Model Curriculum

QA Standards Incharge

SECTOR: AUTOMOTIVE

SUB-SECTOR: MANUFACTURING SUPPORT

OCCUPATION: QUALITY ASSURANCE

REF ID: ASC/Q6305, Version 1.0

NSQF LEVEL: 5

Skill India
कौशल भारत-कुशल भारत

AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL

N·S·D·C National Skill Development Corporation
Transforming the skill landscape

Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK - NATIONAL OCCUPATIONAL STANDARDS

is hereby issued the

AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/Qulalification Pack: **'QA Standards Incharge Version 1.0'**
QP No. **'ASC/Q6305 NSQF Level 5'**

Date of Issuance : January 1st , 2019
Valid up to* : January 1st , 2022
*Valid up to the next review date of the Qualification Pack

Authorised Signatory
(Automotive Skills Development Council)

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QA Standards Incharge

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a **"QA Standards Incharge",** in the "**Automotive**" Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	**QA Standards Incharge**		
Qualification Pack Name & Reference ID	ASC/Q6305, V1.0		
Version No.	1.0	**Version Update Date**	10th April 2019
Prerequisites to Training	B.Tech/ Diploma in Mechanical Engineering		
Training Outcomes	**After completing this programme, the participants will be able to:** • Identify the roles and responsibilities of a QA Standards Incharge • Select standard instrument (gauge) for measurement, inspect the details as per the design prepared and perform the Reproducibility & Repeatability (R & R) studies • Establish Standards Room for sorting and calibration of the measuring equipment, for maintaining the quality standards of the final product • Work effectively with supervisors, colleagues and other teams by using proper communication methods • Establish safe, healthy and environment friendly organization and vendor's shop floor • Comply with 5S methodology both at shop floor and the office area		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of "**QA Standards Incharge**" Qualification Pack issued by "**Automotive Skills Development Council**".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1.	**Introduction to QA Standards Incharge** Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code Bridge Module	• Identify the role and responsibilities of a QA Standard Incharge. • Define terms relating to quality and measurement such as tolerance, precision and accuracy. • Identify key features of the standards and manuals to be used in quality measurement such as MSA manual, ISO16949, ISO17025, QMS, APQP and PPAP standards. • Interpret component and gauge drawings and be able to inspect them. • List the parameters of quality check such as roundness, concentricity and surface finish. • Use data analysis tools such as 8Ds and 5 why analysis, with information systems like SAP, ERP. • Comply with safety and health policies and regulations at the work place.	Training kit, presentation material, trainers guide Sample gauges, dials, scales, Vernier callipers, gauge, contour gauge, ring gauge, telescopic gauge, bore gauges Micrometres, length and thread gauges Computer with data analysis software installed SAP software, ERP software
2.	**Selection, Design and Inspection of Measuring Instruments/ Gauges** Theory Duration (hh:mm) 60:00 Practical Duration (hh:mm) 90:00 Corresponding NOS Code ASC/N6309	• Demonstrate how to select standard instruments to be used for measurement depending upon its range and precision level. • Identify the type of gauge (attribute, indicative, acceptance) required for the measurement. • Apply principles of GD&T to finalize the design/tolerances of gauges. • Evaluate gauges for quality inspection of manufactured and New Product Development (NPD) considering its tolerance range, accuracy, limits, fits, profile, material finish and precision parameters • Identify non-conformities observed during validation and ensure they are resolve and revalidated.	Vernier callipers, micrometer, surface plate, height gauge, dial stand with dial indicator, V block with clamps, slip gauge box, pin box, feeler gauge, roughness tester, profile projector, coordinate measuring machine, bore gauge, drawings of component, gauges & fixtures, references standards of PPAP, APQP, MSA, SPC, SAP software, ERP software

