| | |
|---|---|
| Course Title | **BASIC CAR MAINTAINANCE** |
| Purpose | To acquire practical knowledge on Maintaining Vehicles. |
| Eligibility | 1. Degree/Diploma in relevant branch of engineering or NTC/NAC with 2-3 years relevant trade experience.<br>2. SSC with Valid Driving License. |
| Duration | 01 week |
| Location | ADVANCED TRAINING INSTITUTE, MUMBAI |
| Learning outcomes | After completion of training the candidate will<br>1. Able to Perform Basic Maintenance of Cars/Vehicles.<br>2. Perform Basic Checks like, Checking Engine Oil, Brake oil etc. |
| Teaching methods | 1 Lectures in class room.<br>2 Practice sessions<br>3 Group exercises<br>4 Demonstrations. |
| Assessment methods | Formative Assessment Consist of Following Things. |

| Srl No | Criteria for Assessment | Maximum Marks |
|---|---|---|
| 1-A | Attendance & Punctuality | 20 |
| 2-B | Sincerity | 20 |
| 3-C | Ability to Grasp the Topic | 10 |

Summative Assessment through objective type Question consist of following things

| Srl No | Criteria for assessment | Maximum Marks |
|---|---|---|
| 1 | Acquired Practical Knowledge | 30 |
| 2 | Test consist of theoretical knowledge | 20 |

Course schedule

| DAY | FORENOON SESSION (9.00 am – 1.00 pm) | AFTERNOON SESSTION (1.30 pm – 5.30) |
|---|---|---|
| **1** | Admission/ Introduction of the course subject. Safety Precautions, | Car Layout. Identify Different Parts in Vehicle. |
| **2** | Corrosion Prevention, Changing of Fuse, | Checking Corrosion in Car Body and Chassis. Testing of Fuses. |
| **3** | Battery, Types, Servicing and Maintenance | Practical on Battery, Servicing & Testing of Spark Plug |
| **4** | Engine Tune up, Requirement and Procedure of Engine Tune up. Pollution Control Norms. | Check and Replace Fuel and Ignition system parts. |
| **5** | Brake Adjustment, Tyre Pressure, Proper Inflation of Tyres, Greasing of Suspension System, Wheel Replacement, Fan Belt Replacement | Feedback / Validation |

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|---|---|
| AIDS | LCD projector, white board, Vehicle in Running Condition, Nitrogen Tyre Inflator, Battery Charger, Spark Plug Testing & Cleaning Machine, Diesel Smoke meter, 5 Gas Analyzer, Measuring Instruments/machines/material for practice sessions, laptop. |
| Instruction material | TD/AVTS/AV.03/01/CM<br>TD/AVTS/AV.03/01/PPT |

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|---|---|
| Course Title | **MAINTENANCE, SERVICING AND OVERHAULING OF AUTOMOTIVE PETROL ENGINE.** |
| Purpose | To acquire practical knowledge to repair/maintain the petrol engine. |
| Eligibility | 1. Degree/Diploma in relevant branch of engineering or NTC/NAC with 2-3 years relevant trade experience |
| Duration | 02 week |
| Location | ADVANCED TRAINING INSTITUTE, MUMBAI |
| Learning outcomes | On completion of the course the participant will able to repair/maintain the petrol engine. |
| Teaching methods | 1 Lectures in class room.<br>2 Practice sessions<br>3 Group exercises<br>4 Demonstrations. |
| Assessment methods | Formative Assessment Consist of Following Things. |

| Srl No | Criteria for Assessment | Maximum Marks |
|---|---|---|
| 1-A | Attendance & Punctuality | 20 |
| 2-B | Sincerity | 20 |
| 3-C | Ability to Grasp the Topic | 10 |

Summative Assessment through objective type Question consist of following things

| Srl No | Criteria for assessment | Maximum Marks |
|---|---|---|
| 1 | Acquired Practical Knowledge | 30 |
| 2 | Test consist of theoretical knowledge | 20 |

Course schedule

| DAY | FORENOON SESSION (9.00 am – 1.00 pm) | AFTERNOON SESSTION (1.30 pm – 5.30) |
|---|---|---|
| **1** | Admission/ Introduction of the course subject. Safety Precautions, | Practical |
| **2** | Engine: Specification, Components, Disassembly, Inspection repair and assembly. | Starting and stopping of engine. |
| **3** | Intake and exhaust system: Air intake quality, Air cleaner, manifold, PCV device. | Disassembling the engine. |
| **4** | Fuel: Difference between leaded petrol and unleaded petrol and product of combustion. | Decarbonising valve, refacing , grinding etc. |
| **5** | Fuel system: Carburettor, specification, components, adjustment, disassembly, inspection repair and assembly MPFI. | Inspection, repair / replace the engine components. |
| **6** | Lubrication system: Oil pump and oil filter. | Assembling the engine. |
| **7** | Cooling system: Description, water pump, thermostat, radiator, coolant properties and coolant classification. | Start the engine. |
| **8** | ition system: Battery, distributor, operation, nponents, disassembly, inspection, assembly, ustment, test and installation, ignition coil, H.T es, spark plug. | Compression test. |
| **9** | Turbo engine: Function and operation of turbo charger, maintenance and trouble shooting of turbo charger. | Pollution control system, euro norms. |

