

# Nuclear Probabilistic Safety Assessment (PSA)

## **Purpose**

This course enables students to understand and apply Probabilistic Safety Assessment (PSA) techniques with particular relevance to the nuclear industry. It provides an overview of nuclear industry safety assessment guidelines and principles. Reliability theory and system modelling is covered, including event tree and fault tree analysis. Consequence modelling in the nuclear industry and typical hazard scenarios such as fire, aircraft crash, natural hazards, etc. is also discussed. The module includes application of PSA results and demonstration of ALARP.

## **At the end of the course you will be able to**

1. Deduce the PSA techniques appropriate to a real-life nuclear plant
2. Evaluate the risks associated with the operation and design of the plant
3. Identify and critically examine any additional measures that may be required to ensure that the risks are both tolerable and ALARP.

## **Outline content**

Introduction to safety assessment in the nuclear industry

Safety assessment, guidelines and principles

Reliability theory and concepts

System reliability and modelling

Fault and hazard identification, including

- Failure Modes and Effects Analysis
- Hazard and Operability Studies (HAZOP)

Frequency analysis

- Event tree analysis
- Fault tree analysis

Supporting data, including

- Reliability data
- Dependent failures
- Human factors

Consequence analysis in the nuclear industry

Hazards PSA

Application of results, including ALARP demonstration

## **Recommended prior study**

Education, skills or experience equivalent to undergraduate level

Risktec modules: *Principles of Risk Management; Hazard Identification; Fault Tree & Event Tree Analysis*

## **Who should attend**

Managers, engineers, operators, HSE advisors and risk management practitioners.

## **Delivery Methods**

Face-to-face, Distance Learning, or Blended Learning

## **Levels of Assessment**

- Attendance only
- Assessment by Risktec
- Postgraduate Qualifications: PgCert, PgDip and MSc

## **Assessment details**

Postgraduate programmes: activities and assignment (total about 80 hours)

## **Module details**

Level: Masters  
Duration: 2 days (F2F),  
8 weeks (Postgraduate DL)

## **Price**

For prices and further information, or to book a course, please contact **Vicky Billingham** at [training@risktec.tuv.com](mailto:training@risktec.tuv.com)

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