QUALIFICATION FILE

Jr. Designer (Mechanical)

☐ 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: 5

Submitted By:

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

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Section 1: Basic Details

1.	**Qualification Name**	**Jr. Designer (Mechanical)**	
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) QG-05-CG-00176-2023-V1.1-CGSC V3.0*	**Qualification Name of existing/previous version: Designer Mechanical**
4.	**a. OEM Name** **b. Qualification Name** (*Wherever applicable*)		
5.	**National Qualification Register (NQR) Code &Version** (*Will be issued after NSQC approval)*	**QG-05-CG-03929-2025-V2-CGSSC V4.0**	**6. NCrF/NSQF Level: 5**
7.	**Award (Certificate/Diploma/Advance Diploma/ Any Other** *(Wherever applicable specify multiple entry/exits also & provide details in annexure)*	**Certificate**	
8.	**Brief Description of the Qualification**	A Designer Mechanical is responsible for determining the client's requirements with respect to the mechanical devices and equipment; creating the design brief; validating the design; allocating resources for each activity; and ensuring the designing process is completed.	
9.	**Eligibility Criteria for Entry for Student/Trainee/Learner/Employee**	**a. Entry Qualification & Relevant Experience:**	

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1	Completed UG Diploma or equivalent	No Experience required
2	Completed UG Certificate or equivalent	Relevant Experience

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		3 | 12th pass with 2 year of any combination of NTC/NAC/CITS or equivalent. | No Experience required 4 | 10th Grade Pass | 6-year relevant experience 5 | 12th Grade pass | 3 year relevant experience 6 | Previous relevant Qualification of NSQF Level 4.5 | 1.5 year relevant experience 7 | Previous relevant Qualification of NSQF Level 4 | 3 Year relevant experience **b. Age:** <As per Govt. Norms>
10.	**Credits Assigned to this Qualification, Subject to Assessment** *(as per National Credit Framework (NCrF))*	18 **11. Common Cost Norm Category (I/II/III)** *(wherever applicable)*: **I**
12.	**Any Licensing requirements for Undertaking Training on This Qualification** *(wherever applicable)*	
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)** | **Viva (Hours)** | **Total (Hours)** **Classroom (offline)** | 194 | 286 | 60 | - | 540 **Online** | | | | | | *(Refer Blended Learning Annexure for details)*
14.	**Aligned to NCO/ISCO Code/s** *(if no code is available mention the same)*	NCO-2015/2144.0201
15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	Computer Tool and Die Design Engineer -L6
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	**No**
17.	**Is similar Qualification(s) available on NQR-if yes, justification for this qualification**	**☐ Yes ☒ No URLs of similar Qualifications:**
18.	**Is the Job Role Amenable to Persons with Disability**	**☐ Yes ☒ No** **If "Yes", specify applicable type of Disability:**

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19.	**How Participation of Women will be Encouraged**	**Yes via Industry or College Engagement**	
20.	**Are Greening/ Environment Sustainability Aspects Covered** *(Specify the NOS/Module which covers it)*	**☐ Yes ☒ No**	
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** *(In case of CS or MS, provide details of both Lead AB & Supporting ABs)*	**Name: Ridhima** **Email : technicaladvisors@cgssc.org Contact No.: +91-8882907092** **Website: www.cgssc.org**	
23.	**Final Approval Date by NSQC: 30thApril 2025**	**24. Validity Duration: 3 Years**	**25. Next Review Date:30th April 2028**

Section 2: Module Summary

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

Mandatory NOS/s:

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

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

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	Bridge Module & Follow the health and safety practices at work	CSC/N1335 NOS Version- 2.0	Non-Core	3	2	25	35	-	-	60	30	70	-	-	100	10
2.	Coordinate with co-workers to achieve work efficiency.	CSC/N1336 : Version No. – 2.0	Non-Core	3	1	10	20	-	-	30	30	70	-	-	100	10