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|---|---|---|---|
| | **10** | Engine specified parts tightening torque, engine tune up, service specifications. | Feedback / Validation |
| AIDS | LCD projector, white board, Vehicle in Running Condition, ECU Diagnostic Machine, Ultrasonic Injector Cleaner, 5 Gas Analyzer, Measuring Instruments/machines/material for practice sessions, laptop. | | |
| Instruction material | TD/AVTS/AV.03/02/CM<br>TD/AVTS/AV.03/02/PPT | | |

| | |
|---|---|
| Course Title | **MAINTENANCE , SERVICING AND OVERHAULING OF AUTOMOTIVE DIESEL ENGINE.** |
| Purpose | To acquire practical knowledge to repair/maintain the diesel engine. |
| Eligibility | 1. Degree/Diploma in relevant branch of engineering or NTC/NAC with 2-3 years relevant trade experience |
| Duration | 02 week |
| Location | ADVANCED TRAINING INSTITUTE, MUMBAI |
| Learning outcomes | On completion of the course the participant will able to repair/maintain the diesel engine. |
| Teaching methods | 1 Lectures in class room.<br>2 Practice sessions<br>3 Group exercises<br>4 Demonstrations. |

Assessment methods

Formative Assessment Consist of Following Things.

| Srl No | Criteria for Assessment | Maximum Marks |
|---|---|---|
| 1-A | Attendance & Punctuality | 20 |
| 2-B | Sincerity | 20 |
| 3-C | Ability to Grasp the Topic | 10 |

Summative Assessment through objective type Question consist of following things

| Srl No | Criteria for assessment | Maximum Marks |
|---|---|---|
| 1 | Acquired Practical Knowledge | 30 |
| 2 | Test consist of theoretical knowledge | 20 |

Course schedule

| DAY | FORENOON SESSION (9.00 am – 1.00 pm) | AFTERNOON SESSTION (1.30 pm – 5.30) |
|---|---|---|
| **1** | Admission/ Introduction of the course subject. Safety Precautions, | Practical |
| **2** | Engine: Specification, Components, Disassembly ,Inspection repair and assembly. | Starting and stopping of engine. |
| **3** | Intake and exhaust system: Air intake quality, Air cleaner, manifold, PCV device, super charging, turbo charging. | Disassembling the engine. |
| **4** | Fuel system: FIP (inline and rotary), types of injectors and testing, fuel filter and fuel lines. | Decarbonising valve refacing , grinding etc. |
| **5** | Lubrication system: Oil pump and oil filter. | Inspection , repair / replace the engine components. |
| **6** | Cooling system: Description, water pump, thermostat, radiator, coolant properties and coolant classification. | Overhaul the oil pump, oil filter, cleaning oil passage, pipes, water pumps, servicing fuel system etc. |
| **7** | Engine specified parts tightening torque, engine tune up, service specifications. | Assembling the engine. |
| **8** | Turbo charger, Automatic timer. | Bleeding fuel system. |
| **9** | PUC control system, product of combustion of diesel fuel. | Starting the engine. |
| **10** | Euro norms. | Feedback / Validation |

| | |
|---|---|
| AIDS | LCD projector, white board, Vehicle in Running Condition, ECU Diagnostic Machine, FIP Test Bench, Injector Testing Machine, Diesel Smoke meter, 5 Gas Analyzer, Measuring Instruments/machines/material for practice sessions, laptop. |
| Instruction material | TD/AVTS/AV.03/03/CM<br>TD/AVTS/AV.03/03/PPT |

| | |
|---|---|
| Course Title | **MAINTENANCE ,SERVICING OF AUTO ELECTRICAL / ELECTRONIC SYSTEM.** |
| Purpose | To acquire practical knowledge to trouble shoot, repair auto electrical / electronic system. |
| Eligibility | 1. Degree/Diploma in relevant branch of engineering or NTC/NAC with 2-3 years relevant trade experience |
| Duration | 02 week |
| Location | ADVANCED TRAINING INSTITUTE, MUMBAI |
| Learning outcomes | On completion of the course the participant will able to trouble shoot, repair auto electrical / electronic system. |
| Teaching methods | 1 Lectures in class room.<br>2 Practice sessions<br>3 Group exercises<br>4 Demonstrations. |

