AUTOMOTIVE TECHNICAL ACADEMY (ATA)

ATA-E000

Automotive Electrical & Electronics Foundation

Curriculum Framework (Version 1.0)

Programme Status: ✓ APPROVED & LOCKED

Programme Information

Programme Code:

ATA-E000

Programme Title:

Automotive Electrical & Electronics Foundation

Qualification:

Foundation Certificate

Duration:

12 Weeks

Training Days:

5 Days Per Week

Hours Per Day:

8 Hours

Total Contact Hours:

480 Hours

Teaching Philosophy

70% Practical (336 Hours)

30% Theory (144 Hours)

The programme is built on ATA's competency-based philosophy, ensuring every learner develops practical workshop skills before advancing to specialized diploma programmes.

Programme Goal

To equip learners with the fundamental knowledge, practical skills, and professional work habits required to safely identify, test, diagnose, repair, and install basic automotive electrical and electronic systems while preparing them for advanced study within the Electrical & Electronics Faculty.

Graduate Competency Profile

On successful completion, graduates will be able to:

- Apply workshop safety standards for electrical and electronic work.
- Identify automotive electrical and electronic components.
- Interpret basic electrical symbols and wiring diagrams.
- Understand voltage, current, resistance, power, and circuit operation.
- Use multimeters, test lamps, clamp meters, power probes, and battery testers correctly.
- Inspect, repair, and protect wiring harnesses.
- Test batteries, alternators, and starter motors.
- Diagnose basic electrical faults systematically.
- Understand the functions of sensors, actuators, relays, fuses, and switches.
- Communicate professionally and maintain accurate workshop documentation.

Programme Structure

Module	Title	Weeks	Hours
E000-01	Electrical Workshop Safety, Professional Ethics & Tool Handling	2	80
E000-02	Electrical Principles & Automotive Circuits	2	80
E000-03	Electrical Components, Wiring & Connectors	2	80
E000-04	Batteries, Starting & Charging Fundamentals	2	80
E000-05	Basic Electrical Diagnosis & Wiring Diagram Interpretation	2	80
E000-06	Foundation Practical Projects, Quality Assurance & Final Assessment	2	80
TOTAL		**12 Weeks**	**480 Hours**

Module 1

Electrical Workshop Safety, Professional Ethics & Tool Handling

Duration: 2 Weeks

Topics

- Personal Protective Equipment (PPE)
- Electrical hazards
- Battery safety
- Fire prevention
- Workshop housekeeping
- Safe tool handling
- Professional ethics
- Customer vehicle protection
- Environmental awareness

Practical Competencies

Students will:

- Work safely around vehicle electrical systems.
- Handle electrical tools correctly.
- Apply workshop safety procedures.
- Demonstrate professional conduct.

Module 2

Electrical Principles & Automotive Circuits

Duration: 2 Weeks

Topics

- Voltage
- Current
- Resistance
- Power
- Ohm's Law
- Series circuits
- Parallel circuits
- Ground circuits
- Voltage drop
- Electrical symbols

Practical Competencies

Students will:

- Build simple circuits.
- Measure electrical values.

- Verify circuit operation.
- Identify common electrical faults.

Module 3

Electrical Components, Wiring & Connectors

Duration: 2 Weeks

Topics

- Wiring harnesses
- Wire identification
- Connectors
- Relays
- Fuses
- Switches
- Terminals
- Crimping
- Soldering
- Heat-shrink protection

Practical Competencies

Students will:

- Repair damaged wiring.
- Install connectors.
- Replace electrical components.
- Produce reliable wiring repairs.

Module 4

Batteries, Starting & Charging Fundamentals

Duration: 2 Weeks

Topics

- Battery construction
- Battery testing
- Charging systems
- Alternator basics
- Starter motors
- Voltage regulators

- Battery maintenance

Practical Competencies

Students will:

- Test batteries.
- Test alternators.
- Test starter circuits.
- Diagnose charging system faults.

Module 5

Basic Electrical Diagnosis & Wiring Diagram Interpretation

Duration: 2 Weeks

Topics

- Wiring diagrams
- Circuit tracing
- Continuity testing
- Voltage drop testing
- Ground testing
- Fuse testing
- Relay testing
- Basic scan tool introduction

Practical Competencies

Students will:

- Read simple wiring diagrams.
- Trace electrical circuits.
- Locate wiring faults.
- Perform structured electrical diagnosis.

Module 6

Foundation Practical Projects, Quality Assurance & Final Assessment

Duration: 2 Weeks

Students complete supervised projects including:

- Battery testing
- Starter motor testing
- Alternator testing

- Wiring harness repair
- Relay and fuse replacement
- Circuit diagnosis
- Lighting circuit repair
- Final workshop inspection
- Practical competency demonstration

Required Laboratories & Workshops

- Automotive Electrical Foundation Workshop
- Battery Testing Laboratory
- Wiring & Harness Fabrication Laboratory
- Electrical Measurement Laboratory
- Basic Electronics Laboratory
- Diagnostic Practice Bay
- Quality Inspection & Assessment Area

Essential Training Equipment

Students should train with:

- Digital multimeters
- Clamp meters
- Test lamps
- Power probes
- Battery analyzers
- Battery chargers
- Oscilloscope (introductory level)
- Wiring harness boards
- Soldering stations
- Crimping tools
- Heat guns
- Terminal extraction kits
- Relay and fuse training panels
- Basic automotive scan tools
- Regulated DC power supplies
- Professional PPE

Assessment Structure

Assessment	Weight
Continuous Practical Assessment	35%
Practical Trade Tests	30%
Written Examination	15%
Foundation Practical Project	15%
Professional Conduct	5%
TOTAL	**100%**

Progression Pathways

Successful graduates may progress to any of the following 48-week Professional Diploma programmes:

- **ATA-E100** – General Automotive Electrical
- **ATA-ER100** – ECU Repair & Key Programming
- **ATA-AC100** – Automotive Cooling Systems Technology
- **ATA-ST100** – Vehicle Security & Tracking Technology
- **ATA-IM100** – Infotainment, Multimedia & Connected Vehicle Systems
- **ATA-EV100** – Electric Vehicle Systems Technology