on Automation – Hydraulics Pneumatics, PLC, Robotics and IoT • Demonstrate Professional Knowledge on Additive Manufacturing • Can analyze Data situations and take appropriate decisions. • Can do continuous improvement in processes (KAIZEN) • Describe Artificial Intelligence and Machine Learning.	• Will have Good Communication Skills • Will perform on manual metal working methods and equipment, Conventional machines, Nonconventional and CNC machines. • Highly Competent in Measurement/Inspection Equipment Used in Tool Room • Competency on Programming, CAD/CAM software • Will have Knowledge on Properties, Specification and Application of Materials and their Heat Treatment • Will be able to Design, Manufacture, Inspect and tryout Jigs and Fixture, Press Tool and Mould • Conversant with Industrial Hydraulics Pneumatics, PLC, Robotics and IoT • Perform Maintenance of Press Tools and Moulds • Describe Additive Manufacturing Process • Able to adapt knowledge of artificial intelligence and machine learning into tool and die making job role.	4.5

Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	• Able to communicate effectively with Peers and Supervisors in the work area. • Good Knowledge on Organization, ethical & moral values, and Practice Time Management • Able to Analyze solutions Critically and Logically for fine decision making. • Able to work effectively in a Team and lead a Team. • Knowledge of the latest Technologies and Industrial Trends. • Will have good Ingenuity and Creativity. • Will have good Leadership Skills and have an entrepreneurial for small startup. • Proficiency in Manual metal working Processes • Proficiency in Designing Press Tools, Moulds, Jigs and Fixtures • Proficiency in Software CAD and CAM • Proficiency in using Conventional Machine, Nonconventional Machine and CNC Machine • Proficiency in Use of Measuring/Inspection Equipment • Manufacture Tool Parts Using Manual, Conventional, Nonconventional, CNC machine, Assemble Tools, and Moulds • Proficiency in Additive Manufacturing Process • Integrate Hydraulics and Pneumatics, PLC and IoT for Automation	• Good Communication with Peers, superiors both verbal and written, Good on Presentation Skills, QC, 5S and KAIZEN. • Can Analyze situations Critically and Logically. • Adopt latest Technologies emerging in the Domain. • Can lead a group to work effectively. • Can solve, adapt to new Situations Creatively. • Perform Manual metal working Operations. • Machine Components using Conventional and CNC Machines • Programming in CAD/CAM for CNC machine and Nonconventional machine • Use Measuring/Inspection Equipment • Design, Process Plan, Manufacture and Assemble Try out Jigs and Fixture, Press Tool and Moulds • Print Parts using 3D Printers. • Use Hydraulics, Pneumatics, PLC and Robots for Automating Production	4.5
Broad Learning Outcomes/Core Skill	• Proficiency in using CAD software for preparing technical drawing. • Can do calculations required for Manufacturing and Inspection • Prepare Technical Reports and Presentations using MS Office • Prepare emails for correspondence. • Use Internet to get additional Technical Information • Safety and standard operating Procedures and Practices in the work area. • Communicate with Peers and Superiors.	• Ability to create Technical Drawings. • Ability to calculate required details for Manufacturing and Inspection. • Ability to make technical reports and Presentation using MS Office. • Correspond through emails. • Ability to retrieve necessary technical details from the Internet. • Will follow all safety norms and standard operating Procedures in the work area.	4.5

	• Critical Thinking, Creativity and Logical thinking. • Data collection, analysis, decision making ability. • Solve problems using QC tools and contribute for Kaizen in the work areas. • Knowledge on effective 5S, TPM and TQM activities.	• Verbal and written communication, computer literacy. Maintain Good Relationship with Peers and Superiors and will be able to win good will and Trust of Peers. • Analyze Critical problems in work area and real life. • Decision making ability. • Process improvement and problem-solving skills.	
Responsibility	• Aware of Personal/Industrial goals • Adapt to changes in the work area. • Thorough understanding of safety Procedures and SOPs in the relevant work area • Supervise, evaluate and improve the activities of team in the shop floor	• Able to Carry out Design and Manufacture of Jigs and Fixture, Press Tool and Moulds Under Minimum Supervision • Guide Junior Toolmakers in Fulfilling Tasks Assigned to them.	4.5

Annexure 2: Tools and Equipment (Lab Set-Up)**Tools and Equipment requirement for a batch of 30 Trainees**

Automation Lab – 3 rd Year			
Sl. No.	Equipment		Quantity
1	Pneumatic Trainer Kit		1
2	Pneumatic Simulation Software -10 User		1
3	Hydraulic Simulation Software - 10 User		1
4	Programmable Logic Controller with programming software		2
5	PLC Simulation Software - 2 Analog I/O and 8 Digital I/O ports -10 User		1
6	Robot with Accessories		1
7	Robot Simulation Software -10 User		1
Machines – 3 rd Year			
Sl. No.	Machine	Recommended Specification	Quantity
1	Centre Lathe	Machining Dia: 100mm x 650mm long	1
2	Vertical Milling Machine	Machining size: 250mm x 150mm x 100mm H	1
3	Tool Milling Machine with DRO	Machining size: 250mm x 150mm x 100mm H	1
4	Surface Grinding Machine with DRO	Machining size: 450mm x 150mm x 100mm H	1
5	CNC Milling with Servo Stabilizer	Machining size: 250mm x 150mm x 100mm H	1
6	EDM with Servo Stabilizer	200mm x 200mm	1
7	WEDM with Servo Stabilizer	200mm x 200mm	1
8	Eccentric Press	C Frame - 50 Ton with Pneumatic clutch	1
9	Injection Moulding Machine	60 Ton Locking with Electronic controls	1
10	3D printer with Servo Stabilizer		1

Computer lab		
Sl. No.	Equipment	Quantity
1	Server	1
2	Switch and Cabling	1
3	Computers with networking and Furniture	15
4	UPS	1

Software		
Sl. No.	Software Name	Quantity
1	Autodesk Fusion 360 Open-Source Education License	
2	Master CAM	5
3	CNC training /simulation software (10 user license)	1

Note:

- The Tools, Equipment, Software, and other lab facilities are shared between Qualifications and batches.
- During admission the trainees are supplied with a toolkit containing Micrometer 0- 25mm L.C. 0.01mm, Vernier Caliper 0- 150mm L.C. 0.02mm.
- Trainees are provided with Laptop.

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. White board
2. Projector with screen / Smart TV
3. Laptop / computer

Annexure 3: Industry Validations Summary

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

Sl. No.	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile
1	Mogora Cosmic (P) Ltd	Sanjay Hubli		EI 31/16, Electronic Zone, Bhosari, Pune, Maharashtra – 411026	9820907828	hubli@mogora.com	
2	PMT Machines Pvt Ltd	Sonali K. Weljali		Behind PCMC, Mumbai-Pune Highway, Pimpri, Pune	7219012966	ssd@pmtmachines.com	
3	Renata Precision Components Pvt.Ltd.	Rohit Thawani		J-526, MIDC, Bhosari, Pune – 411026, India	7774086210	rohit.thawani@renata.co.in	
4	Sridevi Tool Engineers Pvt. Ltd.	Divyesh HR Department		62-D, M.G. Road, Opp. Raychem Industries, Valiv - Village, Vasai - East, Palghar - 401 208, Maharashtra, India.	8828124118 09987924808	rfq@sridevitoools.com	
5	KHK Scoffolding Ltd	Prashanth Kumar Putchala		P O Box 28480, Ducast Factory Building, Al Quoz Industrial Area 2, Dubai UAE	971-4-3411106 Ext: 107 971-582263788	khkscaf@emirates.net.ae	
6	Yanfeng India Automotive Interior Systems Pvt. Ltd.	Subodh Deshmukh		Plot No. G-1, Chakan MIDC Phase -III, Village: Nighoje Taluka Khed, Dist: Pune, Maharashtra– 410501	9822721116	yfi.info@yfai.com	https://www.linkedin.com/company/yanfeng-global/
7	Bharat Automotive Pressings Ind Pvt Ltd	Shabbir		W-148/149, 'S' Block, MIDC, Bhosari, Pune - 411 026. India	7620267852		dsmahajan@bapipl.com
8	Larsen & Toubro Limited	Chaitanya		Ahmedabad. 501, Sakar Complex I, Ashram Road Ahmedabad Pin - 380 009. Tel: 079-4900 4000. Fax: 079-2658 0491.	9623122445	Nehal.Shah@Larsentoubro.Com	
9	Shaily Engineering Plastics Ltd	Shagun Rai		Survey No.363 & 364 & 366, Rania, Ta. -Savli, Baroda, Gujarat, India- 391 780	9974093907	careers@shaily.com	

