COURSE OVERVIEW HE1287
Advanced Risk Assessment Practices

Course Title
Advanced Risk Assessment Practices

Course Date/Venue
Session 1: July 20-24, 2025/Meeting Plus 9, City Centre Rotana, Doha, Qatar
Session 2: October 12-16, 2025/Meeting Plus 9, City Centre Rotana, Doha, Qatar

Course Reference
HE1287

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date knowledge of Advanced Risk Assessment Practices. It covers the risk management principles and frameworks, hazard identification techniques (HAZID), risk assessment process and hierarchy of control and qualitative and semi-quantitative methods; and the team-based risk assessment facilitation skills, regulatory and industry standards in risk assessment and explain the advance concepts of HAZOP.

Further, the course will also discuss the failure mode and effects analysis (FMEA/FMECA), event tree analysis (ETA), and bowtie analysis and barrier management; objectives and scope of QRA, frequency analysis and data sources, consequences modeling techniques, risk contours and individual versus societal risk and human reliability analysis (HRA); and the layer protection analysis (LOPA), safety integrity level (SIL) determination, occupational health risk assessment and environmental risk assessment (ERA).

During this interactive course, participants will learn the security risk assessments, advanced risk register development and risk communication and decision-making; the cost-benefits and ALARP demonstration, integration of risk assessment and business continuity; and the lead risk reviews and the risk revalidation and risk maturity and culture in organizations.

Course Objectives

Upon the successful completion of this course, each participant will be able to: -

- Apply and gain an advanced knowledge on risk assessment practices
- Discuss risk management principles and frameworks, hazard identification techniques (HAZID), risk assessment process and hierarchy of control and qualitative and semi-quantitative methods
- Carryout team-based risk assessment facilitation skills, regulatory and industry standards in risk assessment and explain the advance concepts of HAZOP
- Discuss failure mode and effects analysis (FMEA/FMECA), event tree analysis (ETA), and bowtie analysis and barrier management
- Determine the objectives and scope of QRA, frequency analysis and data sources, consequences modeling techniques, risk contours and individual versus societal risk and human reliability analysis (HRA)
- Explain layer protection analysis (LOPA), safety integrity level (SIL) determination, occupational health risk assessment and environmental risk assessment (ERA)
- Perform security risk assessments, advanced risk register development and risk communication and decision-making
- Identify cost-benefits and ALARP demonstration, integration of risk assessment and business continuity as well as lead risk reviews and risk revalidation and explain risk maturity and culture in organizations

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of advanced risk assessment practices for risk managers, process safety engineers, HSE (health, safety and environment) professionals, technical consultants and emergency planners and response coordinators.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Haward's Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Peter Christian is an **International Expert** in **Safety**, **Health**, **Environmental** and **Quality** with over **30 years** of practical and industrial experience in **NEBOSH** International General Certificate in Occupational Health & **Safety**, **Lifting & Rigging Equipment HAZOP**, **HAZWOPER**, **HAZMAT**, **HAZCOM**, **PHA** (**Process Hazard Analysis**), **FMEA**, **HAZID**, **ISO 14001**, **OHSAS 18001**, **ISO 9001**, Process Safety Management (**PSM**), Safety, Health, Environmental & Quality Management (**SHEQ**), **Behavioral Safety Management**, **Industrial Hygiene**, **Human Factors Engineering**, **Risk Assessment**, Fire Fighting, Rope Rescue Operations, Emergency Response within process industries. He is currently the **President** of **NKWE** and spearheads the companies major projects and business ventures, where he specializes in the areas of **SHEQ** solutions, **ISO**, **Quality Control** and **OSHA systems**. Previously, he has had much on–hand experience in the initiation and management of projects (technical as well organizational development) including involvement in **design of process plants**; **the commissioning & decommissioning** of process plants; the **operational and financial responsibility** for large process operations; **risk management**; **operational and maintenance management**, **crisis and emergency management**, **accident investigation**, **risk assessment**, **hazard identification** and **emergency preparedness & response** (oil spillage and gas explosions).

Much earlier in his career, Mr. Christian was a **HAZOP Team Leader** for numerous **HAZOP** studies and he has further managed the **Health, Safety & Environmental** and **Quality** requirements of a large process company. This included responsibilities as an auditor for compliance against **SHEQ standards**, **ISO standards** and the **Fatal Risk Control Protocols**. He then facilitated the development and implementation of the above standards as a group and at site level as part of the SHEQ council. Moreover, he established, trained and led a Rope rescue team and a high level emergency care clinic and ambulance service for many years. He still abseils recreationally and leads adventure groups during abseiling activities and serves as a rescue team member for mountain and water emergencies.

