

AUTOMOTIVE TECHNICAL ACADEMY (ATA)

ATA-C100

Chassis Systems Technology

Curriculum Framework (Version 1.0)

Programme Status: Proposed for Locking

Programme Information

Programme Code:

ATA-C100

Programme Title:

Chassis Systems Technology

Qualification Level:

Professional Diploma

Duration:

48 Weeks

Training Days:

5 Days Per Week

Hours Per Day:

8 Hours

Total Contact Hours:

1,920 Hours

Teaching Philosophy

- **70% Practical = 1,344 Hours**
 - **30% Theory = 576 Hours**
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Entry Requirement

Successful completion of:

ATA-M000 – Automotive Mechanical Engineering Foundation

or

Recognition of Prior Learning (RPL) in accordance with ATA admission policy.

Programme Goal

ATA-C100

To produce competent chassis systems technicians capable of inspecting, servicing, diagnosing, repairing, testing, and maintaining vehicle suspension, steering, braking, wheel alignment, tyres, hubs, axles, and electronically controlled chassis systems using professional workshop procedures, precision equipment, and OEM-informed service practices.

Graduate Competency Profile

Graduates shall be able to:

- Diagnose and repair suspension systems.
 - Service steering systems, including hydraulic and electric power steering.
 - Inspect and repair hydraulic and electronic braking systems.
 - Perform professional wheel alignment and balancing.
 - Diagnose tyre wear and handling complaints.
 - Service wheel bearings, hubs, and axle assemblies.
 - Diagnose ABS, ESC, TCS, and EPB systems.
 - Conduct chassis inspections and preventive maintenance.
 - Diagnose vibration, steering pull, noise, and ride-quality concerns.
 - Apply OEM service procedures and torque specifications.
 - Verify repairs through road testing and quality assurance.
 - Prepare professional inspection and service reports.
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Programme Structure

Module	Title	Weeks	Hours
C100-01	Chassis Workshop Practice, Safety & Professional Procedures	3	120
C100-02	Suspension Systems Technology	7	280
C100-03	Steering Systems Technology	6	240
C100-04	Hydraulic & Electronic Braking Systems	8	320
C100-05	Wheels, Tyres, Wheel Alignment & Balancing	6	240
C100-06	Axles, Hubs, Bearings & Chassis Components	5	200
C100-07	Electronic Chassis Control Systems & Diagnostics	5	200

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Module	Title	Weeks	Hours
C100-08	Ride Quality, NVH, Quality Assurance & Performance Verification	4	160
C100-09	Integrated Chassis Workshop Projects	2	80
C100-10	Industrial Attachment, Capstone Project & Final Assessment	2	80
TOTAL		48 Weeks	1,920 Hours

Module 1

Chassis Workshop Practice, Safety & Professional Procedures

Duration: 3 Weeks

Topics

- Workshop safety
- Safe vehicle lifting
- Jack and hoist operation
- Torque procedures
- Suspension spring safety
- Brake fluid handling
- OEM workshop manuals
- Workshop documentation
- Professional ethics
- Environmental management

Practical Competencies

Students will:

- Safely lift and support vehicles.
- Follow workshop safety procedures.
- Complete service documentation professionally.

Module 2

Suspension Systems Technology

Duration: 7 Weeks

Topics

- Suspension design and operation
- Coil springs
- Leaf springs
- Torsion bars
- Shock absorbers
- Struts
- Control arms
- Ball joints
- Bushings
- Stabilizer bars
- Ride-height inspection

Practical Competencies

Students will:

- Inspect suspension systems.
 - Replace worn suspension components.
 - Diagnose suspension noise and ride concerns.
 - Verify repairs through testing.
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Module 3

Steering Systems Technology

Duration: 6 Weeks

Topics

- Steering geometry
- Rack-and-pinion systems
- Steering gearboxes
- Hydraulic power steering
- Electric power steering (EPS)
- Steering columns
- Tie rods
- Steering joints
- Steering angle sensors
- Steering diagnostics

Practical Competencies

Students will:

- Service steering systems.
 - Diagnose steering faults.
 - Replace steering components.
 - Perform steering system verification.
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Module 4

Hydraulic & Electronic Braking Systems

Duration: 8 Weeks

Topics

- Brake system fundamentals
- Disc brakes
- Drum brakes
- Master cylinders
- Brake boosters
- Brake lines
- Brake calipers
- ABS
- Electronic Stability Control (ESC)
- Traction Control System (TCS)
- Electronic Parking Brake (EPB)
- Brake bleeding procedures

