COURSE DESCRIPTION

TÜV Rheinland functional safety engineer - SIS (T245)

A four day course to learn the principles and requirements of Functional Safety according to IEC 61508 / 61511 and includes the complete safety lifecycle in the context of Safety Instrumented Systems (SIS) projects.
The aim of this course is to learn the principles and requirements of functional safety according to IEC 61508 / 61511. This includes the complete safety lifecycle in the context of Safety Instrumented Systems (SIS) projects. Course attendance is open to all interested parties. Achieving the threshold mark for the examination and meeting the prerequisites as detailed below will result in the candidate becoming a certificated TÜV Rheinland functional safety engineer.

Learning objectives
Upon completion of this course, the participants should be able to:
- Describe the principles of Functional Safety Management (FSM) and key features of IEC 61508 / 61511
- Describe the requirements of the Safety Lifecycle
- Explain and determine Safety Integrity Levels (SIL) with different methods
- Outline the key deliverables from the Safety Lifecycle, roles and responsibilities
- Describe a Safety Requirement Specification
- Appreciate the need for Safety Lifecycle processes, procedures, methods and techniques
- Explain and determine key factors used in the SIS engineering and design such as Random Hardware Failure, Architectural Constraints and Systematic Capability
- Tell the main differences between IEC 61508 Edition 1 and Edition 2

Delegate profile
This training is targeted to control, instrumentation and application engineers who will be involved in executing SIS projects covering any phase of the safety lifecycle from hazard and risk assessment, through engineering and design to operations and maintenance.

Prerequisites for TÜV Rheinland FS Engineer certificate
In accordance with the TÜV Rheinland functional safety program, to be accredited students shall have:
- A minimum of 3 years experience in the field of functional safety
- University degree or equivalent engineering experience and responsibilities as certified by employer or engineering institution

Course type
This is an instructor led course with interactive classroom discussions and practical examples of implementation of safety systems.

Course duration
The duration is 4 days consisting of 3 days of tuition with an examination on the fourth day.
## Agenda

**Day 1**

Course overview  
TÜV Rheinland functional safety program  
Background on functional safety  
Regulations and safety standards  
IEC 61508 / 61511  
Management of functional safety  
Competency management  
Safety lifecycle phases and planning  
Hazard and risk analysis  
Target SIL determination methods

**Day 2**

Management of functional safety  
HazID and SIL determination  
Safety Requirement Specification (SRS)  
SIS design and engineering

**Day 3**

SIS design and engineering  
Verification and validation  
Continuing use and improvement  
IEC 61508 Edition 2

**Day 4**

Examination

ABB reserve the right to amend the course agenda.

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**Topics covered:**

- TÜV Rheinland functional safety program  
- Background on functional safety  
- Regulations and safety standards  
- IEC 61508 / 61511  
- Management of functional safety  
- Competency management  
- Safety lifecycle phases and planning  
- Hazard and risk analysis  
- Target SIL determination methods  
- Safety Requirement Specification (SRS)  
- SIS design and development  
- Probability calculation  
- Selection of components, subsystems  
- Proven in use - aspects  
- Verification, validation, audit and assessment  
- Operations, maintenance and modifications  
- Continuous review and improvement
How to book

Please contact ABB as listed below for either attendance at any open course being planned in your region or if you would like to run a training course specific to your organisation.

For on-site training, a fixed price training proposal will be issued to you for your approval to proceed.

**ABB technical training**

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