During his career life, Mr. Christian has gained his practical and field experience through his various significant positions as the **Plant Manager**, **Project Metallurgist**, **Metallurgist**, **HSE Team Leader**, **SHEC Superintendent**, **Mentor**, Instructor/Trainer, Acting **Technical Manager**, **Process Plant Superintendent**, Acting **Project Leader**, Acting **Plant Superintendent**, Appointed **Health & Safety & Environmental Superintendent**, Production Technician, Acting **Senior Shiftsman**, Foreman and Learner – Official Extraction Metallurgy from various companies such as the NKWE Consulting, SAMANCOR, Middleburg Mine Services (Pty) Ltd., Koomfontein Mines, Emelo Mine Services, Gencor Group and South African Defence Force.

Mr. Christian has a **Postgraduate Studies** in **Advanced Executive Programme** and a **National Higher Diploma** (**NHD**) & a **National Diploma** in **Extraction Metallurgy**. He is also a **Certified/Registered Tutor** in **NEBOSH International General Certificate**, **Certified Auditor** in **OHSAS 18001**, **ISO 14001** & **ISO 9001**, a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), a **Six Sigma Black Belt Coach** and holds a Certificate in Facilitate Learning Using a Variety of Given Methodologies **NQF Level 5** (**EDTP-SETA**) as a **Certified Facilitator**. He has further delivered innumerable courses, trainings, workshops and conferences globally.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Risk Management Principles & Frameworks*** *ISO 31000:2018 & Its Integration in Organizations • Risk Management Process Lifecycle • Key Definitions: Hazard, Risk, Control & Residual Risk • Governance & Oversight in Enterprise Risk Management (ERM)*
0930 – 0945	*Break*
0945 – 1030	***Hazard Identification Techniques (HAZID)*** *Structured What-If Technique (SWIFT) • Brainstorming & Prompt Word Methods • Hazard Mapping & Bow-Tie Identification • Use of Historical Data & Incident Databases*
1030 – 1130	***Risk Assessment Process & Hierarchy of Control*** *Risk Matrices & Severity-Likelihood Scoring • Determining Tolerability (ALARP Concept) • Risk Prioritization & Ranking Tools • Control Hierarchy (Eliminate to PPE)*
1130 – 1215	***Introduction to Qualitative & Semi-Quantitative Methods*** *Qualitative Risk Rating versus Decision Trees • Risk Matrices Calibration & Interpretation • Semi-Quantitative Tools: Risk Graphs, LOPA Basics • Benefits & Limitations of Each Method*
1215 – 1230	*Break*