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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)*
3.	Determine the client's requirement and create a design brief	CSC/N0405 : : Version No. – 2.0	Core	5	1	10	20	-		30	30	70	0	0	100	20
4.	Create and modify mechanical engineering drawings using the CAD / CAM Software.	CSC/N0402: Version No. – 3.0	Core	4	4	40	50	30	-	120	30	70	0	0	100	15
5.	Create and modify 3D mechanical engineering models using the CAD /CAM Software.	CSC/N0408: Version No. – 3.0	Core	5	5	45	75	30	-	150	30	70	0	0	100	20
6.	Develop prototypes using 3D Printer as per the design brief and carry out Prototype Validation and production	CSC/N0407: Version No. – 3.0	Core	5	3	40	50	-		90	30	70	0	0	100	20
7.	Employability Skills (60 hours)	DGT/VSQ/N0102 - Version No. – 1.0	Non-Core	4	2	24	36	-	-	60	20	30	0	0	50	5
Duration (in Hours) / Total Marks					**18**	**194**	**286**	**60**		**540**	**200**	**450**	**-**	**-**	**650**	**100**

Elective NOS/s:

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

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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)*
Duration (in Hours) / Total Marks																

Optional NOS/s:

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

Assessment - Minimum Qualifying Percentage

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

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

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

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Diploma in Mechanical with 2 years of relevant industry experience specialization in Designer Mechanical (Practical Skills & Knowledge required in the relevant field). B. Tech in Mechanical with 1 year of relevant industry experience specialization in Designer Mechanical (Practical Skills & Knowledge required in the relevant field).

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2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	B. Tech in Mechanical/ Electronics/ Mechatronics with 6 years of relevant experience. M. Tech in Mechanical/ Electronics/ Mechatronics with 4 years of relevant experience.
3.	**Tools and Equipment Required for Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	NA

Section 4: Assessment Related

	Assessor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*	Diploma in Mechanical with 3 years of relevant industry experience specialization in Designer Mechanical (Practical Skills & Knowledge required in the relevant field). B. Tech in Mechanical Engineering with 2 years of relevant industry experience specialization in Designer mechanical (Practical Skills & Knowledge required in the relevant field).
	Proctor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*	B. Tech in Mechanical/ Electronics/ Mechatronics with 6 years of relevant experience. M. Tech in Mechanical/ Electronics/ Mechatronics with 4 years of relevant experience.
	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*	B. Tech in Mechanical/ Electronics/ Mechatronics with 8 years of relevant experience. M. Tech in Mechanical/ Electronics/ Mechatronics with 4 years of relevant experience.

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

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** No
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** No (Industry driven)
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes
4.	**Number of Industry validation provided:** 11
5.	**Estimated nos. of persons to be trained and employed:** 229
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments: Yes** If "No", why:

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

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

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9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	*Attached*
10.	**Supporting Document:** Occupational Map *(Mandatory)*	*Attached*
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	*Available in QP*
12.	**Any other document you wish to submit:**	*NA*

Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	**Wide-ranging specialized theoretical learning requirements** • Process of preparing for creating the design brief • Process of preparing the design brief • Process of preparing for 2D mechanical engineering drawings • Process of performing the set-up activities • Process of creating or modifying 2D mechanical engineering drawings • Process of preparing for performing 3D mechanical engineering modelling • Process of creating and editing 3D mechanical engineering models • Process of developing and testing prototypes	The job involves a range of theoretical understanding and practical skills as can be seen from the job requirements given in the adjacent cell. The skills include determining the client's engineering design requirements and creating an engineering design brief, setting up a CAD system, creating and modifying 3D mechanical engineering models using a CAD system, developing prototypes as per the approved design brief and carrying out testing.	5
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Knowledge of applicable documentation requirements in the job role. • Knowledge of using of relevant information	As indicated by the knowledge and understanding requirements mentioned in the adjacent cell, the	5

