

Model Curriculum

Auto Service Technician Level 4

SECTOR : AUTOMOTIVE
SUB-SECTOR : AUTOMOTIVE VEHICLE SERVICE
OCCUPATION : TECHNICAL SERVICE & REPAIR
REF. ID : ASC/Q1402, VERSION 1.1
NSQF LEVEL : 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Auto Service Technician Level 4' QP No. 'ASC/Q1402 NSQF Level 4'

Date of Issuance: **8th January, 2016**

Valid up to: **7th January, 2017***

* Valid up to the next review date of the Qualification Pack



Authorised Signatory
(Automotive Skills Development Council)

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Auto Service Technician

Level 4

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Auto Service Technician Level 4”, in the “Automotive” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Auto Service Technician Level 4		
Qualification Pack Name & Reference ID.	Auto Service Technician Level 4 ASC/QQ1402		
Version No.	1.1	Version Update Date	10-06 – 2013
Pre-requisites to Training	Preferably Class X		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Assist the senior technician in identifying & diagnosis of the operational fault responsible for the root cause of the vehicle trouble • Assist in taking necessary action post the root cause analysis to repair the vehicle • Carry out routine and schedule servicing of various aggregates in a vehicle (including free and paid service) • Carry out other maintenance activities in a vehicle which are not a part of schedule maintenance (e.g. oil, lubricant, coolant change and greasing) • Carry out minor service and repair in a vehicle (including mechanical and electrical aggregates) • Plan and organise work requirements including various activities, deliverables or work output required in the given time • Maintain set quality standards • Use resources in a responsible manner(both material / equipment and manpower) • Interact & communicate effectively with colleagues including member in the own group as well as other groups • Monitor the working environment and make sure it meets requirements for health, safety and security. 		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of “Auto Service Technician Level 4” Qualification Pack issued by “SSC: Automotive Skills Development Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1.	<p>Introduction</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 00:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • General Discipline in the class room • General Safety Rules • Introduction to Automotive Industry • Familiarization about various auto manufacturers • Familiarization of terms associated with the sector • Brief outline about the course • Job Opportunities for an Auto Service Technician • Career growth path for an Auto Service Technician 	Nil
2.	<p>Maintain a healthy, safe and secure working environment</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 15:00</p> <p>Corresponding NOS Code ASC/ N 0003</p>	<ul style="list-style-type: none"> • comply with organisation’s current health, safety and security policies and procedures • Report any identified breaches in health, safety, and security policies and procedures to the designated person • Coordinate with other resources at the workplace to achieve the healthy, safe and secure environment for all incorporating all government norms esp. for emergency situations like fires, earthquakes etc. • Identify and correct any hazards like illness, accidents, fires or any other natural calamity safely and within the limits of individual’s authority • Report any hazards outside the individual’s authority to the relevant person in line with organisational procedures and warn other people who may be affected • Follow organisation’s emergency procedures for accidents, fires or any other natural calamity • Identify and recommend opportunities for improving health, safety, and security to the designated person • Complete all health and safety records are updates and procedures well defined 	<ul style="list-style-type: none"> • Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit • Workshop Safety: Fire extinguishers • First Aid • Safety signs • SOP Charts on safety norms and drills. • Charts of dos and Don’ts in work area.
3.	<p>Assemblies and sub-assemblies in a vehicle and their basic functioning</p>	<ul style="list-style-type: none"> • List and Identify various system and parts of car petrol / diesel • Explain the functioning of each system, component and aggregate (including both mechanical and electrical aggregates) of a vehicle. • Dismantle and assemble aggregates. 	<ul style="list-style-type: none"> • Cut sections, Aggregates, Assemblies/ sub-assemblies and working models of car petrol/ diesel - Engine, transmission system, brake system,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code ASC/ N Q1402</p>		<p>suspension system, steering system, electrical system etc mounted on chassis</p> <ul style="list-style-type: none"> Teaching Aids: Charts, CBTs, Videos.
