COURSE OVERVIEW LE0433-3D
FMEA Risk Management

Course Title
FMEA Risk Management

Course Date/Venue
October 25-27, 2026/Meeting Room 6,
Courtyard by Marriott, Baku, Azerbaijan

Course Reference
LE0433-3D

Course Duration/Credits
Three days/1.8 CEUs/18 PDHs

Course Description

This highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using the "MS Excel" application.

This course is designed to provide participants with a detailed and up-to-date overview of Laboratory FMEA Risk Management. It covers the purpose, principles and benefits of FMEA; the relationship between failures, hazards, risks, and consequences; the types and applications of FMEA, establishing FMEA scope and building an effective FMEA team; the laboratory processes, functions and FMEA and ISO/IEC 17025 risk-based thinking; the identification of potential failure modes and analysis of failure effects; the failure causes, existing prevention and detection controls; the severity, occurrence and detection ratings; the risk priority number, risk prioritization, root-cause analysis within FMEA and practical root-cause analysis techniques; developing corrective and preventive actions; and the CAPA management and effectiveness verification.

During this interactive course, participants will learn the risk treatment hierarchy, reassessment, residual risk evaluation and FMEA for laboratory equipment; integrating maintenance and reliability practices, equipment criticality and reliability analysis; the supplier, procurement and inventory risk FMEA; the FMEA software tools and digital documentation; the LIMS, data-integrity risk analysis, risk monitoring and key risk indicators; the FMEA review, lifecycle management and FMEA and management of change; and the FMEA for continuous improvement.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an in-depth knowledge on laboratory FMEA risk management
- Discuss the purpose, principles and benefits of FMEA and the relationship between failures, hazards, risks and consequences
- Identify the types and applications of FMEA, establish FMEA scope and build an effective FMEA team
- Recognize laboratory processes and functions and apply FMEA and ISO/IEC 17025 risk-based thinking, identification of potential failure modes and analysis of failure effects
- Identify failure causes, existing prevention and detection controls including severity, occurrence and detection ratings
- Carryout risk priority number and risk prioritization, root-cause analysis within FMEA and practical root-cause analysis techniques
- Develop corrective and preventive actions and apply CAPA management and effectiveness verification
- Employ risk treatment hierarchy, reassessment and residual risk evaluation and FMEA for laboratory equipment
- Integrate maintenance and reliability practices and apply equipment criticality and reliability analysis
- Carryout supplier, procurement and inventory risk FMEA as well as FMEA software tools and digital documentation
- Apply LIMS and data-integrity risk analysis including risk monitoring and key risk indicators
- Implement FMEA review and lifecycle management, FMEA and management of change and FMEA for continuous improvement

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 laboratory FMEA risk management for laboratory managers and supervisors, laboratory analysts and technicians, quality assurance and quality control (QA/QC) professionals, laboratory quality and compliance specialists, process and analytical chemists, HSE and risk management professionals, maintenance and equipment reliability personnel, technical and operations managers, internal auditors and laboratory accreditation professionals, professionals responsible for identifying, assessing and controlling risks in laboratory processes and activities.

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 **1.8 CEUs** (Continuing Education Units) or **18 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:

Dr. Tony Dimitry, PhD, MSc, BSc, is a **Senior Mechanical Maintenance Engineer** with over **30 years** of industrial experience within the **Petroleum**, **Oil & Gas**, **Petrochemical**, **Nuclear & Power** industries. His expertise covers Revising **Laboratory FMEA Risk Management**, **Laboratory Risk Management**, Laboratory Processes & Functions, Failure **Analysis Methodologies**, Machinery Root Cause Failure Analysis (**RCFA**), **Preventive Maintenance** & **Condition Monitoring**, Reliability Centred Maintenance (**RCM**), Risk Based Inspection (**RBI**), Root Cause Analysis (**RCA**), **Planning & Managing Plant Turnaround**, **Scheduling Maintenance**, **Data Archive Maintenance**, **Master Milestone Schedule** (**MMS**), Piping & Mechanical **Vibration Analysis**, Preventive & Predictive Maintenance (**PPM**) **Maintenance**, Condition Based Monitoring (**CBM**), Risk Based Assessment (**RBA**), Planning & Preventive Maintenance, **Maintenance** Management (**Preventive**, **Predictive**, **Breakdown**), **Reliability** Management, Rotating Equipment, Scheduling & Cost Control, **Maximo** Foundation, **Maximo** Managing Work, **Asset Management Best Practices**, **Resource Management**, **Inventory Set-up & Management**, **Work Management**, Automatic & Work Flows & Escalations, **Vibration Analysis**, **Heat Exchanger**, **Siemens**, **Gas & Steam Turbine Maintenance**, **Pumps & Compressors**, **Turbo-Expanders**, **Fractional Columns**, **Boilers**, **Cryogenic Pumps** for **LNG**, **Electromechanical Maintenance**, **Machinery Alignment**, **Lubrication Technology**, **Bearing & Rotary Machine**, **Blower & Fan**, **Shaft Repair**, **Safety Relief Valves**, **Pipelines**, **Piping**, **Pressure Vessels**, **Process Equipment**, **Diesel Engine & Crane Maintenance**, **Tanks & Tank Farms**, **Pneumatic System**, **Static Equipment**, **FMEA**, **Corrosion**, **Metallurgy**, **Thermal** and **Electrical Modelling** of **Battery Problems** Reading **Engineering Drawings**, **Process & Project Drawings**, **Engineering Drawings** Interpretation, **Piping Layouts & Isometrics**, **P&ID** Reading & Interpretation, Glass Reinforced Epoxy (**GRE**), Glass Reinforced Pipes (**GRP**), Glass Reinforced Vent (**GRV**), **Mechanical Pipe Fittings**, **Flange Joint Assembly**, Adhesive Bond Lamination, **Butt Jointing**, **Joint & Spool Production**, **Isometric Drawings**, **Flange Assembly** Method, **Fabrication & Jointing**, Jointing & Spool Fabrication, **Pipe Cuttings**, **Flange Bolt Tightening** Sequence, **Hydro Testing**. He is also well-versed in various simulators such as i-**Learn Vibration**, **AutoCAD**, **Word Access**, **Aspen One**, **Fortran**, **VB**, **C ANSYS**, **ABAQUS**, **DYNA3D**, **Ceasar**, **Caepipe**, **MS Project**, **Primavera**, **MS Excel**, **Maximo**, **Automation Studio** and **SAP**. Currently, he is the **Maintenance Manager** of the PPC Incorporation wherein he is responsible for the maintenance and upgrading of all **Power Station** components.

During his career life, Dr. Dimitry held a significant positions such as the **Operations Engineers**, **Technical Trainer**, **HSE Contracts Engineer**, **Boilers Section Engineer**, **Senior Engineer**, **Trainee Mechanical Engineer**, **Engineer**, **Turbines Section Head**, **Professor**, **Lecturer/Instructor** and **Teaching Assistant** from various multinational companies like **Chloride Silent Power Ltd.**, **Technical University of Crete**, **National Nuclear Corporation**, **UMIST Aliveri Power Station** and **HFO Fired Power Station**.

Dr. Dimitry has **PhD**, **Master** and **Bachelor** degrees in **Mechanical Engineering** from the **Victory University of Manchester** and the **University of Newcastle**, **UK** respectively. Further, he is a **Certified Instructor/Trainer,** a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an associate member of the American Society of Mechanical Engineers (**ASME**) and Institution of Mechanical Engineers (**IMechE**). He has further delivered various trainings, seminars, courses, workshops and conferences internationally.

