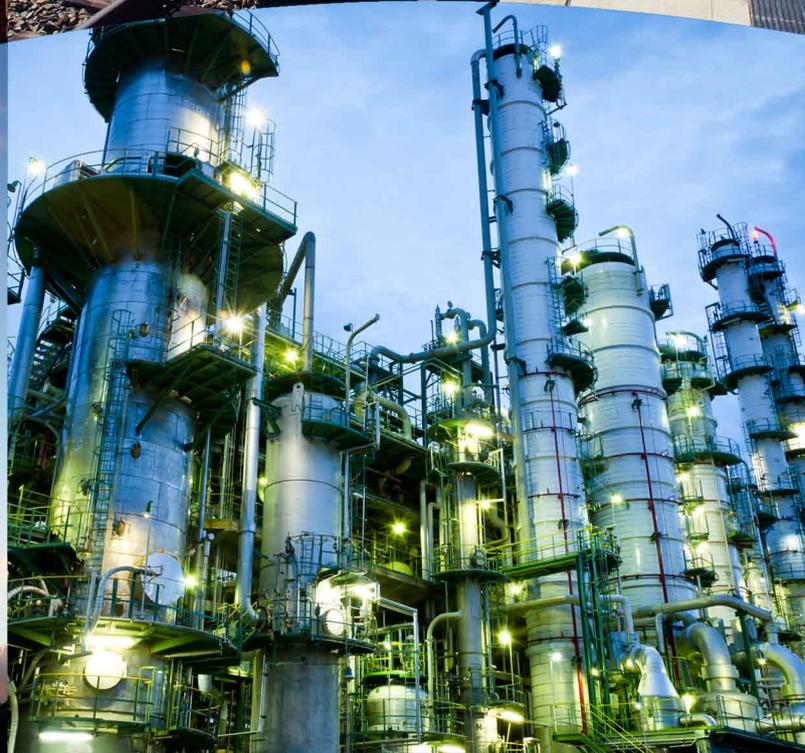




TÜVRheinland®
Risktec

TÜV Rheinland Risktec CPD
Module Catalogue



TÜV Rheinland Risktec CPDs

Module List

Bowtie Risk Management

Common Safety Method

Culture, Behaviour & Competency

Emergency Response & Crisis Management

Engineered Risk Control Systems (Oil & Gas)

Fault Tree & Event Tree Analysis

Functional Safety of Safety-Related Systems

Hazard Identification

HAZOP Study

HSE Management Systems

Human Factors in Design & Operations

Incident Investigation & Analysis

Oil & Gas and Process Industry QRA

Oil & Gas and Process Industry Risk Studies

Physical Effects Modelling

Principles of Risk Management

Rail Industry Hazards & Risks

Rail Safety Analysis

Reliability, Availability and Maintainability (RAM) Analysis

Risk Analysis

Risk Reduction & ALARP

Safety/HSE Cases

Workplace Safety

What's the purpose?

Bowtie analysis (also known as barrier diagrams) is an increasingly popular approach to help manage risk. This module introduces the bowtie methodology and examines in detail the various bowtie analysis components. The module also provides a critical review of the method's benefits, limitations and practical uses, with hands-on practice at applying the technique.

Who is this for?

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

What does it cover?

- Introduction to risk assessment and bowties
- The bowtie method
- Assuring barrier integrity
- Effectiveness and ALARP for bowties
- Benefits and practical uses of bowties
- Facilitating bowtie workshops
- Bowtie software tools

After completing the module you should be able to:

1. Analyse hazard scenarios by applying the bowtie method and designing a bowtie diagram
2. Develop integrity assurance for bowtie barriers
3. Devise risk acceptance criteria for hazards in bowties

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec modules: Principles of Risk Management; Hazard Identification.

Common Safety Method for Risk Evaluation and Assessment

What's the purpose?