4.	<p>Introduction to workshop tools and equipment and their usage</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code ASC/ N Q1402</p>	<ul style="list-style-type: none"> Identify all tools and equipment in a basic servicing toolkit Demonstrate the usage of each of the tool and equipment Follow standard operating procedures for using workshop tools and equipment for fault diagnosis or troubleshoot problem in a vehicle 	<ul style="list-style-type: none"> Basic Tool Box Workshop tool/equipment :drain pan, oil can, jack hydraulic, bench vice, two post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, etc. Tools: pressure indicators: feeler gauges, multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc. Electrical and electronic testing equipment: volt meters, ammeters, ohmmeters, battery testing equipment, computer based diagnostic equipment, neon timing light, oscilloscopes etc Pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc. Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc. Measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler etc Teaching Aids: Charts, CBTs, Videos.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
5.	<p>Assist in performing diagnosis of vehicle for repair requirements</p> <p>Theory Duration (hh:mm) 45:00</p> <p>Practical Duration (hh:mm) 70:00</p> <p>Corresponding NOS Code ASC/ N Q1402</p>	<ul style="list-style-type: none"> • Understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle • Conduct test drives to assist the Senior Technician in finding the fault basis the performance of the vehicle during the test drive • Review the job card and understand customer complaints • Follow standard operating procedure set out for diagnosing faults under the supervision of a Senior Technician • Follow instructions of seniors for specific tasks related to diagnosing faults in the various sub-assemblies and aggregates in a vehicle • Use checklists and standard OEM operating procedures to understand if the fault is because of improper servicing, or low levels of oils, coolants, grease etc. or poor quality oil/ air filters etc. • Ensure any malfunctions observed in tools and equipment are reported to the concerned persons • Ensure any malfunctions or repair requirements observed in vehicles (and beyond own scope of work) are reported to the concerned person • Understand the various precautions to be taken to avoid damage to the vehicle and its components while working on diagnosis or troubleshooting the vehicle for any faults • Ensure safe movement and parking of the vehicle in the workshop especially in case some aggregate to be diagnosed had been disassembled • Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes) • Drive a relevant 2/3/4 wheeler vehicle which is an important part of the diagnosis of the type of vehicle that is dealt by the relevant OEM 	<ul style="list-style-type: none"> • Basic Tool Box • Workshop tool/equipment :drain pan, oil can, jack hydraulic, bench vice, two post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, etc. • Diesel/ petrol serviceable training Vehicle • Tools: pressure indicators:feeler gauges, multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc. • Electrical and electronic testing equipment: volt meters, ammeters, ohmmeters, battery testing equipment, computer based diagnostic equipment, neon timing light, oscilloscopes etc • Pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc. • Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc. • Measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler etc • Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit • Workshop Safety: Fire extinguisher • First Aid • Consumable: cotton waste, petrol/diesel, coolant, lubricant,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			grease, storage containers, air filters, oil filters, spark plugs, glow plugs etc <ul style="list-style-type: none"> • Vehicle service manuals, vehicle hand book, job orders, work order, completion material requests, feedback forms, Technical reference books. • Teaching Aids: Charts, CBTs, Videos.
6.	<p>Carry out routine service and minor repairs of mechanical and electrical aggregates</p> <p>Theory Duration (hh:mm) 85:00</p> <p>Practical Duration (hh:mm) 115:00</p> <p>Corresponding NOS Code ASC/ N 1403</p>	<ul style="list-style-type: none"> • Understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle • Follow standard operating procedures for using workshop tools and equipment for service and minor aggregate repairs in the vehicle • Conduct test drives to assess need for repairs, calibration or any other adjustments in the electrical/ mechanical aggregates in the vehicle • Review the job card and understand work to be carried out • Ensure OEM recommended procedure and checklist is followed for routine servicing in case of non-routine service or repair, confirm tasks to be carried out with superior • Calibrate, align and adjust settings, alignment and other routine service and maintenance of various parts and aggregates including: <ul style="list-style-type: none"> • engine and aggregates • other engine sub-assemblies like turbocharger, radiator etc. • gear box and it aggregates • propeller shafts and other transmission systems • clutch and brake systems and sub-assemblies • chassis • electrical and electronic components • steering systems • suspension system • other components (including to valves, ignition, fuel and emissions, 	<ul style="list-style-type: none"> • Basic Tool Box • Workshop tool/equipment: drain pan, oil can, jack hydraulic, bench