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	systems for recording design information • Knowledge of preparing the brief confirming the requirements of the customer • Understand applicable drafting standards and procedures • Knowledge of various computer drawing software • Knowledge of different types of drawings that may be produced using a CAD software • Know how to use of various accessories, such as a mouse, light pen, digitizer and tablet, printer or plotter, and scanner • Knowledge of creating and modifying various entities in 3D space • Knowledge of creating and analysing the digital prototype of a physical model to predict its actual performance • Understand basic metallurgy and heat treatment • Knowledge of the applicable trigonometry and geometry principles	job holder needs to have a knowledge of determining the client's engineering design requirements and creating an engineering design brief, setting up a CAD system, creating and modifying 3D mechanical engineering models using a CAD system, developing prototypes as per the approved design brief and carrying out testing.	
Employment Readiness & Entrepreneurship **Skills & Mind-set/Professional Skill**	• use of various accessories, such as a mouse, light pen, digitizer and tablet, printer or plotter, and scanner • use of different types of computer modelling software • the application of modelling tools • use of development view, motion analysis,	As indicated by the performance criteria in the adjacent cell, the job holder needs to have wide-ranging knowledge of preparing the design brief, creating or modifying 2D mechanical engineering drawings, creating	5

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	animation, defining material property, exploded views • Process of carrying out relevant documentation during the prototype development and testing process	and editing 3D mechanical engineering models, finalising prototypes and overseeing production	
Broad Learning Outcomes/Core Skill	**Logical and mathematical skills** • Follow the technical specification and appropriate procedures. • Perform work-related calculations **Collecting and organising information** • Use the standard templates and tools for documenting work • Collect the relevant information concerning the client's engineering design requirements and create an engineering design brief, set up a CAD system, create and modify 3D mechanical engineering models using a CAD system, develop prototypes as per the approved design brief and carry out testing.	The job holder requires logical and relevant mathematical skills for creating the design brief, validating the design, allocating resources for each activity As indicated by the performance criteria in the adjacent cell, the job involves identifying and evaluating design options, creating detailed design and models using the appropriate 2D and 3D software	5
Responsibility	• Responsible for determining the client's requirements, applications and expectations from the engineering product, its operational and functional requirements • Responsible for coordinating with the stakeholders and production team to obtain approval for drawings • Responsible for ensuring the design process and final design brief conform to the applicable regulations, directives and	A Designer Mechanical is responsible for determining the client's requirements with respect to the mechanical devices and equipment; creating the design brief; validating the design; allocating resources for each activity; and ensuring the designing process is completed within the agreed deadlines and in compliance	5

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	guidelines • Responsible for checking the data and information received to ensure it is correct and complete • Responsible for ensuring compliance with the applicable regulations, codes of practice, national and international standards • Responsible for using the appropriate codes and references that follow the required conventions	with the relevant regulations. The individual identifies and evaluates design options, creates detailed design and models using the appropriate 2D and 3D software and presents them to the relevant stakeholders to get their approval and oversees production.	

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 20-25 Nos

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Chairs/Tables	Standard	25
2	Computer with internet	Standard	25
3	LCD projector with screen	Standard	1
4	Trainer chair and Table	Standard	1
5	Demonstration table pin up boards	Standard	1
6	White board with marker	Standard	1
7	CADD Software	Standard	1
8	Drawing Tools,	Standard	1
9	CAD Template	Standard	1

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10	GD&T Symbols	Standard	1
11	Measuring Tools	Standard	1
12	Fire Extinguisher	Standard	1
13	Safety Gloves (Rubber)	Standard	25
14	Ear Plugs	Standard	25
15	Safety Shoes & Helmet	Standard	25
16	Goggles	Standard	25
17	First-Aid Kit	Standard	2

Classroom Aids

The aids required to conduct sessions in the classroom are:

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

Annexure: Industry Validations Summary

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

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S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1	Wangfeng Aluminium Wheel (India) Pvt. Ltd.	Sanjeev Chaudhary	HR Head	Plot No. 15 to 18, Sec-8, Industrial Model TWP,Bawal, Haryana - 123501	8750231400		
2	Palak Plastic Pvt.Ltd.	Hem Chander Yadav	Director	Plot No. 25, Sec-3, Phase 1, IMT, Bawal, Rewari, Haryana - 123501	0124-4019506	palakplastic@gmail.com	
3	Hay Industry	Harshit Yadav	HR Head	504/4, Gali No. 4, Near Rajendra Hospital, Om Nagar, Gurugram,Haryana-122001	9212154114	industryhay@gmail.com	
4	AG Enterprises	Durgesh Gupta	Manager -HR	Room No. 1,2nd Floor,Plot No. 345, Sector-08,IMT, Manesar, Gurugram Haryana -122051	8750279555	bd@agenterpriseshr.com	
5	Hans Enterprises	OP Yadav	Sr. OP Manager	Cyberwalk, Plot No.CP 9,Tower E,GF,Cabin No4, Sec-5,IMT,Manesar, Gurugram Haryana	8750801333	Enterpriseshans@gmail.com	
6	Palak Plastic Pvt.Ltd.	Sunil Kumar	Director	Plot No.345, Sec-8, IMT, Manesar, Gurugram Haryana-122051	9810075433	sunilyadav7143@gmail.com	
7	Revent	Krishnakant Shukla	DGM-Training	Forging Division, unit 2nd, Begumpur, Khataula, Post Office-Khandsa,,Gurugram , Haryana-122004	9262708933	Krishnakant.shukla@reventengineering.com	
8	Sudhir Foundation	Ravi Prakash	DGM-Training	Plot No.93, Sector-8,IMT,Manesar,Gurugram , Haryana-122051	7988101508	965sudhirfoundation@gmail.com	

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9	JBM Group	Rajeev Kumar Sharma	VP-Head Skill Development – JBM Group	JBM Auto Limited,Skill Development Centre, Plot No.16, sector-20B,Faridabad, (Haryana)- 121007	8860281177	Rajeev.sharma@jbmgroup.com	
10	Subros	Pawan Yadav	HR Head	Plot No. 395-396, Sec-8, Phase-3, IMT Manesar, Gurugram, -122050	9818148609	p.yadav@subros.com	
11	Texmaco	Rajeev Gupta	Chief Business Officer	Belgharia,24 Parganas(North), Kolkata-700056	7042644994	Rajeev.gupta@texmaco.in	

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Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
FY2025-2026	271	62	27	6	3	1
FY2026-2027	298	69	30	7	3	1
FY2027-2028	327	75	33	8	3	1

Data to be provided year-wise for next 3 years

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

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
	FY2022-2023	28	28	28	20	3	3	3	2	0	0	0	0
	FY2023-2024	24	24	24	17	2	2	2	2	0	0	0	0
	FY2024-2025	246	82	81	57	25	8	8	6	2	1	1	1

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

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

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

Content availability for previous versions of qualifications: PH

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

Languages in which Content is available: No

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Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

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

Annexure: Detailed Assessment Criteria

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

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

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain personal health and safety	**7**	**12**	**-**	**-**
PC1. follow the recommended practices to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask	2	3	-	-
PC2. check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them	1	2	-	-

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PC3. select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions	1	2	-	-
PC4. follow the recommended techniques while lifting and moving heavy objects to avoid injury	1	3	-	-
PC5. follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment	2	2	-	-
Assist in hazard management	**4**	**10**	**-**	**-**
PC6. identify existing and potential hazards at work	1	1	-	-
PC7. assess the potential risks and injuries associated with the identified hazards	1	3	-	-
PC8. coordinate with the supervisor or other relevant personnel to prevent or minimise the identified hazards	1	3	-	-
PC9. handle hazardous materials safely and store them in the designated storage	1	3	-	-
Check the first aid box, firefighting and safety equipment	**3**	**7**	**-**	**-**
PC10. check the first aid box to ensure it is updated with the relevant first aid supplies	1	2	-	-