Practical Competencies

Students will:

- Service braking systems.
 - Replace hydraulic components.
 - Bleed brake systems correctly.
 - Diagnose ABS and electronic brake faults.
 - Perform brake performance testing.
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Module 5

Wheels, Tyres, Wheel Alignment & Balancing

Duration: 6 Weeks

Topics

- Wheel construction
- Tyre construction
- Tyre inspection
- Tyre pressure monitoring systems (TPMS)
- Wheel balancing
- Four-wheel alignment
- Camber
- Caster
- Toe
- Tyre wear analysis

Practical Competencies

Students will:

- Mount and balance tyres.
 - Perform computerized wheel alignment.
 - Diagnose abnormal tyre wear.
 - Calibrate TPMS where applicable.
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Module 6

Axles, Hubs, Bearings & Chassis Components

Duration: 5 Weeks

Topics

- Front axle systems
- Rear axle systems
- Wheel hubs
- Bearings
- CV joints
- Wheel studs
- Hub assemblies
- Chassis fasteners
- Torque procedures
- Chassis inspection

Practical Competencies

Students will:

- Replace wheel bearings.

- Service axle assemblies.
 - Inspect and repair hub components.
 - Apply correct torque specifications.
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Module 7

Electronic Chassis Control Systems & Diagnostics

Duration: 5 Weeks

Topics

- ABS diagnostics
- ESC diagnostics
- TCS diagnostics
- EPB servicing
- Wheel speed sensors
- Steering angle sensors
- Yaw rate sensors
- Live data interpretation
- Scan tool diagnostics
- Fault verification

Practical Competencies

Students will:

- Diagnose electronic chassis faults.
 - Interpret live scan data.
 - Test sensors and actuators.
 - Verify repairs using OEM procedures.
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Module 8

Ride Quality, NVH, Quality Assurance & Performance Verification

Duration: 4 Weeks

Topics

- Noise, Vibration & Harshness (NVH)
- Steering pull
- Brake vibration
- Wheel vibration
- Ride comfort evaluation

- Road testing
- Customer complaint analysis
- Final inspection
- Quality assurance
- Service reporting

Practical Competencies

Students will:

- Diagnose ride and handling complaints.
 - Conduct structured road tests.
 - Prepare final inspection reports.
 - Verify customer concerns have been resolved.
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Module 9

Integrated Chassis Workshop Projects

Duration: 2 Weeks

Students complete integrated projects such as:

- Suspension overhaul
 - Steering system repair
 - Complete brake service
 - Four-wheel alignment
 - TPMS inspection and calibration
 - Electronic chassis diagnostics
 - Road test and quality inspection
 - Professional documentation
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Module 10

Industrial Attachment, Capstone Project & Final Assessment

Duration: 2 Weeks

Students complete:

- Supervised industrial attachment
- Comprehensive chassis repair project
- Practical trade test
- Written examination
- Technical presentation

- Portfolio assessment
 - Exit competency assessment
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Required Laboratories & Workshops

- Chassis Systems Workshop
 - Suspension & Steering Laboratory
 - Brake Systems Laboratory
 - Wheel Alignment & Balancing Centre
 - Tyre Service Workshop
 - Electronic Chassis Diagnostics Laboratory
 - Road Test & Quality Assurance Bay
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Essential Training Equipment

Students should train with:

- Two-post and four-post vehicle lifts
 - Wheel alignment machine
 - Wheel balancing machine
 - Tyre changer
 - Brake lathe (where applicable)
 - Brake bleeding equipment
 - Suspension spring compressors
 - Hydraulic presses
 - Torque wrenches
 - Ball joint separators
 - Professional scan tools
 - TPMS programming tools
 - Dial indicators
 - Vernier calipers
 - Micrometers
 - OEM chassis service manuals
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Assessment Structure

ATA-C100

Assessment	Weight
Continuous Practical Assessment	35%
Practical Trade Tests	30%
Written Examination	15%
Capstone Project	15%
Professional Conduct & Industrial Attachment	5%
TOTAL	100%

Career Opportunities

Graduates may work as:

- Chassis Systems Technician
- Suspension & Steering Technician
- Brake Systems Technician
- Wheel Alignment Specialist
- Tyre Service Specialist
- Fleet Maintenance Technician
- Dealership Service Technician
- Technical Instructor
- Workshop Supervisor
- Independent Automotive Service Entrepreneur