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.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

Accommodation

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

Course Fee

US$ 3,750 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

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

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Day 1: ***Sunday, 25th of October 2026***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction to FMEA Risk Management*** *Purpose, Principles and Benefits of FMEA • Relationship Between Failures, Hazards, Risks and Consequences • Preventive versus Reactive Risk-Management Approaches • Applications in Petrochemical Plants and Quality Laboratories*

0900 – 0930	***Types & Applications of FMEA*** *System FMEA for Interconnected Laboratory and Plant Systems • Design FMEA for Equipment, Instruments and Facilities • Process FMEA for Testing and Operational Workflows • Equipment FMEA for Reliability and Maintenance Planning*
0930 – 0945	*Break*
0945 – 1030	***Establishing the FMEA Scope*** *Defining the Process, Equipment and System Boundaries • Establishing FMEA Objectives and Expected Outputs • Identifying Assumptions, Limitations and Interfaces • Preparing the FMEA Scope and Planning Worksheet*
1030 – 1100	***Building an Effective FMEA Team*** *Selecting Multidisciplinary FMEA Team Members • Defining the Roles of Team Leader, Facilitator, and Specialists • Incorporating Laboratory, Maintenance, Quality, and HSE Expertise • Conducting Effective FMEA Workshops and Review Meetings*
1100 – 1130	***Understanding Laboratory Processes & Functions*** *Mapping Sample Receipt, Preparation, Testing and Reporting • Defining the Intended Function of Each Process Step • Identifying Equipment, Personnel, Material and Environmental Interfaces • Recognizing Critical Quality and Operational Requirements*
1130 – 1200	***FMEA & ISO/IEC 17025 Risk-Based Thinking*** *Risk and Opportunity Requirements Under ISO/IEC 17025 • Protecting the Validity and Reliability of Laboratory Results • Addressing Impartiality, Competence and Operational Risks • Integrating FMEA Into the Laboratory Management System*
1200 – 1230	***Identification of Potential Failure Modes*** *Techniques for Identifying Credible Failure Modes • Equipment, Method, Material, Human and Software Failures • Failure Modes Affecting Laboratory Result Accuracy and Reliability • Developing Clear and Specific Failure-Mode Statements*
1230 – 1245	*Break*
1245 – 1315	***Analysis of Failure Effects*** *Identifying Local, Intermediate, and End Effects • Evaluating Effects on Product Quality and Laboratory Operations • Assessing Safety, Environmental, Regulatory, and Business Impacts • Linking Failure Effects to Customer and Stakeholder Requirements*
1315 – 1345	***Identification of Failure Causes*** *Distinguishing Failure Modes, Effects, Causes and Mechanisms • Equipment Deterioration, Calibration, Contamination and Handling Causes • Human Factors, Procedural Weaknesses and Competency Gaps • Supplier, Chemical, Consumable, Utility and Environmental Causes*
1345 – 1420	***Existing Prevention & Detection Controls*** *Reviewing Procedures, Inspections and Preventive Controls • Evaluating Calibration, Quality-Control and Verification Activities • Assessing Alarms, Interlocks, Duplicate Testing and Data Checks • Determining the Effectiveness and Limitations of Existing Controls*
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	*End of Day One*