The course provides an overview of the Common Safety Method for Risk Evaluation and Assessment and practical training on implementation in engineering rail projects. It provides background on approaches to the application of CSM for legal compliance. This involves studying the industry regulatory regimes and case studies applying to UK rail projects, and developing an understanding of the risk assessment process for all changes to the railway.

Who is this for?

Managers, engineers and HSE professionals as well as individuals new to the rail industry who require an overview of the industry's risks.

What does it cover?

- Introduction to Risk Management
- CSM Overview, Context and Significance Decision
- Implementation of CSM.

After completing the module you should be able to:

1. Demonstrate expertise in safety management using key terms such as "hazard", "consequence", and "risk"
2. Understand Tolerability, ALARP and compliance with EU and UK legislation
3. Evaluate the significance of a change and the interaction with Hazard Identification techniques
4. Understand the elements of the Common Safety Method Risk Evaluation and Assessment process.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Risktec CPD	15	1 day, followed by assessment	8 weeks duration
Attendance only	15	1 day	—

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.

What's the purpose?

The purpose of this module is to provide the theory and practice that underpins safety culture and related workplace behaviour, as well as managing competency. It aims to promote consideration, discussion and evaluation of the inter-connection between culture, behaviour and competency and their relative importance within the workplace. The module promotes the application of this knowledge in workplace situations and highlights the importance of the topic in the field of risk and safety management.

Who is this for?

Managers, HSE advisors and risk management practitioners.

What does it cover?

- Competency management
- Training and resourcing
- Organisational culture
- Human behaviour
- Organisational change management
- Examples of major accidents / accident causes

After completing the module you should be able to:

1. Determine and justify the elements of, and requirements for, competency management and evaluate the relationship between competency, training and resourcing
2. Critically review the importance of culture and behaviour in the workplace
3. Demonstrate how culture, behaviour and competency can be successfully managed in the workplace

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec modules: Principles of Risk Management; HSE management Systems.

What's the purpose?

The purpose of this module is to enable students to understand and apply the principles of emergency response planning and crisis management. It considers the need for emergency and crisis response planning and an integrated approach to emergency management. Emergency organisation and procedures are also studied.

Who is this for?

Managers, supervisors and HSE professionals who may be required to develop emergency or crisis response plans or exercises.

What does it cover?

- Emergency management basics
- Emergency anticipation and assessment
- Emergency prevention and mitigation
- Emergency preparations - planning, organisation, training, documentation, mutual aid, drills & exercises, etc.
- Emergency response and recovery
- Crisis management overview

After completing the module you should be able to:

1. Define the requirements and importance of Emergency and Crisis Response Management
2. Discuss aspects of integrated emergency management
3. Generate appropriate emergency and crisis response documentation

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.



What's the purpose?

This module provides an understanding of engineered risk control systems and the need for performance standards and technical integrity verification schemes. This involves exploring the concept of engineered risk control systems and the need for identifying Safety and Environmentally Critical Elements (SECEs) and performance standards. Assuring and verifying performance against the performance standards will be discussed as an integral part of technical integrity assurance throughout an asset's lifecycle.

Who is this for?

Managers, discipline engineers, operators and HSE professionals required to identify SECEs, develop performance standards and verification schemes and implement performance assurance tasks.

What does it cover?

- Introduction to ERCSSs
- Identification of ERCSSs
- Criticality ranking
- Performance standards
- Performance assurance & verification
- Performance monitoring
- Integrity throughout facility lifetime

After completing the module you should be able to:

1. Analyse process plant to logically deduce relevant Engineered Risk Control Systems (ERCSSs/SECEs)
2. Devise performance requirements/standards of ERCSSs/SECEs
3. Illustrate how ERCSSs/SECEs contribute to sustaining technical integrity over the lifetime of an asset

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.

What's the purpose?

To enable participants to understand the principles of fault and event tree analysis and to perform their own assessments. The module looks at the development of fault tree and event tree models and populating them with suitable reliability data, human errors and dependent failures. It then considers quantification of the models and how they can be used to evaluate potential improvements.