		• Demonstrate how to select appropriate first principle methods for verification of dimensions profiles, surface finish, roundness etc of fixtures and gauges under checking. • Prepare the documents and records of inspection report for gauges/tools/fixtures. • Analyse the inspection report and arrange rectification and subsequent re-inspection. • Use SAP/ERP systems to record updated data related to quality. • Comply with the pre-defined standards while reporting the prepared validation and inspection documents.	
3.	**Calibration of Measuring Instruments in Standards Room** Theory Duration (hh:mm) 60:00 Practical Duration (hh:mm) 90:00 Corresponding NOS Code ASC/N6310	• Setup a standard room for carrying out inspection activities. • List the standard operating procedure for carrying out testing and inspection in the standards room. • Identify the ways to maintain safety and cleanliness in the standards room. • Plan for timely validation and calibration of the newly received inspection equipment. • Prepare a schedule for calibration testing and measuring equipment as per quality standards. • Create a list of items which will be calibrated by an authorized third party. • Record the calibration date on every instrument/gauge/fixture and the due date for next calibration. • Organise MSA study to review Reproducibility & Repeatability (R&R) results as per schedule. • Record the MSA validation study in PPAP document. • Demonstrate the implementation of the R&R results for the inspection equipment. • Use personal protective equipment, while doing inspection.	Vernier callipers, micrometer, surface plate, height gauge, dial stand with dial indicator, V block with clamps, slip gauge box, pin box, feeler gauge, roughness tester, profile projector, coordinate measuring machine, bore gauge, drawings of component, gauges & fixtures, references standards of PPAP, APQP, MSA, SPC PPEs such as safety gloves, glasses, helmet, shoes, mask and so on

4.	**Maintaining a Safe and Healthy Working Environment** Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm) 45:00 Corresponding NOS Code ASC/N0006	• List workplace hazards and risks • Use personal protective equipment like safety equipments (gloves, glasses, shoes and helmet) at workplace. • Identify activities which can cause potential injury • Report concerned authorities about the potential risks • Report concerned authorities about machine breakdowns, damages • Support the safety team and the supervisor in creating the risk mitigation plan • Follow the instructions given in the equipment manual • Follow the safety, health and environment related practices • Follow safety signs placed on the shop floor • Demonstrate use of fire-fighting equipment • List the contents of first aid kit. • Maintain a clean and safe working environment • Attend safety and fire drills to be aware of safety hazards and preventive techniques • Maintain high standards of personal hygiene at the work place • Follow organizational procedure of waste disposal • Report appropriately to medical officer/ HR in case of self or an employee's illness	PPEs such as safety gloves, glasses, helmet, shoes, mask and so on Fire extinguisher, first aid kit
5.	**Working Effectively** Theory Duration (hh:mm) 25:00 Practical	• Define the importance of communication. • Identify various communication methods. • Identify the importance of listening skills in day to day activities and importance of non-verbal communication.	Training Kit (Presentations, Trainer Guide)

	Duration (hh:mm) 35:00 Corresponding NOS Code ASC/N0002	• Identify the principles of effective team formation. • Communicate effectively with the suppliers and concerned departments on discrepancies and share the concerns with your colleagues for necessary call for action. • Maintain good interpersonal skills and etiquettes while interacting with colleagues and customers. • Organise the work to complete it timely and accurately. • Demonstrate problem solving and decision-making abilities. • Apply team building skills to achieve tasks effectively. • Prepare required documents as per the policy. • Inspect the quality of work and ensure that the work is complete in all respects.	
6.	**Implement 5S Method at Workplace** Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm) 45:00 Corresponding NOS Code ASC/N0022	• Maintain cleanliness of the work area, tools, equipment and materials. • Maintain proper storage for the inventory, cleaning material and equipment. • Demonstrate personal hygiene and cleanliness at workplace. • Identify the sorting methods at workplace for tools, equipment and waste materials. • Record and label the inventory, tools, equipment and work-related document. • Sort the waste into hazardous and non-hazardous waste and dispose the waste as per SOP. • Identify the floor markings/ area markings used for demarcating the various sections in the plant. • Implement 5S guidelines at workplace. • Organise training and workshop for employee to ensure 5S application in	Sign and symbols related to quality standards, safety and 5S methodology

