

AUTOMOTIVE TRAINING CENTRE

Professional Automotive Technician Training Program

Detailed 144-Hour Curriculum

12 Students per Cycle | 3 Cycles per Year | 36 Students per Year

Program Structure

Module	Subject	Theory	Practical	Total
1	Automotive Fundamentals & Workshop Practice	10 h	14 h	24 h
2	Light & Heavy-Duty Vehicle Maintenance	19 h	29 h	48 h
3	Automotive Electrical, Electronics & Diagnostics	19 h	29 h	48 h
4	Diagnostic Tools, Spare Parts & VIN Identification	10 h	14 h	24 h
TOTAL		58 h	86 h	144 h

Recommended methodology: approximately 40% theory and 60% practical training. The learning sequence is THEORY → DEMONSTRATION → HANDS-ON PRACTICE → DIAGNOSIS → ASSESSMENT.

MODULE 1 — Automotive Fundamentals & Workshop Practice

Duration: 24 Hours

1.1 Automotive Industry & Vehicle Types — 2 h

- Passenger vehicles
- Light commercial vehicles
- Trucks and buses
- Conventional vehicles
- Introduction to hybrid/electric vehicles
- Basic automotive terminology

1.2 Vehicle Architecture — 3 h

- Chassis and body
- Engine
- Transmission
- Driveline
- Steering
- Suspension
- Brakes
- Electrical, fuel, cooling and exhaust systems

1.3 Engine Fundamentals — 2 h

- Four-stroke cycle
- Petrol vs diesel
- Combustion
- Compression
- Torque and power
- Basic engine components

1.4 Mechanical Fundamentals — 1 h

- Force
- Torque
- Pressure
- Friction
- Gears
- Bearings
- Seals
- Fasteners

1.5 Fluids & Lubricants — 1 h

- Engine oil
- Coolant
- Brake fluid
- Transmission fluid
- Basic specifications

- Contamination

1.6 Workshop Safety — 1 h

- PPE
- Fire safety
- Chemical safety
- Vehicle lifting
- Tool safety
- Workshop housekeeping
- Emergency procedures

Module 1 Outcome

Students can identify a vehicle, understand its major systems, perform a basic inspection and work safely in a workshop.

MODULE 2 — Light & Heavy-Duty Vehicle Maintenance

Duration: 48 Hours

2.1 Engine Maintenance — 8 h

- Petrol and diesel engines
- Engine components
- Lubrication
- Cooling
- Air intake
- Fuel systems
- Turbocharging
- Exhaust
- Engine inspection
- Oil/filter service
- Air filter, belt, hose and leak inspection

2.2 Fuel & Air Systems — 4 h

- Fuel delivery and filtration
- Injectors
- Petrol and diesel systems
- Common-rail fundamentals
- Air intake
- Turbocharger fundamentals
- Filter/intake/fuel-system inspection

2.3 Cooling & Lubrication — 4 h

- Cooling operation
- Radiator
- Water pump
- Thermostat
- Cooling fan
- Engine oil
- Oil pressure fundamentals
- Fluid, hose and leak checks

2.4 Braking Systems — 7 h

- Hydraulic brakes
- Disc and drum brakes
- Pads and shoes
- Master cylinder
- ABS
- Heavy-duty air brakes
- EBS fundamentals
- Brake inspection and component identification

2.5 Steering & Suspension — 6 h

- Steering systems
- Steering geometry
- Shock absorbers
- Springs
- Control arms
- Ball joints
- Bushings
- Air suspension
- Wheel-alignment fundamentals

2.6 Transmission & Driveline — 6 h

- Clutch
- Manual transmission
- Automatic/automated transmission fundamentals
- Driveshaft
- CV joints
- Differential
- Axles
- Inspection and symptom identification

2.7 Wheels, Tires & Preventive Maintenance — 4 h

- Tire specifications
- Load ratings
- Pressure
- Wear patterns
- Wheel inspection
- Wheel fastening
- Preventive maintenance schedules

2.8 Complete Maintenance Exercise — 9 h

- Vehicle identification
- Structured inspection
- Maintenance diagnosis
- Service task
- Quality check
- Documentation

Module 2 Outcome

Students can perform basic mechanical maintenance and inspection on light-duty and heavy-duty vehicles, identify abnormal conditions and determine when further diagnosis is required.