10	Heitkamp Und Thumann (S) Pte Ltd	Serene Ang		27 Senoko South Road Woodlands East Industrial Estate, Singapore 758082	65-6871-4406 65-9631-7795	info@ht-group.com	
11	Amritha Tools Craft	Sridhar Reddy		203/9, Phase II, IDA, Cherlapally, Hyderabad, Telangana 500051	9963976174	ksrinivas@amrithatoolcrafts.com	
12	Siemens Ltd	Sadiq Anwer		Aurangabad	02403985227 09689969996	sapatc.in@siemens.com	
13	Kirloskar Brothers Ltd	Mr.Ramesh Bijapur		Wadi	7447472727	hr@kbl.co.in	
14	Cears Dies & Moulds Pvt. Ltd.	Harikesh		Cears Dies & Moulds Pvt Ltd. F14, Satpur MIDC, Nasik (Maharashtra) India 422007	91-253-6614-554 Mob:9011093644	ajay@cears.co.in	
15	Molex (India) Pvt. Ltd	Pallavi Ranganath		6a, Sadaramangala Industrial Area, Kadugodi, Bengaluru, Karnataka, 560067	080 - 41293503	pallavi.ranganath@molex.com	
16	Achintyo Engineering Llp	Manjunath Kalburgi		#2331/B, 1st Floor, Rohan Plaza, 17 Th Cross, HSR Layout-1st Sector, Bengaluru, 560102	(0)80 2258 2821	mail@achintyo.com	https://www.linkedin.com/company/achintyo/
17	Whirlpool Of India Ltd	Mahendra D Jadhav		Plot#A4, Ranjangoan, MIDC, Maharashtra 412220	9028031731		https://www.linkedin.com/company/whirlpool-of-i-limited/
18	Siemens Ltd	Parag Shewale		Verna Industrial Estate, Verna, Goa 403722	9601275119		https://www.linkedin.com/in/paragshewale/
19	ARaymond Fastners India Pvt. Ltd	Sujay Jadhav		A Raymond Fasteners India Pvt. Ltd Address: Gat No. 259, 276/8b, Nighoje-Chakan, Taluka-Khed, Pune- 410501	9922991974 (SJ) Tel : +91 (2135) 676 214	sujay@araymond.com	https://www.linkedin.com/company/a-raymond-fasteners-india-private-limited
20	TTB Tooling	Kirit chheda		Plot No 63, Chimbali Phata Road, Chimbali, Khed, Pune, Maharashtra 412105	9930702054	admin@ttbtooling.com	https://www.linkedin.com/in/kirit-chheda-12a77142/
21	Bector Automation Rml India Pvt. Ltd.	Amol Chougule		Plot No 24, Gat No 613-1, Talkhed, Kurala	7506506098	careers@rmlnz.com	https://www.linkedin.com/company/bector-

				Maharashtra 410501			automation-rml-india-private-limited/
22	Aisin Automotive Karnataka Pvt Ltd	Vijay S		Achatnahalli, Karnataka 563103	9900087705	iranna.n@aisin-akl.co.in	https://www.linkedin.com/company/aisin-automotive-karnataka-private-limited/
23	Galva Deco Parts Pvt Ltd	Bal Krishna Shrivasa		MIDC Sector 7, Industrial Area, No153 Plot Pcntda, MIDC Rd, Bhosari, Pimpri-Chinchwad, Maharashtra 411026	9168007336		
24	Dhoot Transmission Pvt Ltd	Vinayak		Gat No 312, Nanekarwadi, Chakan Maharashtra 410501	9022478398	corporatehr1@dhoottransmission.com	https://www.linkedin.com/company/dhoot-transmission-p-ltd/
25	SMP Engineers & Electricals Pvt. Ltd.	Swati Gangurde		Nandni Nagar, MIDC, Ambad, Nasik, Maharashtra 422010	7030917846	swati.gangurde@divineindia.co.in	https://www.linkedin.com/company/smp-engineers-and-electricals-private-limited/
26	Minda Industries Ltd	Tushar Verma		B6, MIDC, Chakkan Industrial Area, Talegon-Chakan Road, Mahalunge, Ingale, Maharashtra 410501	0124-2290427		
27	Vasantha Tool Crafts Pvt Ltd	K. Sunil kumar		7-24/2, Pipeline Road, Subhash Nagar, Jeedimetla, Hyderabad, Telangana 500055	9959971307	Sunilkumar@vasantha.com	https://www.linkedin.com/in/sunil-kumar-talari-328b59a8/
28	Amphenol Interconnect India Pvt. Ltd	Divakar Kulkarni		105, Bhosari Industrial Area, Landewadi, Bhosari, Pune 411026	020 67360304	vbhavsar@amphenol-in.com	https://www.linkedin.com/company/amphenol-interconnect-india-private-limited
29	KSPG Automotive India Private Limited	Shrikant Bongale		Takawe B K, Maharashtra 412106	9552667100		https://www.linkedin.com/in/shrikant-bongale-43644898/
30	Amod Industries	Mahendra Deshmukh		L-215/1, Nimblak Road, MIDC, Ahmednagar,	8390900870	Amod.industries@gmail.com	https://www.linkedin.com/company/amod-

				Maharashtra 414111			group-of-industries/
31	Samvardhana Motherson Reydel Companies	Dinesh Pawale		283-2, Phase 1, Hinjewadi, Rajiv Gandhi Inoteck Park, Hinjewadi, Pune 411057	020 66534720	dineshp@smrc-automotive.com	https://www.linkedin.com/company/samvardhana-motherson-reydel-companies/
32	SKH Sheet Metals Components Pvt. Ltd	Mani Awasthi		Gatno.542/545, Behind Bombay Dyeing, Ranjangaon, Maharashtra 412220	9607034533	skhsmc@skhgroup.co.in	https://www.linkedin.com/company/skh-sheet-metal-componant
33	Devu Tools.Pvt.Ltd	Praveena		Sakinaka, Mumbai 400072	9820556950		
34	Goa Sintered Products Pvt Ltd	Anil Lotlikar		Mugali, St Joes De Areal, Salcet, Goa	098229 80402	accounts@goasintered.com	https://www.linkedin.com/in/rahul-lotlikar-92b92323/
35	Satyam Venture Engg Services Pvt Ltd	Pavan Kumar Kaja		1-8-301-306, Ashoka My Home Chamber, S P ROAD, Sindhi Colony, Begumpet, Secunderabad, 500030	9985328222	pavankumar_kaja@satven.com	https://www.linkedin.com/company/satyam-venture-engineering-services/
36	Easi Technologies Pvt Ltd	Sridhar S		Salarpuria Areana,24, 6th, Hosur Rd, Bengaluru 560030	98455063106	sridhars@allegisindia.com	https://www.linkedin.com/company/easi_2/
37	Mahindra Cie Automotive Ltd - Bill Forge Division	Reginald Jacob		Gat 856-860, Chakan-Ambethan Rd, Khed Taluka, 410501	91-80-27826991-97		
38	Magna Automotive India Pvt. Ltd	Suyog Chhatre		Chakan, Maharashtra 410501	9145286093		
39	Nypun tooling and press components private limited	Sethumadhavan G Nair		194, Sector 10 Sector 17/19, MIDC, Bhosari, Pimpri Chinchwad, Maharashtra 411026		sethumadhavannr90@gmail.com	
40	Varroc Engineering Ltd	Mr Jaydip		R6P2, HCF, MIDC, Waluj, Aurangabad, Maharashtra 431133	9717288691		
41	Gestamp Automotive India	Shweta Karekar		Gate 374, 517-521 & 523, Takawe Bk, Maharashtra 412106	9673330972	krathod@in.gestamp.com	https://www.linkedin.com/company/gestamp/
42	All Time Plastics Private Limited	Girish C.V.		B-30, Royal Industrial, Estate, Rd No 26, Wadala,	7573025459		

