QUALIFICATION FILE

Electric Vehicle Product Design Engineer

☒ 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:

Automotive Skills Development Council

E-113, Okhla Industrial Estate

Phase- III,

New Delhi-110020

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Qualification Name</td><td colspan="2">Electric Vehicle Product Design Engineer</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">Automotive</td></tr>
<tr><td>3.</td><td>Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options
☐OEM</td><td>NQR Code & version of existing/previous qualification: (change to previous, once approved)</td><td>Qualification Name of existing/previous version:</td></tr>
<tr><td>4.</td><td>a. OEM Name
b. Qualification Name
(Wherever applicable)</td><td colspan="2"></td></tr>
<tr><td>5.</td><td>National Qualification Register (NQR) Code & Version
(Will be issued after NSQC approval)</td><td>QG-4.5-AU-00542-2023-V1.1-ASDC</td><td>6. NCrF/NSQF Level: 4.5</td></tr>
<tr><td>7.</td><td>Award (Certificate/Diploma/Advance Diploma/ Any Other
(Wherever applicable specify multiple entry/exits also & provide details in annexure)</td><td colspan="2">Certificate</td></tr>
<tr><td>8.</td><td>Brief Description of the Qualification</td><td colspan="2">The individual at this job is responsible for designing the automotive products using different simulation tools on the basis of requirements. The individual is also responsible for supporting the manager in ensuring that the designed product includes aspects related to telematics, human machine interface, ergonomics and design of EV.</td></tr>
<tr><td>9.</td><td>Eligibility Criteria for Entry for Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:
<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr>
<tr><td>1</td><td>Pursuing 1st year of B.E/B.Tech and continuous education</td><td></td></tr>
<tr><td>2</td><td>Completed 2 years Diploma (after class 12th)</td><td></td></tr>
<tr><td>3</td><td>Completed 3 years Diploma (after class 10th)</td><td></td></tr>
<tr><td>4</td><td>10th Class pass</td><td>3 years of relevant experience</td></tr>
</table>
b. Age: 21 years</td></tr>
<tr><td>10.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>17</td><td>11. Common Cost Norm Category (I/II/III)
(wherever applicable): I</td></tr>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">NA</td></tr>
</table>

<table>
<tr><td>13.</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td colspan="2">☒Offline ☐Online ☐Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>184:00</td><td>296:00</td><td>30:00</td><td></td><td>510</td></tr>
<tr><td>Online</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
(Refer Blended Learning Annexure for details)</td></tr>
<tr><td>14.</td><td>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</td><td colspan="2">NCO-2015/2144.0803</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td colspan="2">Automotive Product Design Lead Engineer Level 5</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td colspan="2">NA</td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td colspan="2">☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>18.</td><td>Is the Job Role Amenable to Persons with Disability</td><td colspan="2">☐ Yes ☒ No
If “Yes”, specify applicable type of Disability:</td></tr>
<tr><td>19.</td><td>How Participation of Women will be Encouraged</td><td colspan="2">No gender sensitization</td></tr>
<tr><td>20.</td><td>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</td><td colspan="2">☒ Yes ☐ No</td></tr>
<tr><td>21.</td><td>Is Qualification Suitable to be Offered in Schools/Colleges</td><td colspan="2">Schools ☒ Yes ☐ No Colleges ☒ Yes ☐ No</td></tr>
<tr><td>22.</td><td>Name and Contact Details of Submitting / Awarding Body SPOC
(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</td><td colspan="2">Name: Mr. Arindam Lahiri
Email: ceo@asdc.org.in Contact No.: 011-42599800
Website: https://www.asdc.org.in/</td></tr>
<tr><td>23.</td><td>Final Approval Date by NSQC: 23/06/2023</td><td>24. Validity Duration: 3 Years</td><td>25. Next Review Date: 23/06/2026</td></tr>
</table>

Section 2: Module Summary

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

Mandatory NOS/s:

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

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

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	Manage work and resources (Manufacturing)	ASC/N9810, V1.0	Non-Core	5	2	25	35			60	50	30	00	20	100	10
2.	Employability Skills (60 hours)	DGT/VSQ/N0102, V1.0	Non-Core	5	2	24	36			60	20	30	00	00	50	5
3.	Interpret engineering drawing	ASC/N9805, V1.0	Non-Core	4	1	15	15			30	50	30	00	20	100	10
4.	Support the manager in finalising the design specifications and reliability parameters of the product	ASC/N8106, V1.0	Core	5	6	60	105	15		180	30	50	00	20	100	35
5.	Design vehicles and components using simulation tools	ASC/N8107, V1.0	Core	5	6	60	105	15		180	30	50	00	20	100	40
Duration (in Hours) / Total Marks					**17**	**184**	**296**	**30**		**510**	**180**	**190**	**00**	**80**	**450**	**100**