vice, two post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, drums for storage of waste oil etc. • Diesel/ petrol training Vehicle • Aggregate car petrol/ diesel (Engine, transmission system, brake system, suspension system, steering system, electrical system etc mounted on chassis) • Tools: pressure indicators: multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc. • Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc. • Other tools: hand tools, power tools, lifting and jacking equipment, tensioning equipment, brake roller tester, chassis dynamometer, suspension activation,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>transmission, lights, tyres, steering and body fittings</p> <ul style="list-style-type: none"> • Ensure that for routine maintenance and service, the correct spare parts and appropriate grade of lubricants, coolant, oils and grease required have been obtained • Ensure all dismantled components (including mechanical and electrical aggregates) are cleaned and conditioned prior to reassembly • Identify and change components requiring change due to continuous wear and tear including: <ul style="list-style-type: none"> ▪ oil and air filters ▪ belts ▪ wiper blades ▪ brake linings and pads ▪ drive • Ensure disposal of materials (including waste oil, scrap of failed parts/ aggregates) in accordance with the organisation's policies • Understand the various precautions to be taken to avoid damage to the vehicle and its components while working on other aggregates • Record all service and repairs carried out and ensure completeness of tasks assigned before releasing vehicle for the next procedure • Ensure all workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary • Ensure any malfunctions observed in tools and equipment are reported to the concerned persons • Ensure any other repair requirements observed in the other components/ aggregates systems (like engine, gear box etc.) while repairing/ overhauling of braking systems are reported to supervisor/ service advisor for further inspection by other specialists • Measure/ inspect the machining or any other repair done from an outside 	<p>security activator etc</p> <ul style="list-style-type: none"> • Pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc. • Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc. • measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler, measuring tape etc • Personal Protection Equipment : Gloves, Safety Shoes, goggles, ear plugs, boiler suit • Workshop Safety: Fire extinguishers • First Aid • Consumable: cotton waste, petrol/diesel, coolant, lubricant, grease, storage containers, air filters, oil filters, spark plugs, glow plugs etc • Samples: seals, sealants, fittings, gaskets, joints, fasteners, etc • worn out/ defective/ spurious samples: seal, gaskets, clutch plate, brake shoes, brake pads, spark plug, oil filter, air cleaner etc. • Vehicle service manuals, vehicle hand book, job orders, work order, completion material requests, feedback forms, Technical reference books. • Teaching Aids: Charts,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>source/ local machining garages</p> <ul style="list-style-type: none"> Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes) 	CBTs, Videos.
7.	<p>Plan and organise work to meet expected outcomes</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 15:00</p> <p>Corresponding NOS Code ASC/ N 0001</p>	<ul style="list-style-type: none"> Explain and follow 5-S principles in work area Keep immediate work area clean and tidy Treat confidential information as per the organisation's guidelines Work in line with organisation's policies and procedures Work within the limits of job role Obtain guidance from appropriate people, where necessary Ensure work meets the agreed requirements Establish and agree on work requirements with appropriate people Manage time, materials and cost effectively Use resources in a responsible manner 	<ul style="list-style-type: none"> Cleaning equipment and solutions Case Study - Audio/video Training charts
8.	<p>Work effectively in a team</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 15:00</p> <p>Corresponding NOS Code ASC/ N 0002</p>	<ul style="list-style-type: none"> Maintain clear communication with colleagues (by all means including face-to-face, telephonic as well as written) Work with colleagues to integrate work Pass on information to colleagues in line with organisational requirements both through verbal as well as non-verbal means Work in ways that show respect for colleagues Carry out commitments made to colleagues Let colleagues know in good time if cannot carry out commitments, explaining the reasons Identify problems in working with colleagues and take the initiative to solve these problems Follow the organisation's policies and procedures for working with colleagues 	<ul style="list-style-type: none"> Case Study - Audio/video Role Play
9.	<p>Functional English Language</p> <p>Theory Duration (hh:mm) 16:00</p> <p>Practical Duration (hh:mm) 16:00</p>	<ul style="list-style-type: none"> Use elementary level English. Understand and use proper grammar 	<ul style="list-style-type: none"> Audio/video on English course Reference books English Work books for English