Who is this for?

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

What does it cover?

- Introduction to Fault Tree Analysis
- Fault Tree construction
- Minimal cut sets
- Basic event reliability data
- Dependent failures and human errors
- Fault Tree quantification
- Fault Tree analysis advantages & disadvantages
- Introduction to event tree analysis
- Event Tree construction and quantification
- Fault and Event Tree software

After completing the module you should be able to:

1. Consider when it is appropriate to apply fault tree analysis and event tree analysis
2. Design and analyse fault tree models incorporating appropriate reliability data for components, human error and dependent failures
3. Generate and analyse event tree models.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management

What's the purpose?

This course enables students to understand and apply the principles of functional safety to the development and assessment of safety systems, based on the IEC 61508 standard. The module illustrates the primary elements of the Safety Lifecycle and how these are applied to the development of safety systems. It also covers the assessment of safety systems to confirm that functional requirements and risk reduction targets have been achieved. Students will develop expertise in the application of the techniques necessary to specify, implement and assess safety systems to meet the requirements of IEC 61508.

Who is this for?

Electrical and mechanical engineers, operators, HSE advisors and risk management practitioners.

What does it cover?

- Introduction to functional safety – background, terminology and aims
- The Safety Lifecycle (IEC 61508 view)
- Hazard & risk analysis techniques
- SIL selection (setting targets and requirements)
- Safety requirements specification development
- SIL and the design process
- Beyond design lifecycle phases
- Compliance demonstration
- Safety/project lifecycle management

After completing the module you should be able to:

1. Define safety functions and target Safety Integrity Level (SIL) requirements which will reduce the associated risks to a tolerable level.
2. Apply the analysis methodologies to ensure that, when implemented, the safety systems achieve specified risk reduction targets.
3. Logically deduce how the level of risk reduction achieved by a safety system could be improved and when risk has been reduced to As Low As Reasonably Practicable (ALARP).

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec modules: Principles of Risk Management; Hazard Identification.

What's the purpose?

This course provides an understanding and awareness of the tools and techniques available for hazard identification, where they can be applied and what limitations may exist. Students will be introduced to the concept of HAZID, including the HAZID team and process. A range of other hazard identification techniques will also be introduced.

Who is this for?

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

What does it cover?

- Basic concepts
- Overview of hazard identification techniques:
- Hazard identification through the project lifecycle
- Failure Modes and Effects Analysis (FMEA)
- Hazard and Operability (HAZOP) studies
- HAZID/checklist approach
- HAZID versus HAZOP
- Making recommendations

After completing the module you should be able to:

1. Assess the role of hazard identification in the risk management process
2. Critically review the tools and techniques available to carry out effective hazard identification at each lifecycle stage
3. Design a fit-for-purpose hazard identification study

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.

What's the purpose?

To gain an understanding of the technique, application and limitations of the HAZOP study methodology, one of the most commonly used hazard identification methods. This module does not provide detailed HAZOP facilitator training but does cover the skills needed and the work that the facilitator must do as part of the HAZOP Study. Students will have the opportunity to practise the technique.

Who is this for?

Project Managers, Operations Managers, Process Engineers, Operators, HSE advisors and risk management practitioners.

What does it cover?

- Introduction to risk assessment
- Basic engineering terminology
- Process safety incidents – lessons learned
- HAZOP – what, when, how, guidewords and parameters, nodding, teams, roles and responsibilities
- Recording methods, software, reporting and close-out
- Overview of the LOPA technique
- Major HAZOP studies, minor modification studies
- Common failings in HAZOPs, Limitations of HAZOPs
- Leading HAZOP teams
- Other forms of HAZOP – procedures, batch operations

After completing the module you should be able to:

1. Critically review the HAZOP technique and examples of output
2. Analyse how the HAZOP technique can be applied at the different stages of a project's lifecycle such as FEED, detailed design, revalidation and decommissioning
3. Prepare for a HAZOP workshop, determine the skills and actions necessary to lead a HAZOP and how to generate a HAZOP report

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec modules: Principles of Risk Management, Hazard Identification.