Assessment methods

Formative Assessment Consist of Following Things.

| Srl No | Criteria for Assessment | Maximum Marks |
|---|---|---|
| 1-A | Attendance & Punctuality | 20 |
| 2-B | Sincerity | 20 |
| 3-C | Ability to Grasp the Topic | 10 |

Summative Assessment through objective type Question consist of following things

| Srl No | Criteria for assessment | Maximum Marks |
|---|---|---|
| 1 | Acquired Practical Knowledge | 30 |
| 2 | Test consist of theoretical knowledge | 20 |

Course schedule

| DAY | FORENOON SESSION (9.00 am – 1.00 pm) | AFTERNOON SESSTION (1.30 pm – 5.30) |
|---|---|---|
| **1** | Admission/ Introduction of the course subject. Safety Precautions, | Practical |
| **2** | General electrical/ electronic as applied to automobile, self induction, theory of magnetism, generation of EMF, wiring, earthing system, basic electronics and application of electronics. | Wiring practice of automob |
| **3** | Battery- specification, construction, chemical reactions, types and testing for the state of charge test. | Measuring voltage drop in system. |
| **4** | Starting system –starter motor, types of starter motor, testing of starter motor, solenoid switches, current drop test and starter control circuit. | Maintenance, charging and testing of lead acid batterie |
| **5** | Charging system- principle of charging system and charging circuit. | Repair of starter motor, dy alternator. |
| **6** | Operation and construction of dynamo/alternator, regulation of the output of dynamo, alternator, diode testing. | Ignition system maintenanc |
| **7** | Lighting , signalling and wiring- Head light, parking light, brake light, fog light, beacon lamp, flasher unit, festoon lamp , ISI colour code, indicators. | Adjustment and testing of distributor, spark plug, igni coil, setting ignition timing. |
| **8** | Electrical / electronic ignition system-ignition circuit, ignition switches, ignition coil, distributor, condenser, spark plug, automatic advanced mechanism, magnetos and electronic | Adjustment of head light. |

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|---|---|---|---|
| | | ignition systems. | |
| | **9** | Electrical / electronics accessories- Horn, electrical gauges, relays, wiper, heater, fans, washer and wiper reversing switches and pulse tachometer. | Repair and maintenance of electrical gauges and acces |
| | **10** | Insulated return system.<br>Power window and locking system- central locking system.<br>Fault finding of central locking system. | Feedback / Validatio |
| AIDS | LCD projector, white board, Vehicle in Running Condition, Auto Electrical Test Bench, ECU Diagnostic Machine, Battery Charger, Spark Plug Cleaning & Testing Machine, Ignition Coil Tester, Measuring Instruments/machines/material for practice sessions, laptop. | | |
| Instruction material | TD/AVTS/AV.03/04/CM<br>TD/AVTS/AV.03/04/PPT | | |

<table>
<tr><td>Course Title</td><td>MAINTENANCE & SERVICING OF VEHICLE AIR CONDITIONING SYSTEM AND POLLUTION CONTROL SYSTEM</td></tr>
<tr><td>Purpose</td><td>To acquire Practical knowledge to maintain and Service Vehicle Air Condition and Pollution Control System of Vehicles.</td></tr>
<tr><td>Eligibility</td><td>3. Degree/Diploma in relevant branch of engineering or NTC/NAC with 2-3 years relevant trade experience.</td></tr>
<tr><td>Duration</td><td>01 week</td></tr>
<tr><td>Location</td><td>ADVANCED TRAINING INSTITUTE, MUMBAI</td></tr>
<tr><td>Learning outcomes</td><td>After completion of training the candidate will<br>3. Able to Perform Repair, Test and maintain Car Air Conditioning System and Pollution Control System<br>4. Able to Operate Gas Charging Machine.<br>5. Able to Operate PUC Machine.</td></tr>
<tr><td>Teaching methods</td><td>1 Lectures in class room.<br>2 Practice sessions<br>3 Group exercises<br>4 Demonstrations</td></tr>
<tr><td>Assessment methods</td><td>Formative Assessment Consist of Following Things.
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<tr><td>Course schedule</td><td>
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<tr><td>DAY</td><td>FORENOON SESSION<br>(9.00 am – 1.00 pm)</td><td>AFTERNOON SESSTION<br>(1.30 pm – 5.30)</td></tr>
<tr><td>1</td><td>Admission/ Introduction of the course subject.<br>Safety Precautions,</td><td>Basic Air Conditioning Principles.<br>Refrigerants Types & uses.</td></tr>
<tr><td>2</td><td>HVAC Car Layout, Components, AC Compressors, Thermostatic Expansion Valve, RD Bottle, Evaporator, Condenser.</td><td>Identification of Air Conditioning Components.<br>Carryout Performance test on AC Unit.</td></tr>
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| | | | |
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| | | | Checking charged state of refrigerant |
| | **3** | AC Gas Charging Machine use & Maintenance. | Identify Abnormal Noise from Compressor, Magnetic Clutch, and Blower Motor. Replacing Engine Drive Belt. Diagnosis test and topping up of AC Gas using AC Gas Charging Machine. |
| | **4** | Emission Standards, EURO and Bharat Norms, Evaporative Emission Control, Catalytic Conversion, Crankcase Emission Control, Diesel Particulate Filter, EGR & SCR, | Monitoring Emissions procedure by use of Engine Gas Analyser or Smoke meter. Checking & Cleaning a PCV Valve. Inspection of EVAP Canister Purge valve by use of scan tool. EGR/SCR valve removal and Installation. |
| | **5** | Procedure of Repair. Inspection & Fault Finding. Repair/Maintenance | Feedback / Validation |
| AIDS | LCD projector, white board, Vehicle in Running Condition, AC Gas Charging Machine, Diesel Smoke meter, 5 Gas Analyzer, Measuring Instruments/machines/material for practice sessions, laptop. | | |
| Instruction material | TD/AVTS/AV.03/05/CM<br>TD/AVTS/AV.03/05/PPT | | |