Elective NOS/s:

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

Optional NOS/s:

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

Assessment - Minimum Qualifying Percentage

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

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

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

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	M.E/M.Tech (Mechanical/Electrical/Electronics/Automobile/Instrumentation) with 1 year of industry and 1 year of training experience in Mechanical/Electrical/Electronics/Automobile/Instrumentation Or B.E/B.Tech (Mechanical/Electrical/Electronics/Automobile/Instrumentation) with 2 years of industry and 1 year of training experience in Mechanical/Electrical/Electronics/Automobile/Instrumentation Or B.E/B.Tech (Mechanical/Electrical/Electronics/Automobile/Instrumentation) with 3 years of industry experience in Mechanical/Electrical/Electronics/Automobile/Instrumentation
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	M.Tech (Mechanical/Electrical/Electronics/Automobile/Instrumentation) with 3 years of industry and 1 years of training experience in Mechanical/ Automobile/ Electronics/ Instrumentation
3.	**Tools and Equipment Required for Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	M.E/M.Tech (Mechanical/Electrical/Electronics/Automobile/Instrumentation) with 2 year of industry and 1 year of training experience in Mechanical/Electrical/Electronics/Automobile/Instrumentation Or B.E/B.Tech (Mechanical/Electrical/Electronics/Automobile/Instrumentation) with 3 years of industry and 1 year of training experience in Mechanical/Electrical/Electronics/Automobile/Instrumentation Or B.E/B.Tech (Mechanical/Electrical/Electronics/Automobile/Instrumentation) with 4 years of industry experience in Mechanical/Electrical/Electronics/Automobile/Instrumentation
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	NA
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	NA
4.	**Assessment Mode** *(Specify the assessment mode)*	Blended
5.	**Tools and Equipment Required for Assessment**	☒ Same as for training ☐ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** Yes
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** Yes
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes
4.	**Number of Industry validation provided:**
5.	**Estimated nos. of persons to be trained and employed:** 500
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** In progress 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)*	*Attached*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Attached*
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Attached*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Attached*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*Filled*
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	*Filled*
7.	**Annexure:** Acronym and Glossary *(Optional)*	
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	Attached
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	Attached
10.	**Supporting Document:** Occupational Map *(Mandatory)*	Attached
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	Attached
12.	**Any other document you wish to submit:**	

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	The individual on the job needs to develop and design of an electric vehicle and support the manager in ensuring that the designed product includes aspects related to telematics, human machine interface, ergonomics	The individual on the job is responsible for own work and learning. Work in designing of electric vehicle.	4.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	The individual on the job needs to have factual knowledge of: ● Designing methodology. ● Different types of tools and software being used for the process and their identification. ● How to read drawing and the output as defined in the drawing. ● Quality check of layout	Factual knowledge of designing methods.	4.5

Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Recall and demonstrate practical skill to routine and repetitive applications: ● Vehicle designing activities. ● Validity checks of design ● Recognise a workplace problem or a potential problem and take action.	Recall and demonstrate practical skill, routine and repetitive in wide range of application, using appropriate rule and tool, using quality concepts.	4.5
Broad Learning Outcomes/Core Skill	The user individual on the job needs to have written and oral communication skills like: ● To draw basic level drawings and charts. ● Read and interpret symbols given on equipment and work area. ● Read vehicle drawings/ engineering drawings, sketches.	Language to communicate written or oral, with required clarity, skill to basic arithmetic and algebraic principles, basic understanding of social political and natural environment.	4.5
Responsibility	The individual on the job needs to know their own responsibility of designing activities. Alongside this, interact with the designing team and material management team.	The individual on the job is responsible for own work and fully responsible for other's work and learning.	4.5

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Basic Tool box		1
2	Designing software Auto CAD,Pro-E , Turbo CAD designer, simulia		15 License
3	MS-Office		15 License
4	Marking tools	Bevel protractor, T-square, Scriber, Divider, Compass	1

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard
2. Projector
3. Computer/Laptop
4. Chairs
5. Tables
6. Whiteboard marker

Annexure: Industry Validations Summary

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

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1	Hero Moto Corp						
2	Sansera Engineering Pvt. Ltd.						
3	Rico Auto Industries Ltd.						
4	Dynamic India Equipments						
5	Alicon Castalloy Ltd.						
6	Shiv Engineering Industries						
7	Bharadwaj Engineering Services						
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

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
2023-24	500	350	200	140	50	35
2024-25	1000	700	400	280	100	70
2025-26	1500	1050	600	420	150	105

Data to be provided year-wise for next 3 years

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

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed

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

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

1.
2.