		work.	
	Total Duration 550:00 Theory Duration 220:00 Practical Duration 330:00	Unique Equipment Required: Vernier callipers, micrometer, surface plate, height gauge, dial stand with dial indicator, V block with clamps, slip gauge box, pin box, feeler gauge, roughness tester, profile projector, coordinate measuring machine, bore gauge, drawings of component, gauges & fixtures, references standards of PPAP, APQP, MSA, SPC, sign and symbols related to quality standards, safety and 5S methodology PPEs such as safety gloves, glasses, helmet, shoes and mask Flashlight, magnifier, computer system/laptop, projector Training Kit (Presentations, Trainer Guide) Computer with data analysis software installed, SAP software, ERP software	

Grand Total Course Duration: **550 Hours 0 Minutes**

*(*This syllabus/ curriculum has been approved by ***Automotive Skills Development Council)***

Trainer Prerequisites for Job role: "QA Standards Incharge" mapped to Qualification Pack: "ASC/Q6305, Version 1.0"

Sr. No.	Area	Details
1	**Job Description**	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "ASC/Q6305, version 1.0"
2	**Personal Attributes**	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	**Minimum Educational Qualifications**	BE/ B.Tech. in Mechanical engineering
4a	**Domain Certification**	Certified for Job Role: "QA Standards Incharge" mapped to QP: "ASC/ Q6305, version1.0". Minimum accepted score is 80%.
4b	**Platform Certification**	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601". Minimum accepted score is 80%.
5	**Experience**	2-3 years of experience in Quality inspection in production line.

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	QA Standards Incharge
Qualification Pack	ASC/Q6305, v1.0
Sector Skill Council	Automotive

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. Each NOS will have assessed both for theoretical knowledge and practical.
3. The assessment will be based on knowledge bank of questions created by the SSC.
4. Individual assessment agencies will create unique question papers for theory and skill practical part for each candidate at each examination/training centre.
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Compulsory NOS **Total Marks: 1200**			Marks Allocation		
Assessment Outcomes	**Performance criteria**	**Total Marks**	**Out of**	**Theory**	**Skills Practical**
ASC/N6309 Selection of measuring Instruments/ systems/ Gauge Design	PC1. select standard instrument to be used for measurement based on its range, precision levels and any limitations of profile of the part.	400	24	6	18
	PC2. decide as a part of NPD-CFT on type of gauge viz. attribute, indicative, acceptance.		24	6	18
	PC3. decide gauge tolerances, materials, finishes		24	6	18
	PC4. factor GD & T requirements in the gauge design		24	6	18
	PC5. factor requirements as per MSA manual, ISO standards as applicable		24	6	18
	PC6. inspect the details of dimension, marking, material etc as per the design prepared ; using higher accuracy methods for the specified range.		24	6	18

	PC7. in case of attribute, acceptance gauges check at the extreme range of tolerances and beyond to verify correct decision / judgment of quality		26	6	20
	PC8. in case of new process/product development, coordinate with NPD department and prepare the schedule for gauge validation based on the requirements of the gauge; validate covering the following checkpoints: • parts within the tolerance & outside the range are prepared. • approval of judgment / decision by the equipment and inspection method using first principles • use of the measuring system / instrument is easily possible on the part (no obstruction by profile etc.), • report of qualification / validation for records		27	7	20
	PC9. ensure the validation non - conformities are resolved by discussion with manufacturing process owners and corrected / re - validated		26	6	20
	PC10. if required, seek support/feedback from senior management as per requirement		24	6	18
	PC11.select appropriate first principle method for verification of dimensions, profiles, • parameters like surface finish, GD&T parameters e.g. roundness, concentricity etc. • CMM, gauges like bore/air/ dial, slip gauges, etc. • machine / fixture parameters in situ, mounted condition		27	7	20
	PC12.based on the inspection results/defects observed, analyze, co - relate with part results and discuss with the process owners countermeasures for rectification of defects and re-inspect		26	7	20
	PC13. ensure that all the inspection reports for gauges/tools/fixtures are documented and maintained as records		26	6	20
	PC14. ensure that all the gauge validation studies are being conducted & documented		24	6	18
	PC15. all the reports/PPAP documents pertaining to new process/product development are recorded		24	6	18
	PC16. ensure that updation of all the data related to quality in the information system		26	7	19