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PC11. check and test the firefighting and various safety equipment to ensure they are in usable condition	1	3	-	-
PC12. coordinate with the supervisor for the repair and replacement of firefighting and safety equipment	1	2	-	-
Assist in waste management	**3**	**8**	**-**	**-**
PC13. segregate waste into appropriate categories	1	3	-	-
PC14. recycle the recyclable waste appropriately	1	3	-	-
PC15. dispose of the non-recyclable waste in an environment-friendly manner, complying with the applicable regulations	1	2	-	-
Follow the fire safety guidelines	**3**	**12**	**-**	**-**
PC16. use the appropriate type of fire extinguisher to extinguish different types of fires safely	1	4	-	-
PC17. follow the recommended practices for a safe rescue during a fire emergency	1	4	-	-
PC18. coordinate with the fire department to request assistance to extinguish a serious fire	1	4	-	-
Follow the emergency and first-aid procedures	**7**	**12**	**-**	**-**

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PC19. follow the organisational health and safety guidelines during workplace emergencies to ensure own and co-workers' safety	1	2	-	-
PC20. follow the recommended practices to minimise loss to organisational property during an emergency	1	3	-	-
PC21. follow the recommended procedure to free a person from electrocution	1	2	-	-
PC22. administer appropriate first aid to the injured personnel	1	2	-	-
PC23. perform Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest	1	2	-	-
PC24. coordinate with the emergency services to request medical assistance for seriously injured/ ill personnel requiring professional medical attention or hospitalisation	2	1	-	-
Carry out relevant documentation and review	**3**	**9**	**-**	**-**
PC25. carry out appropriate documentation following a health and safety incident at work, including all the required information	1	3	-	-
PC26. coordinate with the relevant personnel to review health and safety conditions at work regularly or following an incident	1	3	-	-

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PC27. assist in implementing appropriate changes to improve the health and safety conditions at work	1	3	-	-
NOS Total	**30**	**70**	**-**	**-**

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

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work effectively with co-workers	**20**	**43**	**-**	**-**
PC1. plan daily tasks at work to ensure their timely completion and efficient use of time	2	4	-	-
PC2. carry out work responsibilities adhering to the limits of authority	2	4	-	-
PC3. follow the supervisor's instructions to ensure adherence to the applicable quality standards and timescales	2	4	-	-
PC4. coordinate with the co-workers to achieve the work objectives efficiently	2	4	-	-

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PC5. prepare the relevant documents and reports as per the supervisor's instructions, providing appropriate information clearly and systematically	2	4	-	-
PC6. coordinate with the supervisor or relevant personnel to deal with out of authority tasks and concerns	2	4	-	-
PC7. mentor and assist subordinates in the execution of their work responsibilities	2	4	-	-
PC8. identify possible disruptions to work through coordination with the relevant stakeholders and take appropriate preventive measures	2	4	-	-
PC9. use various resources efficiently to ensure maximum utilisation and minimum wastage	2	4	-	-
PC10. follow the recommended practices to avoid and resolve conflicts at work	1	4	-	-
PC11. follow the relevant organisational policies to ensure disciplined behaviour with maximum productivity at work	1	3	-	-
Communicate effectively with co-workers	**6**	**15**	**-**	**-**

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PC12. follow the organisational policy for the efficient and timely dissemination of information to the authorised personnel	2	5	-	-
PC13. communicate clearly and politely to ensure effective communication with co-workers	2	5	-	-
PC14. follow the appropriate techniques for active listening during interactions	2	5	-	-
Practice inclusion at work	**4**	**12**	**-**	**-**
PC15. empathise with Persons with Disabilities (PwD)	2	6	-	-
PC16. adopt gender-neutral behaviour at work	2	6	-	-
NOS Total	**30**	**70**	**-**	**100**

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CSC/N0405: Determine the client's requirement and create a design brief

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for creating the design brief	**10**	**30**	**-**	**-**
PC1. determine the client's requirements, applications and expectations from the engineering product, its operational and functional requirements along with the quality criteria by referring to appropriate sources of information	1	4	-	-
PC2. identify the resources necessary to undertake the design process	1	4	-	-
PC3. select the relevant personnel and assign them appropriate responsibilities concerning various aspects of the design process	1	4	-	-
PC4. develop a schedule for the design process, setting the priorities to ensure completion of the design process within the timescales agreed with the client	1	4	-	-
PC5. identify the design brief constraints, such as safety, capacity, capability, copyright, logistical constraints, etc.	1	4	-	-