Content availability for previous versions of qualifications:

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

Languages in which Content is available:

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

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

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline: Online Ratio
1	☒Theory/ Lectures - Imparting theoretical and conceptual knowledge	• Books/ e-books • Presentations • Reference Material • Audio / Video Modules	40:60
2	☒Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	• Self-Learning Videos • Broadcasts • Mobile Learning • Curated Digital content	40:60
3	☒Showing Practical Demonstrations to the learners	• Video Content • E-Resource library • AR/ VR/ XR	40:60
4	☒Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	• Training tools (tools list attached) • Video Play • Presentations	40:60
5	☒Tutorials/ Assignments/ Drill/ Practice	• Online Question Bank • Mobile Quick test app • MCQ based tests	40:60
6	☒Proctored Monitoring/ Assessment/ Evaluation/ Examinations	• Assessment engine for Essays • Up-loadable file examinations • Mock test sessions	40:60
7	☒On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	• Online tests • Offline assessments	40:60

Annexure: 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
ASC/N9810: Manage work and resources (manufacturing)	*Maintain safe and secure working environment*	**20**	**13**	**-**	**8**
	PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	4	2	-	2
	PC2. implement safe working practices for dealing with hazards to ensure safety of self and others	3	1	-	2
	PC3. conduct regular checks of the machines with support of the maintenance team to identify potential hazards	2	2	-	1
	PC4. ensure that all the tools/equipment/fasteners/spare parts are arranged as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions	3	2	-	1
	PC5. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices	2	-	-	-
	PC6. fill daily check sheet to report improvements done and risks identified	2	2	-	-
	PC7. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others	2	2	-	1
	PC8. report any identified breaches in health, safety and security policies and procedures to the designated person	2	2	-	1
	Maintain Health and Hygiene	**13**	**7**	**-**	**5**
	PC9. ensure workplace, equipment, restrooms etc. are sanitized regularly	3	2	-	1
	PC10. ensure team is aware about hygiene and sanitation regulations and following them on the shop floor	2	1	-	-
	PC11. ensure availability of running water, hand wash and alcohol-based sanitizers at the workplace	2	2	-	1
	PC12. report advanced hygiene and sanitation issues to appropriate authority	1	1	-	1
	PC13. follow stress and anxiety management techniques and support employees to cope with stress, anxiety etc.	2	1	-	1
	PC14. wear and dispose PPEs regularly and appropriately	3	-	-	1
	Effective waste management practices	**6**	**4**	**-**	**1**
	PC15. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP	3	2	-	-
	PC16. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste	3	2	-	1
	Material/energy conservation practices	**11**	**6**	**-**	**6**
	PC17. ensure malfunctioning (fumes/ sparks/ emission/vibration/noise) and lapse in maintenance of equipment are resolved effectively	2	2	-	1
	PC18. prepare and analyze material and energy audit reports to decipher excessive consumption of material and water	3	2	-	1

	PC19. identify possibilities of using renewable energy and environment friendly fuels	3	1	-	2
	PC20. identify processes where material and energy/electricity utilization can be optimized	3	1	-	2
	Total Marks	**30**	**50**	**-**	**20**
ASC/N9805 – Interpret engineering drawing	*Interpret information from various views, projection, 2D and 3D shapes*	**21**	**11**	-	**10**
	PC1. interpret engineering drawing's uniqueness, dimensions and important features in 2D and 3D shapes	5	3	-	2
	PC2. identify the difference between 2D and 3D shapes	4	2	-	2
	PC3. explain difference between first angle projection and third angle projection in mechanical engineering drawing	4	-	-	2
	PC4. interpret all the 3 axes (x, y and z axis) and geometrical shapes (cones, cylinder, sphere, cuboid, etc.) on to a 2D and 3D projection	5	3	-	2
	PC5. identify details of the machine component which are not clearly visible by interpreting section views	3	3	-	2
	Identify drawing standards and symbols	**23**	**15**	-	**8**
	PC6. Interpret Geometric Dimensioning and Tolerancing (GD&T) symbols in the drawings	6	4	-	2
	PC7. interpret symbols of Radius, controlled radius, spherical radius, diameter, spherical diameter, square, counterbore, spotface, depth, countersink, “by”, maximum dimension, minimum dimension, reference, dimension origin etc.	6	4	-	2
	PC8. identify the sequence of operations which enables the selection and prioritization of the datums	5	3	-	2
	PC9. read and interpret information from Tolerance Zone boundaries for part features in terms of shape and size	6	4	-	2
	Modification and storage of drawing	**6**	**4**	-	**2**
	PC10. observe any modification, changes required in the drawing and communicate the same to the concerned team in the organization	3	2	-	1
	PC11. store the drawings in an easily accessible place, avoiding damage from moisture, chemicals and fire	3	2	-	1
	Total Marks	**50**	**30**	**-**	**20**
ASC/N8106 – Support the manager in finalising the design specifications and reliability parameters of the product	*Identify product design requirements*	**9**	**15**	**-**	**6**
	PC1. identify product requirements such as customer preferences, benchmarking data, technology parameters etc. received from theCross Functional Team (CFT)	2	4	-	2
	PC2. analyse the type of component (including new component), technology and technique to beused in design of the product	2	3	-	1
	PC3. analyse the parameters such as road scenarios, vehicle aesthetic appeal & ergonomics,shape/ size/ environmental impact etc. for design of the product	3	4	-	2
	PC4. identify and select simulation tools such asCAD, CAM etc. as per the SOP and job requirements	2	4	-	1
	Support line manager in finalization of designspecifications	**7**	**9**	-	**5**
	PC5. support the line manager in creating specifications for design input and requirements ofeach of the aggregates, circuits, ECU programming, etc.	2	2	-	1