				Mumbai, Maharashtra 400031			
43	Dyna K Automotive Stampings Pvt Ltd	Ravindra Jadhav		J6 MIDC, Indrayani Nagar Rd, Balaji Nagar, Pimpri Chinchwad, Maharashtra 411026	8888833976	contact@dynakstamp.com	https://www.linkedin.com/company/dyna-k-automotive-stampings/
44	PSR Tooling	RAJESH		10/01/0386, Bhosari Telco Rd, MIDC, Bhosari, Pimpri Chinchwad, Maharashtra 411026	9026478368	rajesh@psrtaspl.com	https://www.linkedin.com/jobs/view/tools-design-engineer-at-psr-toolings-stamping-pvt-ltd-3399742658/
45	Toyota Industries Engine India	Brijendra Shah		Plot No 9, Jigani Industrial Area Phase I, Jigani, Bengaluru 560105	9538997508	tiei@tiei.toyota-industries.com	
46	Yanfeng India Automotive Interior Systems Pvt. Ltd.	Subodh Deshmukh		Plot No. G-1, MIDC, Pimpri Colony, Pimpri Chinchwad, Maharashtra 411018	9822721116	yfi.info@yfai.com	https://www.linkedin.com/company/yanfeng-global/
47	Makino	Sudhakar		No 11, Whitefield Main Road, EPIP Zone, Whitefield, Bengaluru 560066	9972524113	mttcs@makino.com.sg	https://www.linkedin.com/in/mttc-sudhakar-b3291429

Annexure 4: Training & Employment Details**Training and Employment Projections:** *Data to be provided year-wise for next 3 years*

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2023	1000	More than 10000	300	More than 2000	-	
2024	1200	More than 10000	360	More than 2000	-	
2025	1400	More than 10000	420	More than 2000	-	

Training, Assessment, Certification, and Placement Data for previous versions of qualifications: (Previous years)

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
Tool Engineering and Digital Manufacturing	2017- 2020	1046	917	896	896	8	8	8	8	NIL			
	2018 - 2021	863	811	804	804	11	11	11	11				
	2019 - 2022	875	807	799	799	5	5	5	5				

*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:**3rd year of three years Full Time Programme**Content availability for previous versions of qualifications:**
☐ Participant Handbook
☐ Facilitator Guide
☒ Digital Content
☐ Qualification Handbook
☒ Any Other: In NTTF LMS and Edusquares ERP

Languages in which Content is available: English

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>

Sl. 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	Physical classroom, LMS, Web based	90:10
2	Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Physical classroom, Workshops, Mock sessions, Case study, Role play, Group Discussions, LMS	95:05
3	Showing Practical Demonstrations to the learners	Workshop / Lab, Video recording, Simulators	70:30
4	Imparting Practical Hands-on Skills/ Lab Work/ Workshop/ Shop floor training	Workshop machines, Lab equipment, Simulators, Mini projects, Project	90:10
5	Tutorials/ Assignments/ Drill/ Practice	Class assignments, LMS assignments, Simulators	70:30
6	Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Physical classroom, Labs, Workshop, Quiz tests, Project	75:25
7	On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	Industry	100:00

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
Semester – 5					
Press Tool Technology - 3	Buckling of punches – Theorem, calculation	10			
	Deep Drawing – Blank size determination, Determination of number of stages, Defects of Components and remedial measures.	20			
	Acceptance of Tools on Process capability	15			
	Tool Failures – Analysis, Case study	15			
	Factors effecting Tool life – Analysis, Case study	20			
	Advanced Multistage Tooling	20			
	Total Marks	100			
Mould Technology - 2	Mould for internal under cuts and threads	10			
	Multi-daylight mould	10			
	Runner less mould	10			
	Injection moulding defects	10			
	Compression moulding process	7			
	Transfer moulding process	7			
	Die casting process	10			
	Process other than injection moulding of thermoplastics	6			
	Advanced moulding Process	10			
	Injection moulding of Thermoset plastics	10			
	Factors affecting mould service life	10			
	Total Marks	100			
Production Management	Understanding industry	10			

Control	Production Management System	15			
	Plant Layout, Types, Advantages	15			
	Production Planning and Control	20			
	Material, Purchase, Store and Inventory	20			
	Production and Productivity Management	20			
	Total Marks	100			
Quality Management System	Introduction to Quality	15			
	Deming Quality Wheel (PDCA) and QC Tools	15			
	Tools used in QC	20			
	Inspection & Types of Inspection	20			
	Introduction to ISO Systems	30			
	Total Marks	100			
Automation – Pneumatics and Hydraulics	Pneumatic power and hydraulic power – Advantages & Disadvantages	5			
	Properties of fluids	5			
	Production of compressed air, Types of compressors, Terms used	10			
	Preparation and distribution of compressed air, Air drying, Pipelines, FRL unit	10			
	Pneumatic working elements, Types of cylinders & their application	20			
	Basic pneumatic circuits, Designing basic pneumatic circuits.	20			
	Hydraulic working elements – Types of cylinders & their application, Types of valves and their application.	20			
	Basic hydraulic circuits – Designing basic hydraulic circuits	20			
	Hydro-pneumatic systems – introduction to Hydro pneumatics	10			
	Total Marks	100			
Employability Skill	Leadership & Motivation	20			5
	Quality Management – Importance of quality in industry	15			10
	Critical thinking and Problem solving	20			5

	Getting ready for Entrepreneurship	20			5
	Total Marks	100			
Introduction to Artificial Intelligence & Machine Learning	Introduction to Artificial Intelligence & Machine Learning	2.5			
	Data Pre-Processing	15			
	Data Analysis with MS Excel	20			
	Artificial Intelligence in Predictive Maintenance	17.5			
	Artificial Intelligence for Quality Control	15			
	Data Preparation and Pre-Processing	12.5			
	Artificial Intelligence in Engineering Software	17.5			
	Total Marks	100			
CAD/CAM - 2	Practice on CAD/CAM Software/ Simulation and Try out on Machine		80		20
	Total Marks		100		
Tool Design Drawing - 3	Design of 2 plate injection mould		10		
	Design of injection mould with sleeve ejection		7.5		5
	Design of injection mould with stripper plate ejection		7.5		5
	Design of split cavity injection mould with sleeve ejection		10		
	Design of split cavity injection mould with dog leg cam		10		
	Design of mould with side core		7.5		5
	Design of mould with split cores - (angular acting)		10		
	Design of Mould having threads - Collapsible core		10		
	Total Marks		100		
Workshop Practical - 5	Manufacturing of Die Set		80		20
	Total Marks		100		
Pneumatics & Hydraulics lab	Familiarization of components		20		10
	Simulation / Rigging Circuits on Kit		60		10
			100		

Project Work	Project: Design, Process plan – Manufacturing, Assembling and Try out of Mould, Press Tool, Die Casting and Jigs & Fixtures.		80		20
	Total Marks		100		
Semester – 6					
Mould Technology - 3	Moulding machines – Types, specification and selection	15			
	Polishing – Mould Polishing procedure	10			
	Surface Treatment of plastics	10			
	Plastic Product design guideline	25			
	Die casting Die – Design concepts	10			
	Flow systems of die casting	20			
	Defects and remedies of die casting	10			
	Total Marks	100			
Industrial Management	Basics of Management	5			
	Pollution Prevention and Waste Management	10			
	Industrial Safety Management	10			
	Inspection and Quality Control	10			
	Modern Production Management	10			
	Lean Management	10			
	Total Productive Maintenance and Total Quality Management	25			
	Human Resource Management	15			
	Industrial Relation Legislation management	5			
	Total Marks	100			
Estimation and Costing	Importance of estimation	10			
	Importance of costing and constituents of estimating and costing	10			
	Determination of selling price of a components	15			
	Basic machine hour rate calculation	15			
	Methods of estimating Tooling	05			