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PC6. check the feasibility of achieving the client's requirements	1	4	-	-
PC7. identify potential issues with the design process and take appropriate preventive measures	2	4	-	-
PC8. record all the relevant information using the appropriate information system	2	2	-	-
Prepare the design brief	**20**	**40**	**-**	**-**
PC9. perform relevant calculations such as tolerance, dimensions, and thermal and structural analysis regarding the proposed design brief	2	4	-	-
PC10. prepare technical drawings, sketches and designs using input from engineers and relevant experts	2	4	-	-
PC11. plan and create mechanical designs using Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), and 3D CAD programs, ensuring compliance with the client requirements, company procedure, and applicable regulations	2	4	-	-
PC12. coordinate with the stakeholders and production team to obtain approval for drawings	2	4	-	-
PC13. create the design brief using the relevant software, ensuring it captures all the client's requirements	2	4	-	-

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PC14. coordinate with the relevant personnel to identify any issues in the design brief and determine if any modifications are required	2	4	-	-
PC15. implement necessary changes to the design brief and save it using the relevant software as per the organisational procedure	2	4	-	-
PC16. coordinate with the engineering and production during the design process to ensure the product design brief serves the intended purpose or addresses the relevant issues, and is feasible to produce	2	4	-	-
PC17. ensure the design process and final design brief conform to the applicable regulations, directives and guidelines	2	4	-	-
PC18. carry out appropriate documentation concerning the design process, maintaining version control	2	4	-	-
NOS Total	**30**	**70**	**-**	**-**

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CSC/N0402: Create and modify mechanical engineering drawings using the CAD / CAM Software.

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for creating 2D mechanical engineering drawings	**6**	**11**	**-**	**-**
PC1. use appropriate sources such as drawing brief to obtain the technical information relevant to the drawing to be created	1	2	-	-
PC2. identify design features appropriate to the drawing being produced	1	2	-	-
PC3. check the data and information received to ensure it is correct and complete	1	2	-	-
PC4. establish the drawing requirements from the data and information received	1	1	-	-
PC5. follow the organisational procedure to report and rectify any incorrect and inconsistent information in the job specification documents	1	2	-	-
PC6. select the relevant drawing software and drafting equipment appropriate to the selected drawing method	1	2	-	-
Perform the set-up activities	**5**	**10**	**-**	**-**

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PC7. customize system variables, menus and drawing defaults to produce the drawing to the appropriate scale	1	2	-	-
PC8. develop macros as per the approved procedures	1	2	-	-
PC9. set up and check that all relevant devices are connected and operating,	1	2	-	-
PC10. check if an interface with ERP is required and available	1	2	-	-
PC11. set the drawing datum at a convenient point along with drawing parameters such as layers, line types, colour, text styles according to the drawing to be produced	1	2	-	-
Create or modify 2D mechanical engineering drawings	**17**	**45**	**-**	**-**
PC12. analyse and produce mechanical drawings, using first angle orthographic projections, isometric/oblique projections, third angle orthographic projections, sectional views	1	2	-	-
PC13. create separate assembly view or isometric view	1	1	-	-
PC14. follow the drafting principles to produce various types of drawings that are consistent with applicable standards and procedures for use in various engineering activities	-	1	-	-

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PC15. perform assembly and motion analysis for the moving parts of the assembly	-	1	-	-
PC16. create a drawing template using the appropriate drawing tool according to the required standards, including all the necessary details	-	2	-	-
PC17. use the relevant Industry 4.0 manufacturing technologies to ensure interconnectivity, automation, machine learning, and real-time data collection and analysis	-	2	-	-
PC18. ensure to mention the desired qualities required in the finished components such as hardness, grinding, blackening, chrome plating, paint colour, etc.	1	2	-	-
PC19. use the relevant terminologies in the drawings	-	2	-	-
PC20. use the recommended techniques to create drawings in the required formats, ensuring the drawings are detailed	1	2	-	-
PC21. use various menus available in the CAD system along with relevant codes and references	1	2	-	-
PC22. draw temporary fasteners and rivets, components details, assembly drawings, piping layouts, gears and machine foundation, jigs and fixtures, nailed drawings of dies, moulds and press tools dimensions	1	2	-	-