What's the purpose?

A formal management system or framework can help an organisation manage Health, Safety and the Environment (HSE). The aim of this module is to deliver an understanding of what constitutes an HSE Management System (HSE MS), and how these systems are applied in different hazardous industries. Legislative requirements and international standards for an HSE MS are also discussed. The module examines issues associated with the documentation and the human elements for the successful implementation of an HSE MS.

Who is this for?

Managers, HSE advisors and risk management practitioners.

What does it cover?

- Definition of an HSE MS
- Elements of an HSE MS
- Guidance and legislation
- Implementation aspects
- Documenting and implementing the HSE MS

After completing the module you should be able to:

1. Discuss the key factors to be considered when developing an HSE MS.
2. Assess the role of HSE MSs in reducing the probability and consequences of major accidents.
3. Examine issues associated with the implementation of HSE MSs.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.

What's the purpose?

The purpose of this module is to explain how an understanding of human abilities, limitations and needs can be applied to the design and assessment of tasks, equipment, systems and processes, in order to reduce human error, improve safety and increase efficiency. It also highlights how and why human errors occur, and describes the methods, tools and techniques that can be used to identify, analyse and reduce them. Key Human Factors tools and methodologies will be demonstrated through the use of "real world" practical examples from high hazard industries.

Who is this for?

Managers, supervisors and HSE professionals.

What does it cover?

- Introduction to Human Factors
- Human Factors integration (HFI)
- Human Factors support to the design lifecycle for high hazard industries
- Defining human error
- Human error and violations
- Human Reliability Analysis (HRA)

After completing the module you should be able to:

1. Analyse the part played by individual, task and organisational factors in achieving safe and effective designs, systems and processes
2. Demonstrate how Human Factors should be integrated within a project/ design lifecycle process for high hazard industries and discuss the key Human Factors inputs and activities that are typically required.
3. Analyse the potential causes of human errors and violations and discuss the measures that can be taken to reduce them.
4. Evaluate the different techniques and approaches available for qualitative and quantitative human error identification, assessment and error reduction.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.

What's the purpose?

This course provides an awareness and understanding of incident investigation and analysis, including why we need to investigate incidents. The stages of incident investigation are discussed: immediate actions in the event of an incident; initiating the investigation; collecting, organising and analysing data; identifying corrective and preventive actions; reporting the incident and learning from it. The module involves a significant amount of practical exercises.

Who is this for?

Managers, supervisors and HSE professionals who may be called on to participate in incident investigations.

What does it cover?

- Introduction
- Immediate actions in the event of an accident
- Planning the investigation
- Collecting data
- Data organisation/analysis
- Corrective actions
- Concluding the analysis

After completing the module you should be able to:

1. Demonstrate a thorough grounding in the underlying theories behind accident cause analysis
2. Apply the investigation and analysis process to determine the sequence of events and the causes of an incident
3. Critically analyse published incident and accident reports including the recommendations.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	—

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.

What's the purpose?

The purpose of this module is to enable students to understand and apply QRA techniques with particular relevance to the oil and gas and process industries. Students will be given an opportunity to conduct QRA for example oil and gas and process facilities. The module also covers risk criteria, application of the ALARP principle, sensitivity analysis and cost benefit analysis.

Who is this for?

Managers, engineers, HSE advisors and risk management practitioners.

What does it cover?

- Introduction to QRA
- Identify release scenarios
- Frequency assessment, event trees
- Consequence modelling (including immediate and time-dependent effects)
- Risk analysis
- Non-process hazards
- Risk criteria
- Sensitivity studies
- QRA software

After completing the module you should be able to:

1. Design QRA models incorporating appropriate input data and assumptions
2. Use QRA to analyse the risk to personnel
3. Compare QRA results with criteria and use to devise and evaluate potential risk reduction measures

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level.