	Estimation guide – Understanding Estimation guide	05			
	Standard estimation sheet for press tools – Estimating Press tools	15			
	Estimates for Jig, Fixture, Moulds and Dies	15			
	Determination of Cost of components – Pressed & Moulded components	10			
	Total Marks	100			
Automation – Digital Manufacturing	PLC HMI and SCADA – study of PLC, HMI, SCADA, Basic Programming	50			
	Robotics – Robot Anatomy, Types, Application	25			
	IoT and Industry 4.0 Basics	25			
	Total Marks	100			
Additive Manufacturing	Introduction to AM Technologies	10			
	AM Technologies and Materials	20			
	Introduction to Machines	15			
	Design for AM	15			
	Post Processing	15			
	Part Printing	15			
	Applications of AM	10			
	Total Marks	100			
Employability Skill	Labour Welfare and Legislation.	20			5
	Customer Interaction/ Service.	15			10
	Conflict resolution and Negotiation	20			5
	Job readiness and Career building	20			5
	Total Marks	100			
CAD/CAM -3	Do the core extraction and construct hand mould		15		
	Do the core extraction and construct the single cavity two plate injection mould, pin ejection, using the standards		15		5
	Do the core extraction and construct the two cavity two plate injection mould, sleeve ejection, using the standards		15		5

	Do the core extraction and construct the two cavity two plate injection mould, pin ejection, using Meusburger standard		20		5
	Generate the CNC program for Single Cavity Two Plate Injection Mould		15		5
	Total Marks		100		
Tool Design Drawing - 4	Design of compression mould		10		5
	Design of Transfer mould		10		
	Design of Multi day light mould (advanced)		20		5
	Design of Die Casting die		20		5
	Design of Advanced multistage Tool		20		5
	Total Marks		100		
Workshop Practical - 6	Hand Injection Mould - Process involved: Bench work, Conventional and Non- Conventional Machining, CNC Machining and Inspection, Assembling and Trial		80		20
	Total Marks		100		
Project Work	Project Work could be related to Design and Manufacturing, Try out of Mould, Press Tool, Die Casting and Jigs & Fixtures.		80		20
	Total Marks		100		
OJT	OJT - On the Job Training in the Industry		75		25
	Total Marks		100		

Annexure 7: Assessment Strategy

1. ASSESSMENT STRATEGY

The Criteria for assessment is based on Modules, and. will be assigned marks proportional to its importance.

The assessment for the semester-based qualification is carried out by conducting Formative and Summative Assessments.

Regarding Theory – Sessional is based on Intermediate Tests, File / Assignments & Viva –voce: Semester end examination wherein for each Individual batch, A&E dept. at Corporate office, Bangalore creates unique question papers for theory part as well as practical – Theory comprises MCQ and descriptive questions drawn randomly from Question Bank.

Regarding the practical part, the experiments/ exercises are performed by the trainees during the LAB Hours and the trainees are allowed to record the learning of it which will be carried as their Record Marks & one Lab Test and semester end examination. Semester end examination is outcome-based experiments/ exercises of the course will be given to trainees to perform and based on the performance the mark will be awarded.

The passing criteria is based on practical's performance, viva or oral exam, Test and final semester end examination.

Theory and practical Examinations are carried out by Examiners under the overall supervision of the Assessment and Evaluation Dept.

Evaluation of Theory and Practical examination is carried out by the Trained Assessors (NTTF faculty members) under the supervision of Shopfloor Manager / senior faculty in a fair manner as per the assessment criteria set by A&E dept. of NTTF.

The Tabulation and processing of results shall be carried out under EDUSQUARE campus Software.

Assessment comprises the following components:

- Job carried out in Labs / workshops
- Record book
- ONLINE Examination
- Answer sheet of assessment
- Viva-voce
- Semester end examination
- ON-THE-JOB training
- Tech Talk / Shop Talk
- Extracurricular and Co-curricular Activities

- Projects
- Attendance and punctuality

2. ASSESSORS

Evaluation of Theory & Practical examination is carried out by the Trained Assessors (NTTF faculty members) in a fair manner as per the assessment criteria set by A&E dept. of NTTF.

Assessors / Faculties are trained from time to time to upgrade their skills on various aspects such as conduct of assessments, teaching methodology etc.

3. ELIGIBILITY TO APPEAR FOR THE EXAM

- The candidates should have an attendance of a minimum 90% in a semester.
- The candidates should have secured minimum Sessional Marks in Theory and Practical

4. PASS CRITERIA

To pass the Qualification, every trainee should score a minimum of 40% in each Theory and 50% in each Practical and 60% in OJT / Projects.

5. RESULTS AND CERTIFICATION

The assessment results are backed by evidence collected by assessors. Successful trainees are awarded the Diploma certificate by NTTF Corporate Office.

6. ON THE JOB

1. The candidate must score 60% to successfully complete the OJT.
2. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customer needs and requirements and perform Soft Skills effectively:
 - Videos/photos of Trainees during OJT
 - Suggestions / Kaizens from trainees
 - Rewards and appreciation to trainees as applicable
3. Assessment will ensure the following:
 - Effective engagement with the customers
 - Understand the working of various tools and equipment.

7. SYSTEM OF GRADING

An alphabetical letter grade will be assigned for each subject based on the total marks scored in the sessional and end semester examination.

Equivalent Grade Points are used: A = 9.5, B = 8.5, C = 7.5, D = 6.5, E = 5.5, F = 0 (FAIL), I = Incomplete (MP/AB/SP) Supplementary cleared = E

The student will be issued Semester Grade Report calculating SGPA / CGPA as follows:

$$\text{Semester Grade Point Average (SGPA)} = \frac{\sum (\text{No. of Credits} \times \text{Grade Point})}{\sum (\text{No. of Credits for the Program})}$$

$$\text{Cumulative Grade Point Average (CGPA)} = \frac{\sum (\text{SGPA} \times \text{total Credits of each semester})}{\text{Total credits Acquired}}$$

Awarding of class:**a) Awarding of class for semester:**

SGPA	Classification
8.5 and above	First class with distinction
7.5 to 8.4	First class
6.0 to 7.4	Second class
5.5 to 5.9	Pass class

b) Awarding of class for Programme:

First class with Distinction	Should have scored CGPA 8.5 and above and should have cleared all Semesters in the first attempt.
First class	Should have scored CGPA 7.5 to 8.4
Second class	Should have scored CGPA 6.0 to 7.4
Pass class	5.5 to 5.9

8. **ASSESSMENT TOOLS**

All assessment and evaluation activities are carried out under EDUSQUARE campus software which includes Formative assessment & Summative assessment.

- EDUSQUARE : NTTF ERP/CRM used for academic purpose EDUSQUARE erp.nttftrg.com used as SaaS (software as a service) mode
- Digital Valuation System: Digital Valuation system is an innovative software solution which automates manual evaluation and help institutions to minimize the time, effort and human errors in the entire valuation process.
- Remote proctoring which includes AI based Auto Proctoring, Student authentication and Multi secure Exam browser as and when the need arises.

List of ICT Tools:

Desktop and laptops

Interactive White Board

CCTV Camera

Pen Drive

Video Conferencing

Biometric

Edusquare: NTTF ERP/CRM used for academic purpose Edusquare erp.nttftrg.com used as SaaS (Software as a Service) mode

Networking: Includes Wireless access Points, Switches, Routers, Controllers across all NTTF

AWS Cloud: AWS Cloud computing platform to host NTTF website www.nttftrg.com and used as backup storage.

