CONCEPT

ADAS and Vehicle Sensors Course: Radar, Camera, Lidar, AUTOSAR and ISO 26262

1 – 5 November 2027
Dubai - Five-star CBD venue



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Ref: 1622_25804 **Date:** 1 – 5 November 2027 **Location:** Dubai - Five-star CBD venue **Fees:** 19500 SAR

Introduction:

ADAS and vehicle sensors, covering radar, camera, lidar, AUTOSAR and ISO 26262, is the subject of this 1-week course for vehicle electronics, calibration, validation and ECU software staff, ending with an ADAS Sensor Calibration and Safety Validation Plan for a case vehicle programme. Driver-assistance features misbehave when sensors stay misaligned after a windscreen or bumper repair, when fusion logic is misread or when hazards are never analysed. Nominees already work on vehicle electronics, and teaching is by case study on calibration records, network traces and hazard worksheets. CoreConcept Training Center delivers this ADAS and vehicle sensors course.

Course Objectives:

- Explain ADAS functions such as adaptive cruise control, emergency braking and lane keeping against SAE automation levels and their sensor needs
- Compare radar, camera, lidar and ultrasonic sensing for range, resolution and weather limits and choose a sensor set for a feature
- Carry out static and dynamic calibration of forward cameras and radars after collision, windscreen and suspension repairs and record the result
- Trace sensor data from ECU to vehicle network and describe AUTOSAR Classic and Adaptive software layers for driver-assistance functions
- Perform an ISO 26262 hazard analysis and risk assessment, assign ASIL ratings and derive safety goals for a driver-assistance feature
- Plan SOTIF triggering-condition analysis and scenario-based validation using simulation, hardware-in-the-loop and proving-ground tests

Target Audience:

- Automotive electronics engineering staff who integrate radar, camera and lidar units into vehicle platforms
- Calibration and diagnostic staff who aim and verify driver-assistance sensors after body, glass and chassis repairs
- ECU software staff who develop or configure embedded code for perception and driver-assistance controllers
- Test and validation staff who plan simulation, bench and track evidence for automated driving features
- Service centre technical staff who set repair procedures, equipment and quality checks for sensor-equipped vehicles

Course Outline:

Day 1: ADAS Functions, SAE Automation Levels and Sensor Landscape

- SAE Automation Levels 0 to 5 and Driver Responsibility
- Adaptive Cruise Control, Emergency Braking and Lane Keeping Functions
- Blind Spot, Traffic Sign Recognition and Driver Monitoring Features
- Sensor Suite Layouts on Passenger Cars and Commercial Trucks
- Current-State Review of Workshop ADAS Calibration Capability

Day 2: Radar, Camera, Lidar, Ultrasonic Physics and Sensor Fusion Architecture

- FMCW Radar Range, Doppler Velocity and Angle Resolution
- Mono and Stereo Camera Optics, Field of View and Glare
- Lidar Point Clouds, Ultrasonic Echoes and Weather Degradation
- Early, Feature-Level and Late Sensor Fusion Architectures Compared
- Kalman Filter Object Tracking and Track Association Logic

Day 3: Sensor Calibration, Vehicle Networks and AUTOSAR Software

- Static Target-Board Camera Calibration and Thrust Angle Alignment
- Dynamic Road-Drive Calibration and Radar Vertical Aiming Checks
- CAN FD and Automotive Ethernet Signal Tracing With Diagnostic Tools
- AUTOSAR Classic Basic Software, RTE and Software Component Layers
- AUTOSAR Adaptive Platform With SOME/IP Service-Oriented Messaging

Day 4: ISO 26262 Functional Safety, SOTIF and Validation Risks

- ISO 26262 Item Definition and Hazard Analysis Worksheet
- Severity, Exposure and Controllability Ratings for ASIL Assignment
- Safety Goals, ASIL Decomposition and Functional Safety Concept
- ISO 21448 SOTIF Triggering Conditions and Functional Insufficiencies
- Scenario Catalogues for Simulation, Hardware-in-the-Loop and Track Testing

Day 5: Case Study Building an ADAS Sensor Calibration and Safety Validation Plan

- Case Vehicle Sensor Set and Feature List Review
- Calibration Procedure and Equipment List Drafted for the Case
- Hazard Worksheet and ASIL Results for a Case Braking Feature
- Validation Scenario Matrix Linking SOTIF Conditions to Tests
- ADAS Sensor Calibration and Safety Validation Plan Completion and Defence

Skills You Will Gain:

- Sensor Suite Selection
- Radar and Camera Aiming
- Sensor Fusion Interpretation
- In-Vehicle Network Tracing
- AUTOSAR Architecture Reading
- Hazard Analysis and Risk Assessment
- ASIL Rating
- Scenario-Based Validation Planning

Why Attend This Course:

- Deliver an ADAS Sensor Calibration and Safety Validation Plan to the engineering manager and the service quality lead
- Decide whether a repaired vehicle needs static or dynamic recalibration and which sensors must be re-aimed
- Avoid false emergency braking, missed lane departures and liability exposure from sensors left misaligned after repair
- Coach technicians and software colleagues on calibration records, hazard worksheets and test scenario evidence

Conclusion:

Back at work, the participant hands the ADAS Sensor Calibration and Safety Validation Plan to the engineering manager and the service quality lead. They use it to fix which repairs trigger recalibration, which equipment and targets the workshop needs, which features carry the highest ASIL and which scenarios must pass before a software release or vehicle handover. After the first calibrations and test cycles under the plan, the unit should compare repeat faults, failed aim checks and open SOTIF findings with the plan and revise it.

Frequently Asked Questions FAQ:

What should participants know before an ADAS and vehicle sensors course?

Participants should already work with vehicle electronics, diagnostics or embedded software and read basic wiring and network diagrams. No prior functional safety work is needed. Bringing anonymised calibration reports, fault logs or feature specifications helps them apply the case study to their own vehicles.

How does an ADAS and vehicle sensors course differ from an electric vehicle maintenance or computer vision course?

It concentrates on driver-assistance sensing: sensor physics, calibration, fusion, networks, AUTOSAR and the safety analysis behind each feature. Electric vehicle maintenance courses cover high-voltage isolation and batteries, and computer vision courses teach neural network training rather than vehicle integration and validation.

Why do ADAS and vehicle sensors need recalibration after a repair?

A camera or radar that moves a fraction of a degree aims its detection zone metres away from the lane ahead. Windscreen replacement, bumper work, wheel alignment and ride-height changes all shift mounting angles, so calibration restores the sensor's view before braking or steering decisions rely on it.

What do participants take back from the ADAS and vehicle sensors course?

Participants take back an ADAS Sensor Calibration and Safety Validation Plan with a sensor and feature register, calibration procedure and equipment list, hazard worksheet with ASIL results, and a validation scenario matrix that they can adapt to their own vehicle programme or service centre.