MODULE 3 — Automotive Electrical, Electronics & Diagnostics

Duration: 48 Hours

3.1 Electrical Fundamentals — 6 h

- Voltage
- Current
- Resistance
- Ohm's Law
- Electrical circuits
- Series/parallel circuits
- Grounding
- Fuses and relays
- Multimeter measurement

3.2 Battery, Starting & Charging — 5 h

- Battery construction and specifications
- Starter motor
- Alternator
- Charging system
- Battery testing
- Charging-system checks
- Starting-system checks

3.3 Automotive Electrical Systems — 5 h

- Lighting
- Switches
- Motors
- Relays
- Wiring
- Connectors
- Open and short circuits
- Controlled electrical fault exercises

3.4 Sensors & Actuators — 6 h

- Temperature sensors
- Pressure sensors
- Position and speed sensors
- Oxygen and air-flow sensors
- Injectors
- Solenoids
- Motors and valves
- Sensor/actuator testing

3.5 Electronic Control Systems — 5 h

- ECU fundamentals

- Vehicle networks
- CAN bus introduction
- Module communication
- Electronic architecture
- Warning indicators

3.6 Diagnostic Methodology — 7 h

- Understand complaint
- Verify symptom
- Collect vehicle information
- Scan vehicle
- Interpret fault codes
- Perform additional tests
- Identify root cause
- Repair
- Verify repair

3.7 OBD & Diagnostic Scanner — 6 h

- OBD systems
- Diagnostic trouble codes
- Freeze-frame data
- Live data
- Clearing codes
- Readiness information
- Diagnostic reports

3.8 Integrated Diagnostic Exercise — 8 h

- Inspect
- Scan
- Test
- Diagnose
- Identify cause
- Recommend repair
- Verify result
- Document case

Module 3 Outcome

Students can perform basic automotive electrical and electronic diagnosis, use a diagnostic scanner and multimeter, interpret diagnostic information and follow a logical fault-finding process.

MODULE 4 — Diagnostic Tools, Spare Parts & VIN Identification

Duration: 24 Hours

4.1 Diagnostic & Workshop Tools — 4 h

- Diagnostic scanners
- Multimeters
- Battery testers
- Oscilloscope introduction
- Torque wrench
- Special tools
- Tool selection

4.2 VIN & Vehicle Identification — 5 h

- VIN/chassis number
- Make and model
- Production year
- Engine and engine code
- Transmission
- Vehicle configuration
- Complete practical vehicle identification

4.3 Electronic Parts Catalogues — 5 h

- VIN-based search
- Vehicle configuration
- Engine selection
- Production date
- Component groups
- Catalogue navigation

4.4 OEM & Aftermarket References — 4 h

- OEM part numbers
- Manufacturer references
- Aftermarket references
- Cross-reference systems
- Superseded numbers
- Quality considerations

4.5 Accurate Spare-Part Identification — 4 h

- VIN
- Vehicle configuration
- Parts catalogue
- Component
- OEM reference
- Cross-reference
- Compatibility verification

- Correct part

4.6 Final Parts Identification Challenge — 2 h

- Identify vehicle
- Confirm configuration
- Identify component
- Find catalogue entry
- Verify reference
- Check alternatives
- Confirm compatibility
- Record part

Module 4 Outcome

Students can accurately identify a vehicle and determine the correct spare part using VIN, vehicle configuration and parts-catalogue information.

Final Integrated Practical Project

At the end of the program, students complete one integrated workshop assessment combining vehicle identification, inspection, diagnosis, tool selection, spare-parts identification and documentation.

1. Vehicle Identification — VIN → vehicle configuration
2. Inspection — visual and mechanical inspection
3. Diagnosis — scanner, measurements and testing
4. Determine Repair — identify the actual problem
5. Parts Identification — VIN → catalogue → correct component
6. Repair / Service — perform the assigned supervised task
7. Verification — confirm correct operation
8. Documentation — prepare a short technical report

Graduate Profile

A successful graduate will have foundational practical competence to inspect and maintain light-duty and heavy-duty vehicles, understand basic mechanical, electrical and electronic systems, use professional diagnostic equipment, apply a systematic troubleshooting process, and accurately identify required spare parts using VIN and vehicle-specific information.

Core Professional Workflow

**IDENTIFY THE VEHICLE → UNDERSTAND THE SYSTEM → INSPECT → DIAGNOSE
→ SELECT THE RIGHT TOOL → IDENTIFY THE RIGHT PART → PERFORM THE
WORK → VERIFY THE RESULT**