Firewall: Network security device protecting our network by filtering traffic and blocking outsiders.

Microsoft (O365/M-365) – Email/office (Word, Excel, PPT, One Drive for all staff/students are provided using Microsoft O365 MDM (BYOD) policies implemented through M365 used as SaaS

Annexure 8: Model Curriculum

Semester - 5		Module Name: Press Tool Technology - 3	Module Code: CP01501T
Sl. No.	Module Details	Theory Hours 20	
1	Buckling of punches	3h	
2	Deep Drawing	8h	
3	Acceptance of Tools on Process capability	2h	
4	Tool Failures	2h	
5	Factors effecting Tool life	2h	
6	Advanced Multistage Tooling	3h	

Semester - 5		Module Name: Mould Technology - 2	Module Code: CP01502T
Sl. No.	Module Details	Theory Hours 30	
1	Mould for internal under cuts and threads	2h	
2	Multi-daylight mould	2h	
3	Runner less mould	2h	
4	Injection moulding defects	2h	
5	Compression moulding	2h	
6	Transfer moulding	2h	
7	Die casting	3h	
8	Process other than injection moulding of thermoplastics	2h	
9	Advanced moulding Process	7h	
10	Injection moulding of Thermoset plastics	4h	
11	Factors affecting mould service life	2h	

Semester - 5		Module Name: Production Management and Control	Module Code: CP01503T
Sl. No.	Module Details	Theory Hours 30	
1	Understanding industry	1.5h	
2	Production Management System	1.5h	

3	Layout	3.5h
4	Production Planning and Control	9h
5	Material, Purchase, Store and Inventory	7h
6	Production and Productivity Management	7.5h

Semester - 5 Module Name: Quality Management System Module Code: CP01504T		
Sl. No.	Module Details	Theory Hours 15
1	Introduction to Quality	1.5h
2	Deming Quality Wheel (PDCA) and QC Tools	3h
3	Core Tools	6h
4	Inspection	1.5h
5	Introduction to ISO Systems	3h

Semester - 5 Module Name: Automation- Pneumatics and Hydraulics Module Code: CP01505T		
Sl. No.	Module Details	Theory Hours 15
1	Pneumatic power and hydraulic power	1h
2	Properties of fluids	2h
3	Production of compressed air	2h
4	Preparation and distribution of compressed air	1h
5	Pneumatic working elements	2h
6	Basic pneumatic circuits	2h
7	Hydraulic working elements	2h
8	Basic hydraulic circuits	2h
9	Hydro-pneumatic systems	1h

Semester - 5 Module Name: CAD/CAM - 2 Module Code: CP01506P		
Sl. No.	Module Details	Practical Hours 80

1	Practice on CAD/CAM Software/ Simulation and Try out on Machine	80h
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Semester - 5 Module Name: Tool Design Drawing - 3 Module Code: CP01507P		
Sl. No.	Module Details	Practical Hours 60
1	Design of injection mould base	6h
2	Design of 2 plate injection mould	6h
3	Design of injection mould with sleeve ejection	6h
4	Design of injection mould with stripper plate ejection	6h
5	Design of split cavity injection mould with sleeve ejection	10h
6	Design of split cavity injection mould with dog leg cam	10h
7	Design of mould with side core	10h
8	Design of mould with split cores - (angular acting)	3h
9	Design of Mould having threads - Collapsible core	3h

Semester - 5 Module Name: Workshop Practical - 5 Module Code: CP01508P		
Sl. No.	Module Details	Practical Hours 75
1	Manufacturing of Die Set	75h

Semester - 5 Module Name: Automation - Pneumatics and Hydraulics Lab Module Code: CP01509P		
Sl. No.	Module Details	Practical Hours 35
1	Familiarization of Components	15h
2	Simulation / Rigging Circuits on Kit	20h

Semester - 5 Module Name: Project Work Module Code: CP01510P		
Sl. No.	Module Details	Practical Hours 200
1	Project: Design, Process plan – Manufacturing, Assembling and Try out of Mould, Press Tool, Die Casting and Jigs & Fixtures.	200h

Semester - 5		Module Name: Introduction to Artificial Intelligence and Machine Learning	Module Code: CP01511T
Sl. No.	Module Details		Theory Hours 40
1	Introduction to Artificial Intelligence & Machine Learning		01
2	Data Pre-Processing		06
3	Data Analysis with MS Excel		08
4	Artificial Intelligence in Predictive Maintenance		07
5	Artificial Intelligence for Quality Control		06
6	Data Preparation and Pre-Processing		05
7	Artificial Intelligence in Engineering Software		07

Semester - 5		Module Name: Employability Skills	Module Code: CP01512T
Sl. No.	Module Details		Theory Hours 30
1	Leadership & Motivation		7h
2	Quality Management		8h
3	Critical thinking and Problem solving		8h
4	Getting ready for Entrepreneurship		7h

Semester - 6		Module Name: Mould Technology - 3	Module Code: CP01601T
Sl. No.	Module Details		Theory Hours 30
1	Moulding machines		9h
2	Polishing		2h
3	Surface Treatment of plastics		3h
4	Plastic Product design guideline		3h
5	Die casting Die		4h
6	Flow systems of die casting		4h
7	Defects and remedies of die casting		5h

Semester - 6			Module Name: Industrial Management	Module Code: CP01602T
Sl. No.	Module Details			Theory Hours 20
1	Basics of Management			1.5h
2	Pollution Prevention and Waste Management			1.5h
3	Industrial Safety Management			1.5h
4	Inspection and Quality Control			3.5h
5	Modern Production Management			1.5h
6	Lean Management			3h
7	Total Productive Maintenance and Total Quality Management			6h
8	Human Resource Management			1.5h
9	Industrial Relation Legislation management			2h

Semester - 6		Module Name: Estimation and Costing	Module Code: CP01603T
Sl. No.	Module Details	Theory Hours 20	
1	Importance of estimation	2h	
2	Importance of costing and constituents	2h	
3	Selling price of a components	2h	
4	Basic machine hour rate	3h	
5	Methods of estimating the Tooling	4h	
6	Estimation guide		
7	Standard estimation sheet for press tools		
8	Estimates for Jig, Fixture, Moulds and Dies	4h	
9	Cost of components	3h	

Semester - 6		Module Name: Automation - Digital Manufacturing	Module Code: CP01604T
Sl. No.	Module Details		Theory Hours 40
1	PLC HMI and SCADA		23h
2	Robotics		9h
3	IoT and Industry 4.0 Basics		8h

Semester - 6		Module Name: Additive Manufacturing	Module Code: CP01605T
Sl. No.	Module Details		Theory Hours 40
1	Introduction to AM Technologies		3h
2	AM Technologies and Materials		15h
3	Introduction to the Machine		4h
4	Design for AM		7h
5	Post Processing		3h
6	Part Printing		6h
7	Applications of AM		2h

Semester - 6		Module Name: CAD/CAM - 3	Module Code: CP01606P
Sl. No.	Module Details		Practical Hours 20
1	Do the core extraction and construct hand mould		2h
2	Do the core extraction and construct the single cavity two plate injection mould, pin ejection, using the standards		4h
3	Do the core extraction and construct the two cavity two plate injection mould, sleeve ejection, using the standards		4h
4	Do the core extraction and construct the two cavity two plate injection mould, pin ejection, using Meusburger standard		4h
5	Generate the CNC program for Single Cavity Two Plate Injection Mould		6h

Semester - 6		Module Name: Tool Design Drawing - 4	Module Code: CP01607P
Sl. No.	Module Details		Practical Hours 40
1	Design of compression mould		4h
2	Design of Transfer mould		4h
3	Design of Multi day light mould (advanced)		16h
4	Design of Die Casting die		4h
5	Design of Advanced multistage Tool		12h

Semester - 6		Module Name: Workshop Practical - 6	Module Code: CP01608P
Sl. No.	Module Details		Practical Hours 75
1	Hand Injection Mould - Process involved: Bench work, Conventional and Non- Conventional Machining, CNC Machining and Inspection, Assembling and Trial		75h