<table>
<tr><td>Course Title</td><td>MAINTENANCE & SERVICING OF VEHICLE CONTROL SYSTEM (STEERING, WHEEL BALANCING & ALIGNMENT, BRAKE SYSTEM</td></tr>
<tr><td>Purpose</td><td>Acquire Skills to understand the working of Steering , Brake System and Wheel Balancing & Wheel Alignment system of Vehicles and Perform Repair/Overhaul of Vehicle Control System.</td></tr>
<tr><td>Eligibility</td><td>1. Degree/Diploma in relevant branch of engineering or NTC/NAC with 2-3 years relevant trade experience</td></tr>
<tr><td>Duration</td><td>01 week</td></tr>
<tr><td>Location</td><td>ADVANCED TRAINING INSTITUTE, MUMBAI</td></tr>
<tr><td>Learning outcomes</td><td>After completion of training the candidate will<br>1. Able to Perform Service and Maintenance of Vehicle Brake & Steering System<br>2. Able to Perform Wheel Balancing & Wheel Alignment.</td></tr>
<tr><td>Teaching methods</td><td>1 Lectures in class room.<br>2 Practice sessions<br>3 Group exercises<br>4 Demonstrations.</td></tr>
<tr><td>Assessment methods</td><td>Formative Assessment Consist of Following Things.
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<table>
<tr><td>DAY</td><td>FORENOON SESSION<br>(9.00 am – 1.00 pm)</td><td>AFTERNOON SESSTION<br>(1.30 pm – 5.30)</td></tr>
<tr><td>1</td><td>Admission/ Introduction of the course subject.<br>Safety Precautions,</td><td>Description & Function of Steering & Types of Steering Gear Box.</td></tr>
<tr><td>2</td><td>Steering arm and Components. Hydraulic and Electrical Assisted Steering System.</td><td>Identification of Steering System Components. Practice on Removing Steering Wheel and Steering Gear Box.</td></tr>
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|---|---|---|---|
| | **3** | Wheel Alignment Principles. Wheels and Tyres, Construction and Characteristics. | Check and adjust power steering fluid. Inspect & adjust engine drive belt. Practice on removing wheels from vehicle, dismantle tyre and tubes and check for puncture for tubed and tubeless tyre. Perform Wheel Balancing and Wheel Alignment |
| | **4** | Braking Systems. Different Types of Brakes. Braking System Components. Drum Brakes and Disk Brakes | Practice on Adjusting Brake pedal play. Overhaul/Repair Drum and Disc Brakes. Adjust Air Brake and locate air leaks-General Maintenance. Bleeding of Hydraulic Brake and Disc Brakes. |
| | **5** | ABS and ESP. Procedure of Repair. Inspection & Fault Finding. Repair/Maintenance | Feedback / Validation |
| AIDS | LCD projector, white board, Vehicle in Running Condition, Wheel Alignment Machine, Wheel Balancing Machine, Measuring Instruments/machines/material for practice sessions, laptop. | | |
| Instruction material | TD/AVTS/AV.03/06/CM<br>TD/AVTS/AV.03/06/PPT | | |