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Corresponding NOS Code ASC/ N Q1402, ASC/ N 1403, ASC/ N 0001, ASC/ N 0002, ASC/ N 0003</p>		
10.	<p>Soft Skills</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 16:00</p> <p>Corresponding NOS Code ASC/ N Q1402, ASC/ N 1403, ASC/ N 0001, ASC/ N 0002, ASC/ N 0003</p>	<ul style="list-style-type: none"> Deal with colleagues, supervisor and customer with confidence Demonstrate etiquettes while dealing with team members and customer Greet team members, supervisor and customer Demonstrate efficient problem solving skills Apply balanced judgement to different situations Analyze Data and Activities 	<ul style="list-style-type: none"> Case Study - Audio/video Role play
11.	<p>Basic Computing</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 24:00</p> <p>Corresponding NOS Code ASC/ N Q1402, ASC/ N 1403</p>	<ul style="list-style-type: none"> Operate a computer and other peripherals Retrieve, create, modify and delete data using computer Create documents using MS Office (word, excel) Send and receive emails Browse Internet 	<ul style="list-style-type: none"> CBTs on working on computer Computer system UPS Internet connection
12.	<p>OJT</p> <p>Theory Duration (hh:mm) 00:00</p> <p>Practical Duration (hh:mm) 162:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> Practical training at selected organization/workshop 	
	<p>Total Duration</p> <p>Theory Duration 220:00</p> <p>Practical Duration 468:00</p>	<p>Unique Equipment Required:</p> <ul style="list-style-type: none"> Basic Tool Box Workshop tool/equipment: Drain pan, oil can, jack hydraulic, bench vice, two post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, drums for storage of waste oil etc. Diesel/ petrol Serviceable training Vehicle 	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> • Aggregate car petrol/ diesel (Engine, transmission system, brake system, suspension system, steering system, electrical system etc. mounted on chassis) • Tools: pressure indicators: multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc. • Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc. • Other tools: tensioning equipment, brake roller tester, chassis dynamometer, suspension activation, security activator etc • Electrical and electronic testing equipment: volt meters, ammeters, ohmmeters, battery testing equipment, computer based diagnostic equipment, neon timing light, oscilloscopes etc • Pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc. • Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc. • Measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler measuring tape etc • Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit • Workshop Safety: Fire extinguishers • First Aid • Consumable: cotton waste, petro;/diesel, coolant, lubricant, grease, storage containers, air filters, oil filters, spark plugs, glow plugs etc • Samples: seals, sealants, fittings, gaskets, joints, fasteners, etc • worn out/ defective/ spurious samples: seal, gaskets, clutch plate, brake shoes, brake pads, spark plug, oil filter, air cleaner etc. • Vehicle service manuals, vehicle hand book, job orders, work order, completion material requests, feedback forms, Technical reference books. • Teaching Aids: Charts, CBTs, and Videos. • Cleaning equipment and solutions • Case Study - Audio/video • SOP Charts on safety norms and drills • Charts of dos and Don'ts in work area. • Audio/video on English course • Reference books English • Work books for English • CBTs on working on computer • Computer system • UPS • Internet connection 	