	PC6. support in deciding the means for providingdesign input and requirements of each of the aggregates, circuits, ECU programming, etc.	2	3	-	2
	PC7. support in creating a mechanism forcapturing design output	2	2	-	1
	PC8. ensure that all the required design specifications are achieved and there is conformance between output and input of thedesign	1	2	-	1
	Ensure reliability and validity of the product design	**14**	**26**	-	**9**
	PC9. identify reliability requirements on the basis of benchmarks, competitive analysis, cost, safety,etc. with the support on the manager	2	4	-	2
	PC10. prioritize key reliability risk items and the corresponding risk reduction strategy with the helpof the product design manager	2	3	-	1
	PC11. estimate the products design reliability andanalyse it by using simulation models, prior warranty and tests data from similar models	2	4	-	2
	PC12. analyse failure risks and mechanics of theproduct design	2	4	-	1
	PC13. use design of experiments methodology to identify factors significant to the life of the vehicle	2	4	-	1
	PC14. use Life Data Analysis (LDA) techniques to statistically estimate the reliability of the productdesign and calculate various reliability-related metrics	2	4	-	1
	PC15. conduct Reliability Growth (RG) testing and analyse effective methodology to discover defects and improve the design during/ post testing inputs	2	4	-	1
	Total Marks	**30**	**50**	**-**	**20**
ASC/N8107 – Design Vehicles and components using simulation tools	*Design the vehicle/components using simulation tools*	**11**	**11**	**-**	**8**
	PC1. transform the functional architecture of vehicle design to physical architecture with thesupport of line manager	1	1	-	1
	PC2. create EV product designs as per the definedgeometrical parameters which can be readily altered by changing relevant parameters	1	1	-	1
	PC3. use organisation recommended simulationtools, software and applications to perform designing	2	2	-	1
	PC4. build a simulated model of the EV design as per the engineering inputs, customer requirementsand product necessities	1	1	-	1
	PC5. analyse suspension and structural strength, correct tolerance limits of electronic componentsetc. of the design	1	1	-	1
	PC6. analyse the model using different loads tocheck and validate the design	1	1	-	1
	PC7. incorporate smaller circuits like clippers,clampers, current/ voltage boosters, signal conditioner circuits, etc. in the design	1	1	-	-
	PC8. incorporate different sensors and actuators tomonitor the different electronic parameters in thedesign	1	1	-	-
	PC9. use BMS software validation and simulationalong with battery points like basic, runtime, impedance, 1st principle modelling	1	1	-	1
	PC10. support line manager to create and validatethe standardized Work Analysis Sheet to see the same basic processes are used in the simulation	1	1	-	1
	Conduct electronic design failure analysis	**5**	**11**	-	**5**
	PC11. create failure modes in the simulation modelto identify all possible failure scenarios	1	2	-	1

