

Functional Safety Engineer (TÜV Rheinland) – “SAFETY INSTRUMENTED SYSTEM”

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Formation



2 sessions disponibles



Certificat



Formation en ligne,
Formation présentielle



28 heures



Réalisable en ligne

Référence de la formation: FR-SIL FS SIS

Version: 27.04.2024. Vous trouverez toutes les informations actuelles sur <https://academie-fr.tuv.com/s/FR-SIL FS SIS>

At the end of this session, you will know how to interpret and apply the IEC 61508 and IEC 61511 standards in the following sectors Oil & gas, Chemicals, Pharmaceuticals, Power generation (excluding nuclear power plants).

Les objectifs

- Identify the requirements of IEC 61508 and IEC 61511.
- Interpret and apply IEC 61508 and IEC 61511 in the following sectors: Oil & gas, Chemical, Pharmaceutical, Power generation (excluding nuclear power plants).

Le public ciblé

Instrumentation", "Process" and "Safety" engineers as well as production and/or maintenance personnel involved in any of the stages of the life cycle of safety instrumented systems, from risk assessment to detection and shutdown systems in the context of fire/gas risk, from the design phases through to the test and maintenance phases.

Les prérequis

To graduate (subject to passing the exam):

- At least 3 years of exp. in functional safety,
- A university degree or engineering degree or equivalent/engineering responsibility within a company and certified as such by the employer (see "**Eligibility Requirements**" document).

Individuals who do not have the required experience may still participate in the training and take the exam.

If you pass the exam, the FS Engineer certificate (TÜV Rheinland) can be issued as soon as the 3 years of experience in the field of functional safety have been acquired.

Le contenu de la formation

It is a curriculum developed by the TÜV Rheinland Group, available in many countries. The trainers have all been qualified according to the same procedure, the teaching material is subject to a very strict validation. An internationally recognized certificate of competence can be issued by TÜV Rheinland if the candidate meets the prerequisites and passes the examination.

Content :

Day 1:

- Background of IEC 61508 and IEC 61511,
- Hazards,
- Risk and ALARP concept "As Low As Reasonably Practicable",
- Risk reduction,
- Safety Instrumented Systems (SIS) and Safety Instrumented Functions (SIF),
- Types of SIF,
- RIS Integrity Specifications,
- Fault Tree Analysis (FTA),
- Determination of the SIL level by the FTA method,
- SIL level determination by Qualitative Methods,
- SIL level determination exercises,
- "Layers of Protection Analysis - LOPA and exercises on LOPA,
- Case studies with solutions.

Day 2:

- RIS Integrity Specifications,
- Security specifications for SIS,
- Component and Subsystem Selection,

- "Proven in use, Not proven in use",
- Field Devices,
- Failures, Failure and Reliability,
- Stress modes, Probability of Failure on Demand (PFD), PFD determination exercises,
- Implementation of the SIF (weak solicitation mode),
- Importance of Testing and Maintenance,
- "Fractional Dead Times",
- SFF - Safe Failure Fraction and Hardware Fault Tolerance,
- SFF determination exercises,
- "Partial Stroke Testing,
- Measurement, Validation and Comparison,
- Data Reliability.

Day 3:

- Software Requirements,
- Bridges between hardware and software architectures,
- Specification of the requirements of an Application Software,
- Planning the Validation of Application Software,
- Application Software Architecture Requirements,
- Requirements for support tools, user manuals and language of use,
- Application Software Development Requirements,
- Application Module Testing Requirements,
- Integration of Application Software into SIS subsystems,
- FPL and LVL Software Modification Procedures,
- Verification of Application Software,
- Interaction of FIS with other technologies,
- Multiple Functions, Primary Functions, Exercises,
- Intermediate states,
- Calibration of the Risk Graph,
- Determination of the SIL level in the case of a Fire/Gas detection application,
- Deepening of the notion of Life Cycle,
- Methods of solving complex functions,
- Conclusion of the 3 days training.

Day 4 :

5-hour exam consisting of 2 parts, as follows:

- Multiple choice quiz: 70 questions (1 point per question),
- Multiple choice questionnaire: 10 questions (3 possible points per question).

The minimum grade required is 75%.

Teaching methods:

Alternating theoretical presentations, illustrations by concrete cases and exercises or practical cases.

Evaluation methods :

An examination is conducted at the end of the training. It allows, in case of success and satisfaction of the pre-requisites, to lead to the certificate "Functional Safety Engineer (TÜV Rheinland)" subject to the success of the exam and satisfaction of the pre

Informations importantes

Both the training and the exam will be conducted in English.

Face-to-face training takes place over 4 days, with the exam on the last day.

Virtual classroom training takes place over 4 days, with a 5th day for the exam only.

[More information on this and related certifications](#)

The success rate in France over the last 2 years is 94.5%.

[More information on functional security, the sectors of activity concerned and today's challenges](#)

If you are disabled, please contact us before registering by sending an email to formation@fr.tuv.com. We will do our best to meet your training needs.

Aperçu des dates et réservation

Réservez dès maintenant la date de votre choix directement en ligne sur [https://academie-fr.tuv.com/s/FR-SIL FS SIS](https://academie-fr.tuv.com/s/FR-SIL_FS_SIS) et profitez de ces avantages :

- Processus de réservation rapide
- Compte client personnel

- Réservation simultanée pour plusieurs participant(e)s.

Vous pouvez également utiliser le formulaire de commande pour commander par e-mail.