

# Car electronics course for teachers

## Course Outline

- The course offers a comprehensive exploration of car diagnostics and maintenance techniques, focusing on practical applications and hands-on experience. Participants will delve into various aspects of automotive electrical circuits, electronic control systems, and internal combustion engine diagnostics, utilizing advanced tools such as oscilloscopes and diagnostic equipment. Additionally, the course integrates modern technology, including simulation programs, educational stands, and computer software, to enhance learning outcomes and practical skills in auto mechanics..

## The aim of this course is to

- Equip participants with advanced skills in inspecting and diagnosing car electrical circuits, ensuring proficiency in identifying and resolving electrical issues.
- Enhance participants' understanding of diagnostic methodologies and practical tasks associated with automotive maintenance, fostering competency in practical application.
- Familiarise participants with the use of modern diagnostic equipment, simulation programs, and educational stands, enabling effective organisation of practical training sessions.
- Empower participants to apply innovative technologies such as oscilloscopes, diagnostic software, and artificial intelligence programs in automotive diagnostics and maintenance, facilitating efficient and accurate troubleshooting processes.

## Activities

- Practical Circuit Inspection: Participants engage in hands-on activities where they inspect car electrical circuits using multimeters and diagnostic tools, identifying and diagnosing potential issues.
- Simulation Program Exploration: Participants work with simulation programs to virtually recreate car electrical circuit scenarios, allowing them to practise diagnosing and troubleshooting various electrical problems in a controlled environment.
- Oscilloscope Workshop: A workshop is conducted to demonstrate the usage of oscilloscopes, including popular models like Picoscope, Fluke, or Bosch FSA 760, enabling participants to understand how to effectively analyse electronic control systems in cars.
- Dynamic Engine Testing: Participants participate in dynamic engine testing sessions using a power test bench, where they learn to determine the

dynamic characteristics of a car's internal combustion engine, gaining insights into engine performance and efficiency.

### Outcomes

- Enhanced proficiency in diagnosing and troubleshooting car electrical circuits, utilising multimeters and diagnostic tools effectively.
- Improved understanding of simulation programs for recreating and analysing car electrical circuit scenarios, facilitating better diagnostic skills.
- Increased competency in utilising oscilloscopes, including popular models for diagnosing electronic control systems in cars.
- Enhanced ability to determine dynamic engine characteristics and assess engine performance through practical testing using a power test bench, contributing to more efficient engine diagnostics and maintenance.

**Participants requirements: pronunciation: min. upper Intermediate (B2)**