1230 – 1330	***Team-Based Risk Assessment Facilitation Skills*** *Defining Roles & Responsibilities • Managing Biases & Group Dynamics • Tools for Effective Facilitation & Recording • Handling Conflict & Driving Consensus*
1330 – 1420	***Regulatory & Industry Standards in Risk Assessment*** *OSHA PSM, CCPS, API RP 750/754 • IEC 61882 (HAZOP), IEC 61511 (SIS Lifecycle) • Corporate Risk Assessment Standards • Legal Implications of Poor Risk Assessment*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***HAZOP – Advanced Concepts*** *High-Consequence Deviation Analysis • Identifying & Analyzing Safeguards • Applying HAZOP to Batch & Non-Continuous Processes • Software Tools for HAZOP (PHAWorks, PHA-Pro)*
0830 – 0930	***Failure Mode & Effects Analysis (FMEA/FMECA)*** *Traditional versus Advanced FMEA • Risk Priority Number (RPN) & Its Limitations • Integration of Severity, Occurrence & Detectability • FMECA for Safety-Critical Equipment*
0930 – 0945	*Break*
0945 – 1100	***Event Tree Analysis (ETA)*** *Logic & Branching for Consequence Modeling • Barrier Effectiveness Integration • Probability Estimation Along Paths • Integration & QRA Outputs*
1100 – 1215	***Fault Tree Analysis (FTA)*** *Boolean Logic Gates & System Failures • Top Event Definition & Basic Events • Qualitative & Quantitative FTA • Cut-Set Analysis & Minimal Path Sets*
1215 – 1230	*Break*
1230 – 1330	***Bowtie Analysis & Barrier Management*** *Visualizing Threats, Consequences, & Barriers • Linking to Performance Standards & Assurance • Integration & Safety Cases & ALARP • Tracking Degradation & Escalation Factors*
1330 – 1420	***Scenario-Based Risk Assessment Workshops*** *Building Realistic Risk Scenarios (Fire, Explosion, Toxic Release) • Human Factors in Scenario Planning • Multidisciplinary Team Collaboration • Report Writing & Documentation*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***QRA Overview & Applications*** *Objectives & Scope of QRA • Steps in a QRA (From Data Collection to Results) • Applications in Facility Siting & Licensing • Limitations & Assumptions*
0830 – 0930	***Frequency Analysis & Data Sources*** *Use of Generic versus Site-Specific Failure Data • Historical Incident Databases (OREDA, TNO, EI) • Failure Rate Modeling: Weibull, Exponential, Lognormal • Sensitivity Analysis in Frequency Estimates*
0930 – 0945	*Break*
0945 – 1100	***Consequence Modeling Techniques*** *Dispersion Modeling (Toxic Gas, Smoke, Vapor Clouds) • Fire & Explosion Modeling (Jet Fire, Pool Fire, BLEVE, VCE) • Thermal Radiation & Overpressure Calculations • Use of Software Tools (PHAST, ALOHA, FLACS Overview)*
1100 – 1215	***Risk Contours & Individual versus Societal Risk*** *FN Curves & Their Interpretation • Iso-Risk Contours & Land Use Planning • Risk Acceptability Criteria & Benchmarking • Presentation of QRA Results to Stakeholders*
1215 – 1230	*Break*
1230 – 1330	***Human Reliability Analysis (HRA)*** *Human Error Classifications (Slips, Lapses, Mistakes) • THERP & HEART Methods • Influence of Fatigue, Workload & Design on Error Rates • Integrating HRA into Overall Risk Profiles*
1330 – 1420	***QRA Case Study Workshop*** *Building a QRA Input Data Sheet • Selecting Scenarios for Analysis • Risk Calculation Walkthrough • Result Interpretation & Reporting*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Layer of Protection Analysis (LOPA)*** *IPLs (Independent Protection Layers) Definition & Criteria • Initiating Events & Consequence Selection • Risk Gap Analysis & SIL Implications • LOPA Worksheets & Examples*
0830 – 0930	***Safety Integrity Level (SIL) Determination*** *IEC 61508 & IEC 61511 Principles • Risk Graph & LOPA-Based SIL Allocation • SIL Verification & Lifecycle Management • Impact on SIS Design & Operation*
0930 – 0945	*Break*
0945 – 1100	***Occupational Health Risk Assessments*** *Exposure Risk Assessment for Chemical, Physical, Biological Hazards • Monitoring & Exposure Control Measures • Industrial Hygiene Metrics (TLVs, PELs) • Control Banding Approaches*
1100 – 1215	***Environmental Risk Assessment (ERA)*** *Source-Pathway-Receptor Models • Ecotoxicity, Air Dispersion, Groundwater Contamination • Environmental Receptors & Vulnerability • Environmental Impact Matrices*
1215 – 1230	*Break*

1230 – 1330	***Security Risk Assessments*** *Threat, Vulnerability, & Consequence Models • Facility Protection Levels (Physical, Cyber, Procedural) • Security Layers & Access Controls • Integration & HSE Risk Registers*
1330 – 1420	***Advanced Risk Register Development*** *Bowtie-Based Risk Register Structuring • Prioritization Algorithms & Heat Maps • Tracking Actions & Control Effectiveness • Integration & Audit & Compliance Systems*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Risk Communication & Decision-Making*** *Tailoring Messages for Different Stakeholders • Visualizing Risk: Dashboards, Matrices, & Plots • Techniques for Influencing Risk-Based Decisions • Building Trust Through Transparent Communication*
0830 – 0930	***Cost-Benefit & ALARP Demonstration*** *Cost of Risk versus Cost of Control • ALARP Triangle & Demonstration Techniques • Societal versus Individual Risk Trade-Offs • Tools for Cost-Effectiveness Evaluation*
0930 – 0945	*Break*
0945 – 1030	***Integration of Risk Assessment & Business Continuity*** *Risk-Based Business Impact Analysis • Continuity & Recovery Plans Linkage • Black Swan & Systemic Risks • Enhancing Organizational Resilience*
1030 – 1130	***Leading Risk Reviews & Risk Revalidation*** *Periodic Review Schedules & Triggers • Management of Change (MOC) Integration • Effective Facilitation of Revalidation Workshops • Auditing Risk Management System*
1130 – 1230	***Risk Maturity & Culture in Organizations*** *Measuring Risk Culture Maturity • Role of Leadership in Risk Behavior • Embedding Risk Ownership & Accountability • Cultural Change Strategies*
1230 – 1245	*Break*
1245 – 1345	***Capstone Risk Assessment Project*** *Team-Based Advanced Case Study • Conduct Qualitative/Quantitative Risk Analysis • Present Risk Reduction Strategies • Course Review & Feedback*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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