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PC23. create all required views such as section and detailed views to avoid any issues during machining	1	2	-	-
PC24. label the drawings as per approved procedures	1	2	-	-
PC25. create detailed views using various scales to as per the requirement	1	2	-	-
PC26. ensure to provide geometrical accuracies, such as run out surface finishing circularity, cylindricity, perpendicularity, on the desired portion of the component	1	2	-	-
PC27. coordinate with the relevant person to get the drawings checked and approved	1	2	-	-
PC28. edit the drawings as per the feedback, ensuring any changes are made as per the organisational procedures	1	2	-	-
PC29. follow the standard sizes of raw materials available in the market, while designing to avoid wastage of resources, such as raw material	1	2	-	-
PC30. check the drawings are correctly titled and referenced	-	2	-	-
PC31. check for the intersection of components with each other in the assembly mode	-	2	-	-
PC32. load testing and simulation before finalising the drawing	1	2	-	-

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PC33. save the drawing to an appropriate storage medium such as a hard drive or USB pen drive, while creating a backup to protect against accidental loss	1	2	-	-
PC34. prepare the bill of materials as per organisational guidelines after determining the required component, material specifications, and appropriate quantities	1	2	-	-
PC35. use the CAD system appropriately as per the user manual	1	2	-	-
Use resources optimally	**2**	**4**	**-**	**-**
PC36. optimise the usage of electricity and other resources in various tasks and processes	1	2	-	-
PC37. connect the electrical tools and equipment safely, and turn them off when not in use	1	2	-	-
NOS Total	**30**	**70**	**-**	**-**

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CSC/N0408: Create and modify 3D mechanical engineering models using the CAD /CAM Software.

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for performing 3D mechanical engineering modelling	**12**	**28**	**-**	**-**
PC1. plan the 3D modelling activities after extracting the required information from the relevant sources such as model brief, sketches, engineer drawings, etc.	2	4	-	-
PC2. select the appropriate modelling software and tools such as solid modelling, wire frame modelling, surface modelling, etc.	1	4	-	-
PC3. check the computer system and other relevant equipment is correctly connected safely and is in working condition	1	4	-	-
PC4. follow the user manual instructions for using the relevant 3D software	2	4	-	-
PC5. set up the modelling environment and select an appropriate template	2	4	-	-
PC6. set the drawing datum at an appropriate point to create a modelling template with title, file number, material, date	2	4	-	-
PC7. establish the coordinate system, orientation and views as per the job requirement	2	4	-	-

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Create and edit 3D mechanical engineering models	**18**	**42**	**-**	**-**
PC8. create and modify entities in 3D space as per job requirement	1	4	-	-
PC9. create 3D views by manipulating drawing planes and inserting 3D geometric shapes	1	4	-	-
PC10. create swept, extruded and revolved solids in 3D space	1	4	-	-
PC11. construct sectioned models with cutting planes and cross hatching	1	2	-	-
PC12. use pre-drawn library files and primitives to produce a 3D model	1	2	-	-
PC13. extract mass and area properties from solid models	1	2	-	-
PC14. use relevant features of a solid modelling software package such as extrude cut, wireframe, fillet, soil views and others to construct models	1	2	-	-
PC15. prepare drawings for solid modelling	1	2	-	-
PC16. use pan, isometric and zoom CAD operations to highlight design areas in the modelling environment	1	2	-	-
PC17. modify parts in the assembly environment using the appropriate features such as hatching and shading, angular surfaces, curved surfaces, circles or ellipses, surface texture, etc	1	2	-	-