Semester - 6		Module Name: Project Work	Module Code: CP01609P
Sl. No.	Module Details		Practical Hours 135
1	Project Work could be related to Design and Manufacturing, Try out of Mould, Press Tool, Die Casting and Jigs & Fixtures.		135h

Semester - 6		Module Name: OJT	Module Code: CP01612P
Sl. No.	Module Details		Practical Hours 300
1	OJT - On the Job Training in the Industry		300h

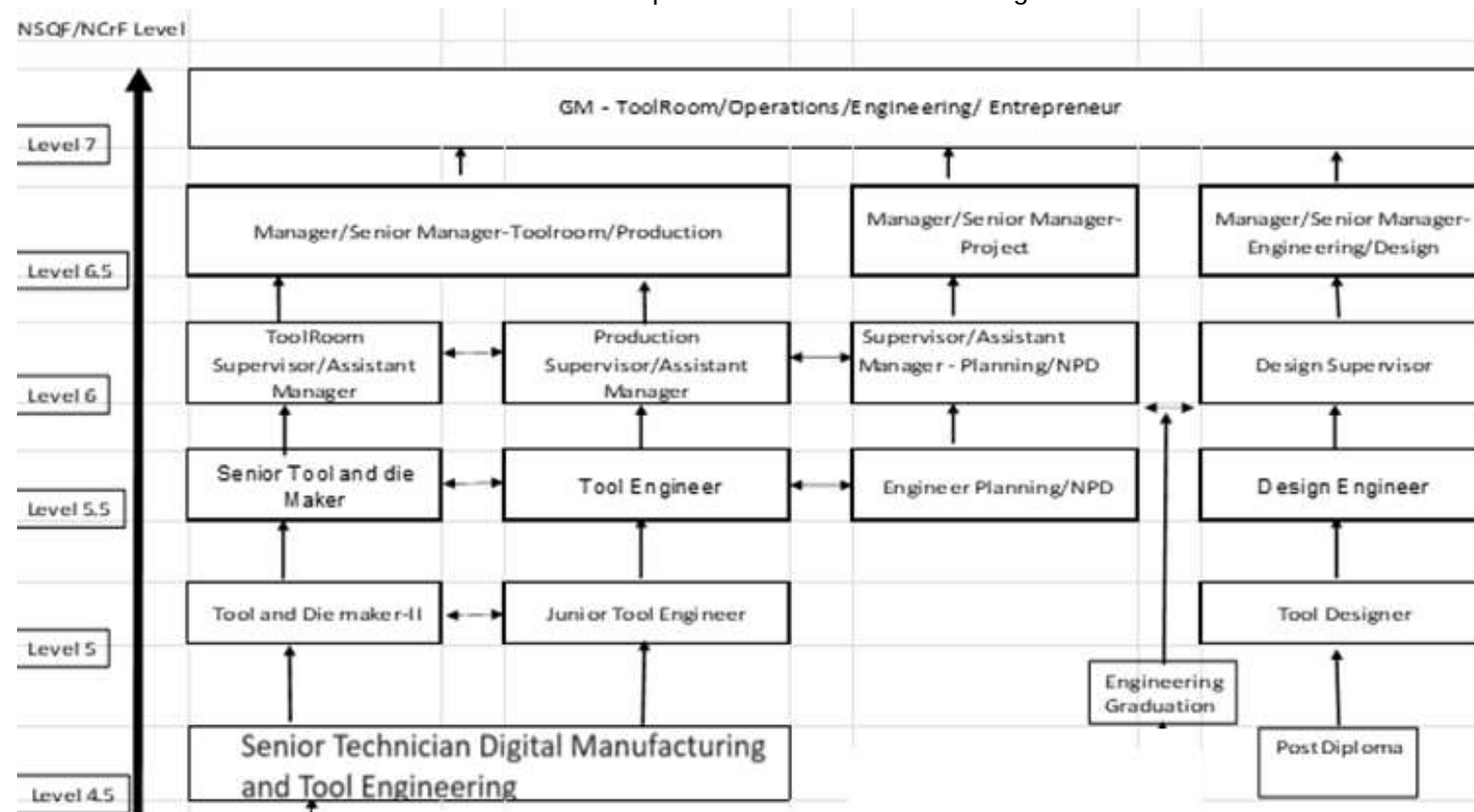
Semester - 6		Module Name: Employability Skills	Module Code: CP01613T
Sl. No.	Module Details		Theory Hours 30
1	Labour Welfare and Legislation.		7h
2	Customer Interaction/ Service.		8h
3	Conflict resolution and Negotiation		8h

4	Job readiness and Career building	7h
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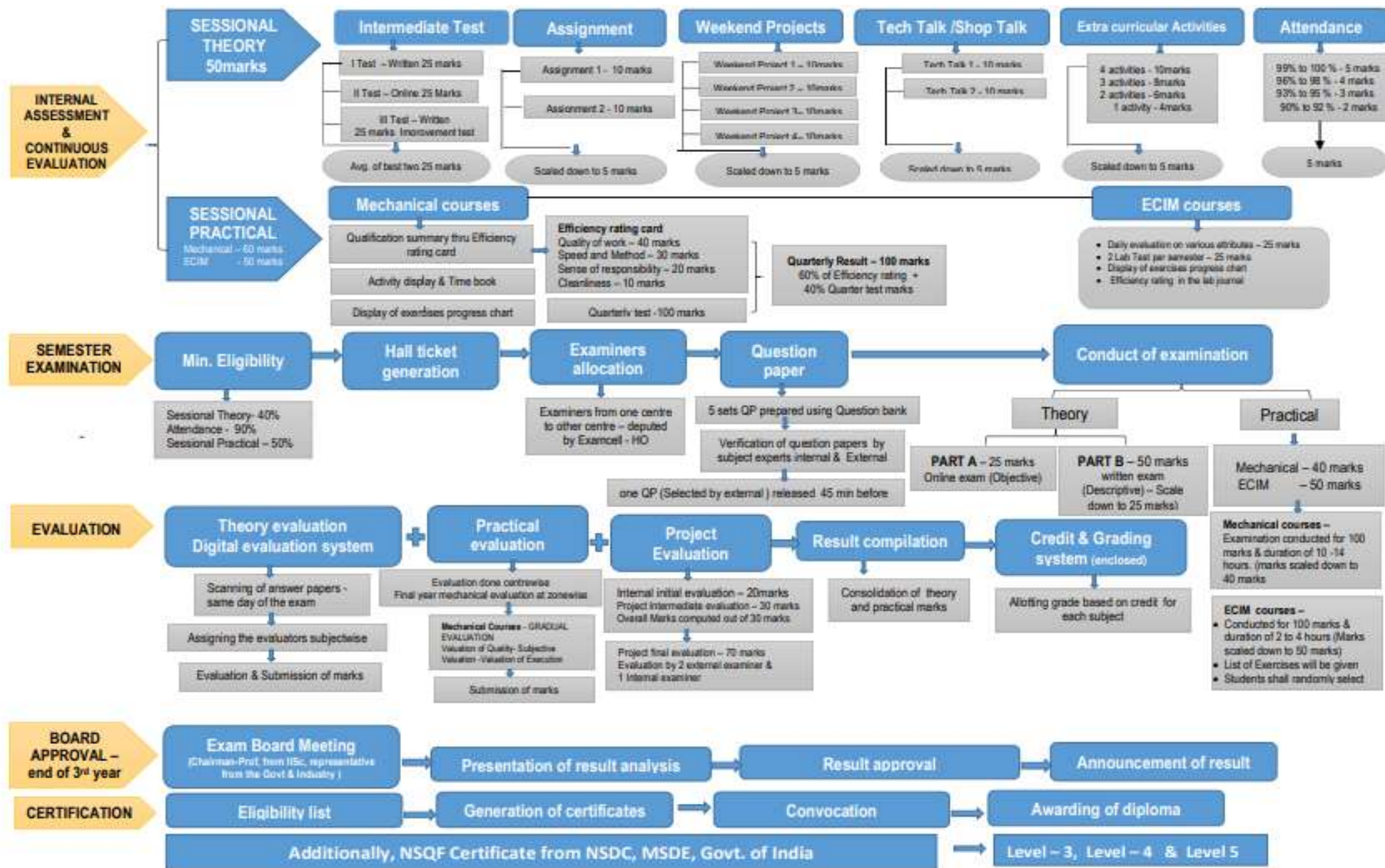
Annexure 9: Career Progression