What's the purpose?

The course provides an introduction to and understanding of the various types of specialist risk study which may be carried out for an oil and gas or process industry facility or operation. It includes QRA (which is covered in more detail in a separate course), Escape, Evacuation and Rescue Analysis (EERA), TR Impairment Assessment (TRIA), Emergency Systems Survivability Analysis (ESSA), dropped object analysis, etc.

Who is this for?

Managers, discipline engineers and HSE and reliability professionals seeking to improve asset performance.

What does it cover?

- Introduction to risk studies
- Fire and Explosion Risk Assessment (FERA)
- Smoke and gas dispersion
- Escape, Evacuation and Rescue Analysis (EERA)
- TR Impairment Assessment (TRIA)
- Occupied Building Risk Assessment (OBRA)
- Dropped object analysis
- Emergency Systems Survivability Analysis (ESSA)
- Ship collision analysis
- Transportation risk study

After completing the module you should be able to:

1. Critically review the use of specialist risk studies in the oil, gas and process industries
2. Apply specialist risk studies to simple oil, gas and process industry operations to analyse the risks to personnel
3. Compare study results with criteria and use to devise and evaluate potential risk reduction measures

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec modules: Principles of Risk Management; Oil and Gas and Process Industry QRA.

What's the purpose?

To enable an understanding of the range of hazardous physical effects that can occur, an overview of human and equipment vulnerability to physical effects, and the uses and limitations of physical effects modelling. This includes an introduction to physical effects modelling and the opportunity for some hands-on practice of physical effects calculations.

Who is this for?

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

What does it cover?

- What are physical effects and why model them?
- Source term release and discharge calculation
- Dispersion analysis
- Fire modelling
- Explosion modelling
- Subsea releases/dispersion
- Human and plant vulnerability to physical effects
- Commercial and public domain software tools

After completing the module you should be able to:

1. Analyse an industrial plant/installation to determine expected physical effects in the event of an incident
2. Evaluate, by applying physical effects modelling techniques, how these physical effects affect people and plant
3. Justify which of the available modelling techniques/software is appropriate to analyse physical effects in different circumstances, whilst understanding the limitations of these techniques

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.

What's the purpose?

The course provides an overview of risk management in the high hazard industries. It discusses the drivers for risk management, defines some of the fundamental terminology and introduces major risk management concepts, such as risk tolerability criteria and As Low As Reasonably Practicable (ALARP). The module briefly introduces some key risk assessment techniques and the situations in which they may be used. It considers the purpose and structure of an HSE/safety case and an HSE Management System (HSE MS). The module includes case studies of some significant historical accidents and their root causes, and evaluates the importance of safety leadership and organisational culture in preventing accidents.

Who is this for?

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

What does it cover?

- Drivers for risk management
- Definitions and terminology
- Elements of the risk management process
- Demonstration of ALARP
- Example tools, techniques and studies
- The HSE case (or safety case) and HSE management system
- Leadership, culture and behaviours
- Causes of major accidents

After completing the module you should be able to:

1. Deconstruct the risk management process into its constituent components
2. Contrast key risk management terms such as “hazard”, “consequence” and “risk”
3. Evaluate the various drivers which cause organisations to manage risk
4. Demonstrate expertise in academic referencing

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level.



What's the purpose?

The course provides an overview of the typical hazards associated with railway infrastructure, rolling stock, operations and maintenance. It also provides an introduction to the concepts of risk management and an understanding of the role of risk management through the rail project lifecycle. This involves studying the different sources of risk in the rail industry, the regulatory regimes of the industry, the typical phases of a project and opportunities for risk reduction within each of the phases and the final acceptance into service.

Who is this for?