	PC12. identify the potential root causes andconsequence of each failure mode	1	2	-	1
	PC13. create a rating system (0 to 10) to identifythe seriousness of each cause	1	2	-	1
	PC14. identify current process controls that are applicable, controls that can be established anddetection rating (DR) for each cause	1	3	-	1
	PC15. identify and implement recommended actions (design changes) to lower the severity oroccurrence of each cause	1	2	-	1
	Perform simulations on the product design	**4**	**10**	-	**3**
	PC16. formulate simulation model to check thearchitectural design with the support of line manager	1	2	-	1
	PC17. run the simulation to test the model	1	2	-	-
	PC18. analyse results of test by comparing behaviour with the actual environment and thenmake changes accordingly in the model	1	2	-	1
	PC19. validate simulation by increasing the chances that the model will be valid in the realworld like crash simulation, chassis, power steering, battery pack, etc.	1	2	-	1
	PC20. create a standardized work combination sheet to see the processes used, work sequence order and changes done after failure analysis in thesimulation	-	2	-	-
	Complete process pertaining to telematics and humanmachine interface for product design	**6**	**11**	-	**3**
	PC21. validate that telematics system can analyse drivers' sense of driving and follows the design requirements	1	2	-	1
	PC22. use high performance HMI (Human Machine Interface) to achieve specific performance and goalobjectives/targets for process control such as safety parameters, production rate, efficiency, cost,and quality	1	2	-	1
	PC23. analyse controls that must be monitored andmanipulated to achieve the performance and goal objectives	1	1	-	1
	PC24. design high performance graphics by following the HMI and addressing the identifiedtasks	1	2	-	-
	PC25. install, commission and provide training onthe new HMI	1	2	-	-
	PC26. control, maintain and periodically re-assessthe HMI performance	1	2	-	-
	Manage product design data	**4**	**7**	-	**1**
	PC27. collect information regarding the product design, product structure management, product material, process management of the product etc.	1	2	-	1
	PC28. maintain and store the information and records regarding product development and toolsto be used as per SOP	1	2	-	-
	PC29. maintain the data related to history, presentuse, serialization, part status, customer preferenceetc. related to the product as per SOP	1	1	-	-
	PC30. ensure planning and control of the entire system though status control reports, meetings reviews, etc.	-	1	-	-
	PC31. ensure continued system integration andvalidation of the data captured	1	1	-	-
	Total Marks	**30**	**50**	**-**	**20**
DGT/VSQ/N0102 - Employability Skills (60 hours)	*Introduction to Employability Skills*	**1**	**1**	**-**	**-**
	PC1. identify employability skills required for jobsin various industries	-	-	-	-
	PC2. identify and explore learning andemployability portals	-	-	-	-

	Constitutional values – Citizenship	**1**	**1**	**-**	**-**
	PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. andpersonal 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 CenturySkills for employment	-	-	-	-
	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 conversationin 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-mailsetc. in English	-	-	-	-
	Career Development & Goal Setting	**1**	**2**	**-**	**-**
	PC10. understand the difference between job andcareer	-	-	-	-
	PC11. prepare a career development plan withshort- and long-term goals, based on aptitude	-	-	-	-
	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 appropriatelywith 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 andservices as per requirement	-	-	-	-
	PC17. carry out offline and online financialtransactions, safely and securely	-	-	-	-
	PC18. identify common components of salary andcompute income, expenses, taxes, investments etc	-	-	-	-
	PC19. identify relevant rights and laws and uselegal aids to fight against legal exploitation	-	-	-	-
	Essential Digital Skills	**3**	**4**	**-**	**-**
	PC20. operate digital devices and carry out basicinternet operations securely and safely	-	-	-	-
	PC21. use e- mail and social media platforms andvirtual collaboration tools to work effectively	-	-	-	-
	PC22. use basic features of word processor,spreadsheets, and presentations	-	-	-	-

	Entrepreneurship	**2**	**3**	**-**	**-**
	PC23. identify different types of Entrepreneurshipand 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, andmitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
	Customer Service	**1**	**2**	**-**	**-**
	PC26. identify different types of customers	-	-	-	-
	PC27. identify and respond to customer requestsand needs in a professional manner.	-	-	-	-
	PC28. follow appropriate hygiene and groomingstandards	-	-	-	-
	Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
	PC29. create a professional Curriculum vitae(Résumé)	-	-	-	-
	PC30. search for suitable jobs using reliable offlineand 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 andconfidence, during recruitment and selection	-	-	-	-
	PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
	Total Marks	**20**	**30**	**-**	**-**
Grand Total		**180**	**190**		**80**

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 SDMS/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:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - 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.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
   - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
   - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts
   - Questions are mapped with NOS and PC
   - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
   - Assessor must be ToA certified & trainer must be ToT Certified
   - Assessment agency must follow the assessment guidelines to conduct the assessment

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
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
   - Surprise visit to the assessment location
   - Random audit of the batch
   - Random audit of any candidate

6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored
- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
- Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

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