Job Roles Progression Path

Sector: Capital Goods and Manufacturing



Annexure 10: Assessment SOP



Annexure 11: Occupational Map
Sector Name: Capital Goods and Manufacturing

As per NCrf		As per NCO-2015	Sub-Sector 1/Automotive, Aerospace, Home appliances, Textile, Construction machinery	
NCrf Level (1-8)	Level Descriptors	NCO-15 -- Family (First 4 digits code/s for the given level cross cutting the OM Sub-Sectors/Occupations)	Occupation 1/ Die and Mould, Fixture Manufacturing	Occupation 2/ Die and Mould, Fixture design
Level 8	1. Professional Theoretical Knowledge: Mastery of knowledge / Innovation driven/ Comprehensive knowledge 2. Professional and Technical Skills/ Expertise: Most advanced Technical and Managerial skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Significant authority, transformational leadership, Social intelligence 4. Broad Learning Outcomes: Lead large transformational projects 5. Responsibility: Business Vision Chairperson/ Board Member / CMD			
Level 7	1. Professional Theoretical Knowledge: Advanced knowledge with critical understanding of emerging developments 2. Professional and Technical Skills/ Expertise: Highly specialized skills, transdisciplinary skills, leadership skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Cross cultural competency, transformational leadership 4. Broad Learning Outcomes: Apply acquired advanced technical skills, technical appraisal and reviews 5. Responsibility: Business Management (like GM/ CEO / CXO, etc.)	1321	GM – ToolRoom /Operations Entrepreneur	GM - Engineering/Design Entrepreneur

Level 6.5	1. Professional Theoretical Knowledge: Advanced multidisciplinary and specialized knowledge 2. Professional and Technical Skills/ Expertise: Advanced Technical and Managerial Skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Leadership, effective resource management 4. Broad Learning Outcomes: Judgement in complex problems 5. Responsibility: Vertical/ Business unit management –Manager or Senior Manager	1324 2144	Manager/Senior Manager-Toolroom/Production/Projects Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables)(Education Institution)	Manager/Senior Manager-Engineering/Design Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables)(Education Institution)
Level 6	1. Professional Theoretical Knowledge: Multidisciplinary and specialized knowledge 2. Professional and Technical Skills/ Expertise: Range of skills along with specialized domain skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Entrepreneurial mindset, self-management 4. Broad Learning Outcomes: Judgement / decision making – specialized 5. Responsibility: Team leader – Assistant technical supervisor, Technical supervisor or Assistant/ deputy manager	3115 7223 3122	Supervisor/Assistant Manager-Tool room /Production /Projects Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables)(Education Institution)	Design Supervisor Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables)(Education Institution)
Level 5.5	1. Professional Theoretical Knowledge: Specialized knowledge 2. Professional and Technical Skills/ Expertise: Specialized skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Team readiness, self-entrepreneurship readiness 4. Broad Learning Outcomes: Specialized/ complex jobs/tasks 5. Responsibility: Self and team responsibility – Sr. Technician or Master Technician/Tool Engineer	3115 7223	Senior Tool and die Maker/Tool Engineer/Engineer NPD Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables)(Education Institution)	Design Engineer Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables) (Education Institution)

Level 5		3115 7222	Tool and Die maker-II/Junior Tool Engineer Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables)(Education Institution)	Tool Designer Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables) (Education Institution)
Level 4.5	1. Professional Theoretical Knowledge: Range of knowledge 2. Professional and Technical Skills/ Expertise: Range of technical skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Team readiness & Enterpreurial readiness 4. Broad Learning Outcomes: Carry out Range of tasks and may provide range of solutions 5. Responsibility: Accountable/ responsible - Jr. Technician & Technician	7222	Tool and Die maker-I /Tool Technician Electives - Metal stamping, Plastic moulding, Die casting, Fixtures, Assembly line. Options - (Automotive) (Electrical) (Aerospace) (Consumer durables)(Education Institution)	Study Post Diploma

Annexure 12: Key Learning Outcome

SL. NO.	MODULE NAME	KNOWLEDGE AND UNDERSTANDING	TECHNICAL AND PROFESSIONAL SKILLS	APPLICATION OF KNOWLEDGE AND SKILLS
3rd Year				
1	Press Tool Technology - 3 (CP01501T) Understanding various types of Press tools, their parts, functions. Design and manufacturing of Press Tools	• Describe Buckling of Punches • Determine Size of Punches • Describe Deep Drawing Operation • Explain terms associate with Deep Drawing • Develop Blank for Cylindrical Shells • Determine Number of Draws • Explain Defects and remedies of Deep Drawing Components • Explain Reverse Draw Ironing and Eye led Drawing • Explain terms associated with process capability of Tools • State factors affecting tool life • Describe Multistage Tooling	Ability to design the punch considering the strength and stability required for cutting. Identify Defects and remedies of Deep Drawing Components. Analyze Tool Failure	Knowledge in the development of blank sizes for drawing operation and the force required to draw. Knowledge in the advanced multistage tooling involving multiple operations. Design Process Plan, Manufacture and Try out different types of Press Tools
2	Mould Technology - 2 (CP01502T) Mould Technology - 3 (CP01601T) Understanding the different Moulding process. Ability to develop Moulds, and Understanding Die casting process	• Describe Moulds for internal undercut and threads • Describe compression Moulding • Describe transfer Moulding • Describe hot chamber and cold chamber die- casting • Explain Advanced Moulding Processes – Gas and Water Assistance Injection Moulding, Reaction Injection Moulding, Multi-colour Injection Moulding, Metal injection Moulding • Describe Injection Moulding of Thermoset Plastic • Explain factors affecting mould service life	Identify Injection Moulding defects and State remedies Describe Multi daylight mould and Runner less mould. Describe Injection Moulding of Thermoset Plastic. Understand the design of compression mould and its parameters. Understand the design of Transfer	Design, Process Plan, Manufacture and Try-out of different types of Moulds. Familiarization with different plastic processing methods other than injection moulding.

		• Describe Mould Maintenance • Describe Types and Specification of Injection Moulding machine • Describe Mould finishing Operations • Explain Surface Treatment of Plastics • Explain Plastic Product Design Guideline • Describe flow system in Die casting Die	mould and its parameters. Identify and explain the function of elements of Die casting Die Identify Die casting defects and State remedies	
3	Production Management Control (CP01503T) Understanding the concepts of Production Management, Productivity Management process and Practices in Industry	• Describe types of Business Organization • Describe Production Management System • Describe factors to be considered for selection of site for factory • Explain Plant Layout • Explain Flow Pattern • Describe Production Planning and Control – Sales forecasting, process planning, dispatching, and routing • Describe functions of material management – purchase organization, stores and store keeping, inventory control • Explain Production and productivity management techniques – SQC, QC, KAIZEN, POKAYOKE, KANBAN • Describe Lean Management	Learn how to set production targets, create production schedules, and allocate resources effectively to ensure that production runs smoothly. Lean manufacturing principles.	Planning, organizing, and controlling the resources and activities required to produce goods and services efficiently and effectively.
4	Quality Management System (CP01504T) Understanding the QC tools, the role of inspection in an industry, ISO system	• Explain the Importance of Quality in Production • Describe Deming's Quality Wheel • Explain QC Tools • Explain APQP Process • Explain PPAP Process • Explain SPC • Explain FMEA • Describe Procedure of Inspection • Introduction to ISO Systems –	Skill to identify potential quality issues before they occur and to implement preventive measures to avoid them. Skill to identify opportunities for improvement, optimize quality processes, and increase organizational efficiency.	Understand the principles and requirements of QMS and implement them in their organization.