Managers, engineers and HSE professionals who need to lead or undertake risk management processes for their organisation and facilities, as well as individuals new to the rail industry who require an overview of the industry's risks.

What does it cover?

- Risk Management introduction/refresher
- Rail industry sources of risk
- Collisions between trains
- Standard Mitigations
- Regulatory regimes/requirements
- Overview of Risk Assessment Tools and Techniques used in the industry

After completing the module you should be able to:

1. Deconstruct the risk management process into its constituent components and contrast key risk management terms such as "hazard", "consequence" and "risk".
2. Evaluate the various drivers which cause railway organisations to manage risk.
3. Understand the principle sources of hazards and evaluate the risks which typically arise during rail industry projects.
4. Apply knowledge of these hazards and the available mitigations to the management of risk within rail projects.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Risktec CPD	15	1 day, followed by assessment	8 weeks duration
Attendance only	15	2 days	—

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.



What's the purpose?

The course enables students to understand and implement the requirements of formal safety assessment in the rail industry. This involves an introduction to safety and risk with an overview of safety regulations in rail engineering. Potential escalation events, human factors and safety management are discussed. Organisational responsibilities, risk criteria, risk modelling, risk reduction and decision making techniques also form part of the module.

Who is this for?

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

What does it cover?

- Introduction to safety and risk in the rail industry
- Identifying and assessing railway hazards and risks
- Potential escalation events e.g. speed, derailment
- Human factors and safety management
- Organisational responsibilities
- Risk reduction and criteria
- Novel risk modelling and decision making techniques

After completing the module you should be able to:

1. Demonstrate knowledge of the principles of risk management and its relevance to the rail industry
2. Apply techniques to evaluate risk of the rail environment from both design and operation aspects
3. Generate a quantitative and/or qualitative rail formal safety assessment

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Risktec CPD	15	1 day, followed by assessment	8 weeks duration
Attendance only	15	2 days	—

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Rail Industry Hazards and Risks.

Reliability, Availability and Maintainability (RAM) Analysis

Cross-sector

What's the purpose?

To enable students to apply appropriate RAM methodologies to projects, ensuring that RAM is included within the design and that RAM targets are met. The module also discusses the concept of critical and life-limited items and the use of reliability centred maintenance strategies to reduce maintenance costs. Finally the module considers the trade-offs between RAM and safety requirements, as well as discussing how RAM shortfalls may be addressed.

Who is this for?

Managers, discipline engineers and HSE and reliability professionals seeking to improve asset performance.

What does it cover?

- Introduction to Reliability Availability and Maintainability (RAM)
- Availability and safety – potential conflicts
- RAM planning and choice of methodology
- RAM assessment methods – deterministic
- Numerical RAM assessment techniques
- Critical and life-limited items
- Maintainability and maintainability demonstrations
- Reliability Centred Maintenance (RCM)
- Methods of improving reliability

After completing the module you should be able to:

1. Identify and apply the analysis methodologies to systems and sub-systems, including both design and operation restrictions, to determine the Availability, Reliability and Maintainability of these Systems.
2. Critically review and balance the requirements of the design for RAM and safety.
3. Logically deduce how RAM results for a system may be improved.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management

What's the purpose?

To provide a solid foundation of knowledge of risk assessment tools, with an emphasis on the concept of risk and qualitative risk assessment techniques.

Who is this for?

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

What does it cover?

- Identifying and recording hazards – registers, schedules, inventories
- The risk assessment matrix
- Risk analysis and risk reduction through project / facility lifecycle
- Significance of environmental aspects – environmental risk assessment
- Human factors in design
- Health risk assessment (HRA)
- Security risk assessment
- Business / commercial risk assessment
- Quantitative risk assessment (QRA) techniques
- Safety Integrity Level (SIL) assessment
- Layers of Protection Analysis (LOPA)
- External hazards, good practice in risk analysis

After completing the module you should be able to:

1. Logically deduce the most appropriate risk assessment tool / technique to be used, depending on circumstances
2. Apply certain risk assessment techniques
3. Critically review example risk assessments and techniques

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

If you are a corporate client and would like a customised delivery, please contact the training team to discuss your requirements.