	followed in organization like SAP/ERP etc. (if applicable)				
Total			400	100	300
ASC/N6310 Calibrate and validate the measuring equipments	PC1. maintain an internal laboratory for conducting inspection and calibration	400	22	6	16
	PC2. based on process requirements, maintain a standards room for carrying out Inspection activities which can't be performed on – line like precision checking, roundness, surface finish, cylindricity etc.		22	5	17
	PC3. work as per the standard operating procedures for all the inspection and testing activities displayed inside the lab		22	5	17
	PC4. maintain a safe, clean and healthy working environment and temperature and humidity conditions in lab as per WC norms.		22	6	16
	PC5. adhere to usage of PPEs while performing the lab activities		22	6	16
	PC6. receive the measuring and testing equipments from vendors safely and ensure that they are validated & calibrated		22	6	16
	PC7. update the list of equipments on receipt of new equipments		22	6	16
	PC8. prepare a calibration schedule along with the calibration frequency for all the testing and measuring equipments used in the manufacturing set -up & lab		22	5	17
	PC9. send those equipments for calibration which cannot be calibrated in -house to the third party agency finalized by organization		22	5	17
	PC10. ensure that all the measuring and testing equipments are calibrated in -house/by agency as decided and the sticker is pasted on the equipment mentioning the date of calibration		22	5	17
	PC11.update the list of calibrated equipments after the activity		22	6	16
	PC12. ensure that all the equipments calibrated by the agency are having the calibration certificates and the same are recorded		22	6	16
	PC13. coordinate with the Lab Incharge and prepare a plan for conducting Measurement Systems Analysis (MSA) studies for all the measuring equipments to analyze the variation in measurement of equipments		22	5	17
	PC14. ensure that the MSA study is well-coordinated and conducted properly		22	6	16
	PC15.review the R&R readings for the		22	5	17

	equipments for a representative unit of the family /type.				
	PC16.based on the readings discuss with team and ensure that the countermeasures for equipments having R&R outside the acceptable range are implemented		22	5	17
	PC17. in case of new process/product development, ensure that the MSA – Validation study is done for all the measuring equipments and the results observed are documented and attached in the PPAP document		24	6	18
	PC18.define the calibration frequency based on type of equipment/instrument, usage pattern at the NPD stage; review in case of abnormalities observed in periodic calibration, audit, customer interaction etc. including actions for the quality impact on Production.		24	6	18
Total			400	100	300
ASC/ N0002 Work effectively in a team	PC1. Maintain clear communication with colleagues	200	24	6	18
	PC2. Work with colleagues		22	6	16
	PC3. Pass on information to colleagues in line with organisational requirements		22	5	17
	PC4. Work in ways that show respect for colleagues		22	6	16
	PC5. Carry out commitments made to colleagues		22	6	16
	PC6. Let colleagues know in good time if cannot carry out commitments, explaining the reasons		22	5	17
	PC7. Identify problems in working with colleagues and take the initiative to solve these problems		22	5	17
	PC8. Follow the organisation's policies and procedures for working with colleagues		22	5	17
	PC9. Ability to share resources with other members as per priority of tasks		22	6	16
Total			200	50	150
ASC/N0006 Maintain a healthy, safe and secure working environment	PC1. identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise	100	10	3	7
	PC2. inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc.		10	3	7
	PC3. inform the concerned authorities about damages which can potentially harm		8	2	6