		QMS/EMS/OHSAS		
5	Automation – Pneumatics and Hydraulics (CP01505T) Automation – Pneumatics and Hydraulics Lab (CP01509P) Rigging simple Pneumatic and Hydraulic circuits and troubleshooting of circuits	• Differentiate between pneumatic and hydraulic power • State application, advantages, and disadvantages of Hydraulics • State Properties of Fluid • State Characteristics of Compressed air • Explain types of Compressors • Explain preparation of Distribution of Compressed air • Explain types and applications of Pneumatic actuators • Specify and Select Pneumatic actuator • Explain types and applications of Pneumatic valve • Specify and Select Pneumatic Valve • State types and Specification and applications of Hydraulic Oils • State types and Specification and applications of Hydraulic Hoses • State types and Specification and applications of Hydraulic Filters • Explain types and applications of Hydraulic actuators • Specify and Select Hydraulic actuator • Explain types and applications of Hydraulic valve • Specify and Select Hydraulic valve • Explain Hydro Pneumatic Systems	Selection and applications of Pneumatic actuators and Pneumatic valves. Design, Rig and troubleshoot Pneumatic. State types and Specification and applications of Hydraulic Oils, Hydraulic Hoses, hydraulic Filters. Familiarity with the components and subsystems of pneumatic and hydraulic systems. Selection and applications of Hydraulic actuators, and valves. Design and Rig Pneumatic and Electro Pneumatic Circuits Design and Rig Hydraulic and Electro-hydraulic Circuits	Design, implement to control different valves, troubleshoot Pneumatic and Hydraulic Circuits.
6	Introduction to Artificial Intelligence and Machine learning (CP01511T)	• Understand the basics of AI & ML • Explain types of Machine learning • Describe Data preprocessing and Data analysis. • Explain the role of AI in Predictive	Demonstrate basics of AI & ML with real world examples. Differentiate between the types of Machine learning.	Visualize, classify, and analyze the data using excel. Study the application of AI & ML examples using CAD, CAM, and

		maintenance. • Understand the role of AI in Quality control. • Describe the application of AI & ML in engineering software used in manufacturing.	Demonstrate data preprocessing methods and data analysis with excel. Learn how AI techniques help in predictive maintenance to prevent failures. Learn how AI ML detects abnormalities. Demonstrate use of AI in CAD, CAM, and simulation software.	simulation software. Understand the flow/sequence.
7	Industrial Management (CP01602T) Understanding Management structure, Safety, Productivity improvement practices, and Factory acts and regulations	• Understand the basics of management structure and management strategies of an industry • understand the impacts of the industrial pollution and waste • Understand the importance of the Industrial safety • Understand the tools used in the industry to improve and control the quality of products • Understand the Importance of modern production management system • Understand the concepts of Lean manufacturing • Understand the Importance of concepts of TPM and TQM • Understand the Importance of industrial and factories act	Able to use the tools used in the industry to improve and control the quality of products. Able to apply the Importance of TPM and TQM Concepts, Inspection and QC Industrial relation legislations.	Apply the importance of Industrial safety. Apply the Importance of modern production management system.
8	Estimation and Costing (CP01603T) Understanding the economics involved in manufacture of Press Tools, Moulds, Jigs and Fixtures	• Describe Importance of Estimation • Describe Importance of Costing • Determine selling price of component • Determine basic machine hour rate • Estimate cost of a Press Tool • Estimate Cost of Moulds and Dies	Skill to ensure that the project budget is realistic and that there are no unexpected cost overruns.	Can accurately estimate project costs, optimize resource utilization, and ensure that projects are completed within the allocated budget and to the required quality standards.

		• Estimate Cost of Jigs and Fixture • Estimate the Cost of Sheet Metal, Moulded and machined Components		
9	Automation – Digital Manufacturing (CP01604T) Creating simple projects using PLC. Understanding HMI, SCADA, Basics of ROBOT and Industry 4.0	• Do Basic Programming • Identify Input and Output Devices • Explain various functions of PLC • Interface PLC and HMI • Explain the role of SCADA in Automation • Explain features and Applications of SCADA • Explain the Benefits of Robots • Explain the Anatomy of Robot • Describe End Effectors of Robot • Explain the Applications of Robot • Explain Industrial IoT – Process, Advantages and applications • Explain Industry 4.0 and its applications	Knowledge of PLC programming. Knowledge of Industry 4.0 concepts. Knowledge of the basics of robotics.	Skill to design, develop and maintain automated systems.
10	Additive Manufacturing (CP01605T) Ability to design, produce 3D objects. Understanding Processing tools, and material selection procedures	• Understand Difference, Advantages and Applications of Additive Manufacturing over Conventional Manufacturing • Specify the Materials and relevant Properties used for Additive Manufacturing Technologies - Material Extrusion and Material Jetting • Convert CAD File for AM • Do 3D Modelling using CAD Software • Use 3D Printing Software • Do Part Printing • Describe the process of Material Extrusion - FDM and Material Jetting - Polyjet • Describe the Post Processing Tools and Procedure	Additive manufacturing Technology, and the materials used and their Properties. Hands-on on the Machine. Interpret and design part using Pre-processing Software	Design the concept for Additive Manufacturing. Converting 3D model to - .stl format. Part printing process and post process of printed materials. Prototyping, and other applications.
11	Tool Design Drawing - 3	• Design Various Types of Injection Moulds	Understand the basic principles of	Ability to interpret industrial Tool

	(CP01507P) Tool Design Drawing - 4 (CP01607P) Designing various types of Moulds	• Design Compression Mould • Design Transfer Mould • Design Die casting Die • Design Multi daylight Moulds • Design Multistage Tools	designing various types of Injection Moulds. Understand and apply basic design principles	Design drawings Ability to Design Various Types of Injection Moulds.
12	Workshop Practical (CP01508P) Workshop Practical (CP01608P)	Die set with spigot pillars Hand Injection Mould	Bench work, Drilling, Milling, Turning, Surface Grinding, Cylindrical grinding, CNC Milling, CNC Turning, EDM, WEDM	Ability to work on, Conventional, Non-conventional and Special purpose machines.
13	CAD/CAM - 2 (CP01506P) CAD/CAM - 3 (CP01606P)	Do the core extraction and construct hand mould, the single cavity two plate injection mould, and two cavity two plate injection mould using the standards.		Ability to design a Hand Mould, Single Cavity Mould, Two Cavity Mould using Fusion software Ability to generate Cam Program using Master Cam
14	Project (CP01510P) Project (CP01609P) Creating a working model using the skill developed during the course of their training	• Design, Process Plan, Manufacture and Try out the selected Project (Mould, Press Tool, Die Casting and Jigs & Fixtures.) • Prepare Project Report • Present Project Report		Design, Process Plan, Manufacture and Try out a working model using the skill developed during the course of their training
15	Employability Skills (CP01512T) Employability Skills (CP01613T) Understand Labour Welfare and Legislation. Understand the concept of Quality Management Getting ready for Employment/ Entrepreneurship. Learn to interact with customers/ provide service.	Knowledge on benefits guaranteed under various Acts, legislations, Factories act, Apprenticeship Act, ESI, EPF Acts, Payment of wages act, women's compensation Act, POSH, and other industrial laws. Understanding of Quality concepts, QMS, PDCA QC Tools, 5S, Kaizen. ISO Process. Distinguishing between Job and Career, Awareness of different job roles in the related sector. Understanding on the pathway and progression. Creating resume and apply for Jobs.	Explain various Acts enacted for labour welfare by various Governments. Attend mock interviews, create Resume documents. Body language, relationship building, probing techniques.	Use of various QC tools and Kaizen for problem solving and Quality improvement themes. Customer handling from greeting, grievance handling.

Annexure: Acronym and Glossary**Acronym**

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

Glossary

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