Day 2: **Monday, 26th of October 2026**

0730 – 0815	***Severity, Occurrence & Detection Ratings*** *Developing Appropriate Rating Scales and Criteria • Assigning Severity Ratings Based on Failure Consequences • Estimating Occurrence Using Historical and Operational Evidence • Assessing Detection Capability Before the Failure Reaches the User*
0815 - 0900	***Risk Priority Number & Risk Prioritization*** *Calculating RPN Using Severity, Occurrence and Detection • Establishing Risk Acceptance and Escalation Criteria • Understanding the Limitations of RPN-Based Prioritization • Using Criticality and Action Priority Alongside RPN*
0900 – 0930	***Root-Cause Analysis within FMEA*** *Differentiating Symptoms, Immediate Causes and Root Causes • Using Evidence to Validate Suspected Failure Causes • Linking Root-Cause Analysis Results to the FMEA Worksheet • Avoiding Assumptions and Weak Causal Statements*
0930 – 0945	*Break*
0945 – 1030	***Practical Root-Cause Analysis Techniques*** *Applying the Five Whys Technique • Developing Cause-and-Effect or Fishbone Diagrams • Using Fault-Tree and Logic-Based Analysis • Applying Pareto Analysis to Recurring Laboratory Failures*
1030 – 1100	***Developing Corrective & Preventive Actions*** *Distinguishing Correction, Corrective Action and Preventive Action • Eliminating or Controlling Identified Failure Causes • Strengthening Prevention and Detection Controls • Assigning Action Owners, Deadlines, and Required Resources*
1100 – 1145	***CAPA Management & Effectiveness Verification*** *Initiating CAPA from FMEA Findings • Prioritizing CAPA Based on Risk and Criticality • Defining Measurable CAPA Effectiveness Criteria • Closing, Documenting and Periodically Reviewing CAPA Actions*
1145 – 1230	***Risk Treatment Hierarchy*** *Eliminating Failure Opportunities Through Process Redesign • Reducing Occurrence through Prevention and Standardization • Improving Detection Through Monitoring and Verification • Accepting, Transferring, or Escalating Residual Risks*
1230 – 1245	*Break*
1245 – 1315	***Reassessment & Residual Risk Evaluation*** *Re-Rating Severity, Occurrence and Detection After Actions • Calculating and Interpreting Revised RPN Values • Assessing Residual and Newly Introduced Risks • Obtaining Approval and Acceptance of Remaining Risks*
1315 – 1345	***FMEA for Laboratory Equipment*** *Identifying Critical Laboratory Equipment and Instruments • Analysing Mechanical, Electrical, Electronic and Software Failures • Assessing Calibration, Measurement and Data-Integrity Failures • Prioritizing Equipment Risks Based on Operational Impact*

1345 – 1420	***Integration with Maintenance & Reliability Practices*** *Linking FMEA Findings to Preventive Maintenance Programmes • Developing Condition-Based and Predictive Maintenance Actions • Optimizing Inspection, Calibration and Maintenance Intervals • Using Failure History to Improve Equipment Reliability*
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	*End of Day Two*

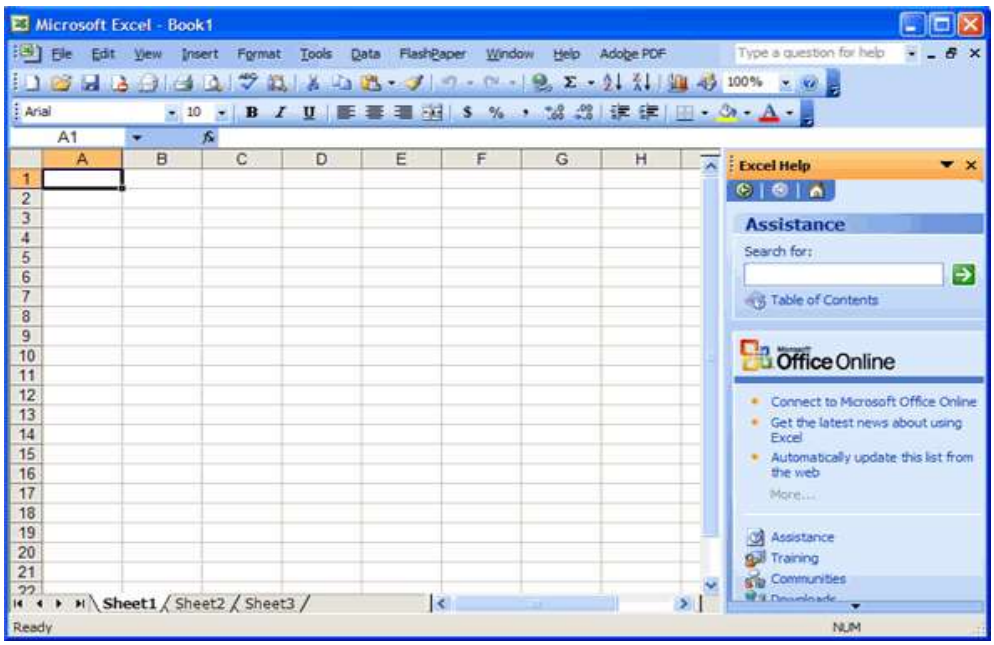
Day 3: ***Tuesday, 27th of October 2026***

