

ISO 26262:2018 Automotive Functional Safety Certification with Truck & Bus Focus



Course Duration: 5 Days - 8 Hours/day

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Seminar Content

This five-day seminar covers all 12 parts of the ISO 26262 standard to give those attending the information necessary to understand the standard, and move your organization toward conformance. ISO 26262 is the Functional Safety standard that is applied to Safety Related Systems that include electric/electronic systems installed in production passenger vehicles, trucks & busses, and motorcycles. The course combines presentations with hands-on work and is conducted in English. There is an optional ISO 26262 Certification exam at the end of the class for those wanting to demonstrate and document their knowledge.

This course combines presentations, along with in-class group exercises to put what you are learning into practice. Concepts are reinforced by a running case study of an air bag system. Forms are used to complete the exercises as a part of the integrated workshops that include Item Definition, Hazard Analysis and Risk Assessment (HARA), Safety Goals, ASIL levels, Functional Safety Concept, Technical Safety Concept, and Hardware/Software Interface.

Learning Objectives

- ✦ Tailor the necessary activities to support vehicle safety lifecycle management, development, production, operation, service, and decommissioning
- ✦ Information provided in the class can be used for ISO 26262 implementation

- ✦ Understand functional safety aspects of the entire development process including requirements specification, design, implementation, integration, verification, validation, and configuration.
- ✦ Understand the risk-based approach for determining risk classes Automotive Safety Integrity Levels (ASILs)
- ✦ Use ASILs for achieving an acceptable residual risk
- ✦ Provide requirements for validation and confirmation measures to ensure a sufficient and acceptable level of safety is being achieved

Seminar Outline

Daily Agenda (approximate, based on class discussions)

Day One

- ✦ Chapter 1: Introduction and Overview to ISO 26262
- ✦ ISO 26262 Purpose, Scope and Framework Part 1 — Definitions — T&B Focus
- ✦ Chapter 2: Management of Functional Safety (Part 2)
- ✦ Safety Culture
- ✦ Project Dependent Safety Management
- ✦ Safety Case
- ✦ Breakout Exercise 1: Safety Case Outline
- ✦ Confirmation Measures
- ✦ Chapter 3: Production and Operation (Part 7)

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- ❖ Chapter 4: Safety Element out of Context (Part 10)
- ❖ Chapter 5: Concept Phase (Part 3)
- ❖ Item Definition — T&B Application
- ❖ Breakout Exercise 2: Item Definition — T&B Application

Day Two

- ❖ Chapter 5: Concept Phase (Part 3)
- ❖ Hazard Analysis and Risk Assessment (HARA) — T&B Application
- ❖ Severity, Exposure and Controllability — T&B Application
- ❖ Safety Goals
- ❖ Breakout Exercise 3: HARA — T&B Application
- ❖ Functional Safety Requirements
- ❖ Breakout Exercise 4: Functional Safety Requirements — T&B Application
- ❖ Chapter 6: ASIL-Oriented and Safety-Oriented Analyses (Part 9)
- ❖ Example Scenario
- ❖ Safety Analyses in ISO 26262 — T&B Application

Day Three

- ❖ Chapter 7: System Level Development I (Part 4)
- ❖ Technical Safety Concept
- ❖ Hardware - Software Interface (HSI) — T&B Application
- ❖ Chapter 8: Hardware Level Development I (Part 5)

- ❖ Specification of Hardware Safety Requirements
- ❖ Hardware Design
- ❖ Evaluation of the Hardware Architectural Metrics
- ❖ Evaluation of Safety Goal Violations Due to Random Hardware Failures
- ❖ Chapter 9: Evaluation of Hardware Elements (Part 8)
- ❖ Classification of Evaluated Hardware Element
- ❖ Hardware Evaluation
- ❖ Chapter 10: Hardware Level Development II (Part 5 revisited)
- ❖ Initiation of Product Development at the Hardware Level
- ❖ Hardware Integration and Verification

Daily Agenda (approximate, based on class discussions)

Day Four

- ❖ Chapter 11: Software Level Development (Part 6)
- ❖ General Topics for Product Development at the Software Level
- ❖ Specification of Software Safety Requirements
- ❖ Software Architectural Design
- ❖ Verification by Review
- ❖ Coverage Metrics
- ❖ Software Integration Testing

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- ❖ Chapter 12: System Level Development II (Part 4 revisited)
- ❖ Item Integration and Testing
- ❖ System Integration and Testing
- ❖ Vehicle Level Integration
- ❖ Safety Validation — Motorcycle Application
- ❖ Functional Safety Assessment — Motorcycle Application
- ❖ Release to Production
- ❖ Daily Agenda (approximate, based on class discussions)

Day Five

- ❖ Chapter 13: Supporting Processes (Part 8)
 - Distributed Development
 - Specification and Management of Safety Requirements
- ❖ Configuration Management
- ❖ Change Management
- ❖ Verification
- ❖ Documentation Management System
- ❖ Qualification of Software Tools
- ❖ Qualification of Software Components
- ❖ Evaluation of Hardware Elements
- ❖ Proven in Use Argumentation
- ❖ Interfacing an Application that is Out of Scope of ISO 26262
- ❖ Integration of Safety-Related Systems not Developed According to ISO 26262

- ❖ Chapter 14: Guideline on Application of ISO 26262 to Semiconductors (Part 11)
- ❖ Chapter 15: Adaption of ISO 26262 to Motorcycles (Part 12)
- ❖ Chapter 16: ISO 26262 Implementation Strategy

Optional ISO 26262 Certification Exam – Final 3 hours of Day Five

Three Levels of Certification

Level 1

Functional Safety Engineer Provisional (FSEP)

Knowledge Requirements:

- ❖ One week of Functional Safety Training and pass the ISO 26262 Certification exam.

Prerequisites:

- ❖ At least three years of relevant professional experience, an engineering degree or work experience equivalency with degree.

Level 2

Functional Safety Engineer (FSE)

Knowledge Requirements:

- ❖ One week of Functional Safety Training and pass the ISO 26262 Certification exam.

Prerequisites:

- ❖ Submit a case study demonstrating experience in Functional Safety that can be

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verified. The case study should demonstrate a broad understanding from Safety Plan to

- ❖ Safety Case (work products).
- ❖ Interview with an Omnex Functional Safety Expert.
- ❖ At least five years of relevant industry experience.

Level 3

Functional Safety Expert (FSX)

Knowledge Requirements:

- ❖ One week of Functional Safety Training and pass the ISO 26262 Certification exam

Prerequisites:

- ❖ Submit two case studies demonstrating the ability to conduct confirmation reviews, evidence of communication and a broad understanding from Safety Plan to Safety Case.
- ❖ Interview with an Omnex Functional Safety Expert.
- ❖ At least five years of relevant industry experience.

Who Should Attend

Those involved in the design, development, and production of electrical and electronic based vehicle products, including the systems, software and hardware engineers, and managers. Basically, all those responsible for the development and implementation of hardware and software systems in motor vehicles.

Participants should be, or plan to be, actively managing, or involved in, or aware of electrical and/or electronic items, systems, or elements that are incorporated in motor vehicles. And have the abilities, education, and experience required for the above roles.

Seminar Materials

Each participant will receive a seminar manual including case studies.

Pre-Requisite

Participants should be involved in or aware of software and hardware development as it relates to the motor vehicle industry.

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