	man/ machine during operations				
	PC4. create awareness amongst other by sharing information on the identified risks		8	2	6
	PC5. follow the instructions given on the equipment manual describing the operating process of the equipments		8	2	6
	PC6. follow the Safety, Health and Environment related practices developed by the organization		8	2	6
	PC7. operate the machine using the recommended Personal Protective Equipments (PPE)		10	2	8
	PC8. maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc		10	2	8
	PC9. maintain high standards of personal hygiene at the work place		10	2	8
	PC10. ensure that the waste disposal takes place in the designated area as per organization SOP		10	3	7
	PC11. inform appropriately the medical officer/ HR in case of self or an employee's illness of contagious nature so that preventive actions can be planned for others		8	2	6
Total			100	25	75
ASC/N0022 Ensure implementation of 5S activities at the shop floor & the office area	PC1. Ensure all recyclable materials are put in designated containers		3	1	2
	PC2. Ensure no Tools, fixtures & jigs are lying on workstations unless in use and no un -necessary items is lying on workbenches or work surfaces unless in use		3	1	2
	PC3. Ensure that the operators and other team members are segregating the waste in hazardous/ non-hazardous waste as per the sorting work instructions		4	1	3
	PC4. Ensure that all the operators are following the technique of waste disposal and waste storage in the designated bins		3	1	2
	PC5. Segregate the items which are labelled at red tag items for the process area and keep them in the correct places		3	1	2
	PC6. 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		4	1	3
	PC7. Check for return of any type of extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area		4	0	4

	PC8. Oversee removal of unnecessary equipment, storage, furniture, unneeded inventory, supplies, parts and material		3	1	2
	PC9. Ensure that areas of material storage areas are not overflowing		3	1	2
	PC10. Ensure proper stacking and storage of the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required		4	1	3
	PC11. Ensure that the team follows the given instructions and checks for labelling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc.		4	1	3
	PC12. Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions		4	1	3
	PC13. Ensure that organizing the workplace takes place with due considerations to the principles of wasted motions, ergonomics, work & method study.		4	1	3
	PC14. Ensure that the area has floors swept, machinery clean and is generally neat and tidy. In case of cleaning, ensure that correct displays are maintained on the floor which indicate potential safety hazards		4	1	3
	PC15. Ensure workbenches and work surfaces are clean and in good condition		3	1	2
	PC16. Ensure adherence to the cleaning schedule for the lighting system to ensure proper illumination		3	1	2
	PC17. Ensure self -cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene		3	1	2
	PC18. Ensure that daily cleaning standards and schedules to create a clean working environment are followed across the plant		4	1	3
	PC19. Oversee that various cleaning and organizing tasks have been developed and assigned for the work area		3	0	3
	PC20. Ensure logical and user-friendly documentation and file management for all activities across the plant and create guidelines around standardization of processes		4	1	3
	PC21. Ensure timely creation and sharing of the 5S checklists		3	1	2
	PC22. Ensure that the 5S manual are		3	1	2

	available as per the timelines				
	PC23. Ensure team cooperation during the audit of 5 S activities		3	1	2
	PC24. Ensure that workmen are periodically trained to address challenges related to 5S		4	1	3
	PC25. Participate actively in employee work groups on 5S and encourage team members for active participation		4	0	4
	PC26. Oversee that the staff/operators are trained and fully understand 5s procedures		3	0	3
	PC27. Ensure that all the guidelines for What to do and What not to do to build sustainability in 5S are mentioned in the 5S check lists/ work instructions and are easily searchable		4	1	3
	PC28. Ensure continuous training of the team members on 5S in order to increase their awareness and support implementation		3	1	2
	PC29. Ensure that all visual controls, notice boards, symbols etc. at the manufacturing place are created, working and are put up as per the requirement		3	1	2
Total			100	25	75
Total			1200	300	900