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PC18. produce 3D drawings incorporating section views with all the required necessary annotation	1	2	-	-
PC19. construct models for export to different manufacturing systems, such as Direct Numerically Controlled (DNC), Computer Numerically Controlled (CNC), etc.	1	2	-	-
PC20. ensure compliance with the applicable regulations, codes of practice, national and international standards	1	2	-	-
PC21. use the appropriate codes and references that follow the required conventions	1	2	-	-
PC22. ensure the prepared model conforms to the expected cost, physical space, quality, operating environment, tolerances, interfaces, ergonomics, safety, aesthetics, etc.	1	2	-	-
PC23. ensure the models are checked and approved by the relevant stakeholders	1	2	-	-
PC24. follow the applicable organisational procedure for saving the prepared models and sharing them with the stakeholder	1	2	-	-
PC25. coordinate with the relevant personnel to resolve any issues encountered while creating 3D models	1	2	-	-
NOS Total	**30**	**70**	**-**	**-**

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CSC/N0407: Develop prototypes using 3D Printer as per the design brief and carry out Prototype Validation and production.

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Develop and test prototypes	**10**	**30**	**-**	**-**
PC1. conduct relevant research and select the appropriate designing and engineering methods required for the development of prototypes	1	4	-	-
PC2. plan the development of prototypes with the involvement of relevant stakeholders	1	4	-	-
PC3. follow the relevant principles of physics, chemistry and mechanics during the development of the prototype	1	4	-	-

PC4. coordinate with the engineering and production team for the development and testing of prototypes	1	4	-	-
PC5. perform computer simulations and experiments to virtually test and refine the designs	1	4	-	-
PC6. measure the level of function of prototypes to assess their performance against the relevant performance criteria	1	4	-	-
PC7. document the design process, iterations, and test analytics, collecting and analyse data on the performance of prototypes	2	4	-	-
PC8. prepare and present relevant progress reports	2	2	-	-
Finalise prototypes and oversee production	**20**	**40**	**-**	**-**
PC9. liaise with the client, and engineering and production teams to seek their feedback on the prototypes	2	4	-	-
PC10. undertake appropriate improvements in the prototypes according to the feedback	2	4	-	-
PC11. carry out further testing to ensure relevant processes and performance of prototypes conform to the applicable performance standards and design specifications are met	2	4	-	-

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PC12. oversee the process of finalising designs through coordination with the production team	2	4	-	-
PC13. ensure the latest technologies, design trends, and engineering best practices are followed during the finalisation process	2	4	-	-
PC14. prepare technical reports, design specification documents, and operations manuals	2	4	-	-
PC15. calculate the cost estimates for final product designs, and prepare relevant reports incorporating costs of labour, material, delivery and overhead	2	4	-	-
PC16. supervise the manufacturing process for the finalised and approved prototypes	2	4	-	-
PC17. coordinate with the production team during product manufacturing, advising them on design specifications and providing assistance, when required	2	4	-	-
PC18. manage project timelines, resources, and budgets	2	4	-	-
NOS Total	**30**	**70**	**-**	**-**

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DGT/VSQ/N0102: Employability Skills (60 Hours)

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-

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PC6. practice the 21st Century Skills such as Self- Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-

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Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**

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PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	1	2	-	-
PC26. identify different types of customers	-	-	-	-

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PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

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Assessment Parameters:

Assessment Plan:

1. Components of Assessment:

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

2. Passing Parameters:

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

Parameter 1 - Weighted Semester Score:

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

Parameter 2 - Individual Component Score:

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

Annexure: Assessment Strategy

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

Mention the detailed assessment strategy in the provided template.

<1. Assessment System Overview:

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

2. Testing Environment:

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

3. Assessment Quality Assurance levels/Framework:

- Question bank is created by the Subject Matter Experts (SME) are verified by the other SME
- Questions are mapped to the specified assessment criteria

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- Assessor must be ToA certified & trainer must be ToT Certified

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Centre photographs with signboards and scheme specific branding
5. Method of verification or validation:
   - Surprise visit to the assessment location
6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored

On the Job:

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

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

Annexure: Acronym and Glossary

Acronym

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

Glossary

Term	Description

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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

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