What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec modules: Principles of Risk Management, Hazard Identification

What's the purpose?

ALARP (As Low As Reasonably Practicable) is a commonly used but often misunderstood concept. The purpose of this module is to enable students to understand the hierarchy of risk reduction measures and the options for risk reduction in the project lifecycle. Students will be introduced to the concept of ALARP, practise applying it and learn how to demonstrate that risk has been reduced to ALARP levels.

Who is this for?

Project and operational managers, engineers and HSE professionals.

What does it cover?

- Risk management summary
- Hierarchy of risk reduction measures
- Risk reduction through the project lifecycle
- The ALARP concept
- Demonstrating ALARP
- Qualitative and semi-quantitative approaches
- Cost Benefit Analysis (CBA)
- Societal risk

After completing the module you should be able to:

1. Identify different options available for risk reduction
2. Decide when risk reduction measures can best be used
3. Describe the concepts of “tolerability of risk” and “As Low As Reasonably Practicable (ALARP)”
4. Apply the ALARP concept and conduct an ALARP assessment to an appropriate level of detail

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

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What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management

What's the purpose?

The aim of this module is to explain the purpose, content and uses of a Safety/HSE Case. Particular attention is focused on the best practical approaches to address legal, industry and company requirements. The differing types of Safety/HSE case during the project lifecycle are discussed, as well as differences in approaches between industries. Links between the case, supporting studies and the management system are studied. Best practices for implementing and maintaining the case are also reviewed.

Who is this for?

Managers, supervisors and HSE practitioners seeking to gain practical insights into how to structure a Safety/HSE case.

What does it cover?

- Historical drivers
- Legal Requirements - UK, Europe, worldwide
- Company and industry body requirements
- Differing types of case by project phase (e.g. PSR, PCSR, design, operational, decommissioning)
- Safety/HSE Case structure and approach by industry
- Bridging documents
- Links between the case and supporting studies and the case and the management system
- Documentation, management and maintenance of the Safety/HSE Case
- Roll-out and implementation
- Features of a fit-for-purpose safety case

After completing the module you should be able to:

1. Critically review the reasons for having Safety/ HSE Cases and the role of the safety/HSE Case
2. Justify the contents of a safety case
3. Discuss the key factors to be considered when planning a safety case.

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Postgraduate	80	2 days, followed by assessment	8 weeks duration
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	4 weeks duration

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What prior study is recommended?

Education, skills or experience equivalent to undergraduate level.

What's the purpose?

The aim of this module is to provide an appreciation of workplace hazards, the systems for controlling them and the drivers for the need for continuous improvement in workplace safety. Task risk assessment, Permit to Work, behavioural safety systems and hazardous area classification are studied, as are personal protective equipment and management of hazardous chemicals and goods.

Who is this for?

Managers, supervisors and HSE professionals who have a responsibility for workplace safety.

What does it cover?

- Drivers for continuous improvement in workplace safety
- Workplace hazards
- Task risk assessment / job safety analysis
- Permit to work systems
- Behavioural safety systems, e.g. STOP
- Hazardous chemicals/ goods
- Personal protective equipment
- Hazardous area classification

After completing the module you should be able to:

1. Apply appropriate techniques to develop a documented workplace safety assessment
2. Consider alternative approaches to workplace safety management
3. Apply the concept of tolerability of risk and As Low As Reasonably Practicable (ALARP) to workplace hazard management

	Hours	Delivery Methods	
		Face-to-face	Distance learning
Risktec CPD	15	2 days, followed by assessment	8 weeks duration
Attendance only	15	2 days	---

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What prior study is recommended?

Education, skills or experience equivalent to undergraduate level. Risktec module: Principles of Risk Management.



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