0730 – 0815	***Equipment Criticality & Reliability Analysis*** *Establishing Equipment Criticality Criteria • Evaluating Availability, Maintainability and Operational Consequences • Understanding MTBF, MTTR and Recurring-Failure Indicators • Prioritizing Spare Parts and Standby-Equipment Requirements*
0815 - 0900	***Supplier, Procurement & Inventory Risk FMEA*** *Evaluating Suppliers of Equipment, Chemicals and Services • Identifying Procurement, Delivery, Quality and Obsolescence Failures • Assessing Chemical, Consumable and Critical Spare-Parts Risks • Integrating FMEA Results into Supplier Performance Monitoring*
0900 – 0930	***FMEA Software Tools & Digital Documentation*** *Comparing Spreadsheet-Based and Dedicated FMEA Applications • Structuring Electronic FMEA Worksheets and Risk Registers • Managing Version Control, Approvals, Traceability and Access • Selecting Software Features Appropriate to Laboratory Operations*
0930 – 0945	*Break*
0945 – 1030	***LIMS & Data-Integrity Risk Analysis*** *Identifying LIMS Interface, Configuration and Access Failures • Assessing Data Entry, Calculation, Transfer and Reporting Risks • Managing Audit Trails, Electronic Records and Backup Controls • Linking FMEA Actions with Digital Laboratory Workflows*
1030 – 1100	***Risk Monitoring & Key Risk Indicators*** *Defining Measurable Risk and Performance Indicators • Monitoring Failure Trends, Recurrence and Control Effectiveness • Establishing Risk Thresholds and Escalation Requirements • Developing Laboratory Risk Dashboards and Reports*
1100 – 1145	***FMEA Review & Lifecycle Management*** *Determining Scheduled and Event-Driven Review Frequencies • Updating FMEA After Incidents, Changes and Audit Findings • Managing New Equipment, Methods, Chemicals and Suppliers • Maintaining FMEA as a Controlled and Living Document*
1145 – 1230	***FMEA & Management of Change*** *Applying FMEA Before Implementing Operational Changes • Evaluating Risks from Equipment and Method Modifications • Assessing Temporary Changes and Emergency Arrangements • Verifying Post-Implementation Control Effectiveness*
1215 – 1230	*Break*

1230 – 1300	***FMEA for Continuous Improvement*** *Using FMEA Results to Identify Improvement Opportunities • Integrating FMEA With PDCA, Lean and Quality Improvement • Capturing Lessons Learned and Preventing Failure Recurrence • Communicating Improvements Across Laboratory and Plant Functions`*
1300 – 1315	***Practical Laboratory FMEA Workshop*** *Mapping a Selected Laboratory Process • Identifying Process Functions, Failure Modes, Effects and Causes • Assigning Ratings and Calculating RPN Values • Developing Prioritized Controls and CAPA Recommendations*
1315 – 1345	***Equipment FMEA Case Study*** *Conducting an FMEA for Critical Laboratory Equipment • Evaluating Maintenance, Calibration and Reliability Controls • Presenting Team Findings and Defending Risk Priorities*
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	*End of Course*

Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using "MS-Excel" application.



MS-Excel

Course Coordinator

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