Grand Total Course Duration: 688 Hours 0 Minutes*

*** These are only notional number of hours. The training must achieve competency outcomes as define by the QP/NOS**

(This syllabus/ curriculum has been approved by Automotive Skills Development Council (name of relevant Sector Skill Council or NSDC designated authority)

Trainer Prerequisites for Job role: “Auto Service Technician Level 4” mapped to Qualification Pack: “ASC/QQ1402, Version 1.1”

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/QQ1402, Version 1.1”.
2	Personal Attributes	<ul style="list-style-type: none"> ▪ 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 abreast of the latest developments and newer technologies used in the various systems of the vehicle and its aggregates is highly desirable. ▪ Should be able to demonstrate the usage of workshop equipment, instruments, special instruments and tools. ▪ Should have sharp diagnostic abilities for identifying reasons of problems in vehicles and troubleshoot. ▪ Should be hands-on with servicing of vehicles to provide experiential training.
3	Minimum Educational Qualifications	Engineer/ Diploma/ ITI in mechanical engineering from a recognized institute
4a	Domain Certification	Certified for Job Role: “Trainer Service Technician” mapped to QP: <u>ASC/Q1401, ASC/QQ1402, ASC/Q 1408, ASC/Q1414, ASC/Q 1415, ASC/Q1416, ASC/Q 1101</u> ”. Minimum accepted score-75%, as per ASDC guidelines.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted score-75%, as per ASDC guidelines.
5	Experience	<ul style="list-style-type: none"> ▪ Minimum 10 years of experience in Automotive Service Industry ▪ Experience of working on latest technology ▪ Minimum of five years of experience as trainer with OEMs ▪ Age: Preferably, not over 35-45 years old; ex-service person and retired auto industry trainers may also apply

Annexure: Assessment Criteria

Assessment Criteria for Auto Service Technician Level 4	
Job Role	Auto Service Technician Level 4
Qualification Pack	ASC/QQ1402, Version 1.1
Sector Skill Council	Automotive Skills Development Council

Sr. No.	Guidelines for Assessment
1	Assessment to be conducted by ASDC as per competency output defined in the NOS/QP and the assessment criteria provided in the NOS/QP
2	Assessment to be carried out by a third party Assessment Body duly affiliated to the SSC.
3	ASDC assessments will be comprehensive and cover all aspects of acquired knowledge, practical skills and also basic ability to communicate. Accordingly, evaluation process would include: <ol style="list-style-type: none"> Theory/Knowledge test Practical demonstration test Face to Face Viva
4	Theory/Knowledge assessment will be carried out on line through a link provided for each assessment that generates a random paper from a bank of questions available at the back end. <ul style="list-style-type: none"> - Exception to an online test in favour of Paper Test would be subject to non-availability of requisite broad band and/or hardware. - On line test would be conducted in the presence of an ASDC assessor till web enabled proctoring is deployed.
5	ASDC assessor would be conducting Practical and Viva as per the criteria provided in the NOS/QP.
6	Cut off criteria for certification (Marks obtained in %):75%

Sr. No.	NOS No.	NOS Name	Total Marks	Marks Allocation: Skills	Marks Allocation: Knowledge
1	ASC/N Q1402	Assist in performing diagnosis of vehicle for repair requirements	130	75	55
2	ASC/N 1403	Carry out routine service and minor repairs of mechanical and electrical aggregates	195	125	70
3	ASC/N 0001	Plan & organize work to meet expected outcome	50	30	20
4	ASC/N 0002	Work effectively in a team	50	30	20
5	ASC/N 0003	Maintain a healthy, safe and secure working environment	75	50	25
Total:			500	310	190
Percentage Weight age:				62%	38%
Minimum Pass% to qualify:				75%	75%



Automotive Skills Development Council

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