COURSE OVERVIEW HE1412
Introduction to Safety Data Analysis

Course Title
Introduction to Safety Data Analysis

Course Reference
HE1412

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

Course Date/Venue

Session (s)	Date	Venue
1	September 06-10, 2026	Misk Meeting Room, Novotel Jeddah Tahlia Street, Jaddah, KSA
2	September 13-17, 2026	
3	September 27-October 01, 2026	
4	November 22-26, 2026	

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 overview of Introduction to Safety Data Analysis. It covers the importance of safety data, types of safety data, roles in risk management, regulatory and organizational context; the safety metrics and KPIs, data sources in safety management and data collection methods; the data quality and integrity, data analysis tools and data cleaning techniques; the data structuring and organization, exploratory data analysis (EDA) and descriptive statistics; and the data visualization basics, safety data classification and probability concepts in safety.

During this interactive course, participants will learn the trend analysis, correlation and relationships, root cause analysis techniques, risk analysis methods, benchmarking and comparison; the predictive safety analytics, regression analysis basics, incident trend forecasting and human factors analysis; the safety performance dashboards, data integration, safety reporting techniques, data-driven decision making and tailoring communication to audience; storytelling with data, visual communication strategies and how to overcome resistance; the continuous improvement in safety and OSHA; and the international standards, regulatory reporting requirements, audit readiness and documentation practices.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain a fundamental knowledge on safety data analysis
- Discuss the importance of safety data, types of safety data, roles in risk management, regulatory and organizational context
- Recognize safety metrics and KPIs, data sources in safety management and data collection methods
- Carryout data quality and integrity, data analysis tools and data cleaning techniques
- Apply data structuring and organization, exploratory data analysis (EDA) and descriptive statistics
- Employ data visualization basics, safety data classification and probability concepts in safety
- Carryout trend analysis, correlation and relationships, root cause analysis techniques, risk analysis methods and benchmarking and comparison
- Apply predictive safety analytics, regression analysis basics, incident trend forecasting and human factors analysis
- Carryout safety performance dashboards, data integration, safety reporting techniques and data-driven decision making
- Tailor communication to audience, apply storytelling with data and visual communication strategies and overcome resistance
- Implement continuous improvement in safety and review OSHA and international standards, regulatory reporting requirements, audit readiness and documentation practices

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 safety data analysis for HSE engineers and advisors, safety supervisors and inspectors, risk and compliance officers, health and safety officers, operations and maintenance personnel, quality assurance and control staff, incident investigation team members and other technical staff.

Course Fee

US$ 7,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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:

Sessions 1&2: Mr. Mohamed Bayoumy

Mr. Mohamed Bayoumy, NEBOSH-IGC, NASP, ILM is a **Senior Fire & HSE Consultant** with over **25 years** of extensive experience within the **Oil**, **Gas**, **Petrochemical** and **Refinery** industries. He is a **NEBOSH Approved Instructor** and his expertise widely include in the areas of **NEBOSH** International General Certificate in Occupational Health and Safety (IG), **Incident Investigation** & **Reporting**, **Occupational Safety & Security**, **Incident Investigation** & **Reporting**, **Certified Environment Impact Assessment**, Certified Occupational Health, Safety & **Industrial Hygiene**, **Environmental Impact** Assessment, **International Basic Scaffolder Program**, **Fire Fighting** Techniques, **Fire Officer** Responsibilities, **Fire Fighter** Rescue Missions, **Fire Protection** Methods, **Fire Safety & Fire Risk**, Advanced **Fire Fighting Techniques**, **Active** & **Positive Fire Fighting**, **Fire & Gas Detection** Systems, **Fire Fighting** Systems & **Fire Proofing**, **Risk** Management, **Fire System Integrity Assurance**, **Fire** Prevention & Safety, , **Fire Fighting & Rescue** Operations, **Emergency Response** Management, **Safety Audit & Hazards** Identification, **OHSAS 18001: 2007** Occupational Health and Safety Introduction, **Safety Hazards Handling** Management, **Slinging, Lifting**, **Scaffolding & Ladder** Safety, **Rigging & Crane** Operation, **Lifting Supervision**, **Working at Heights**, **Scaffolding** Supervision, **Safety Management** System, **Contamination Control**, Lean Six Sigma, **EMS 14001, ISO 45001**, Rigging & Crane, Basic Life Support, **Personal Protective Equipment**, **Machinery & Work Equipment, Manual Handling**, **Accident Incident Reporting & Investigation**, Cause Tree Analysis (**CTA**), Fault Tree Analysis (**FTA**), **HSE** Emergency Planning, Crisis Management, **HSSE** Practices, **Emergency Response** Plans and **Emergency** Preparedness.

During Mr. Mohamed's career life, he held significant position and dedication such as the **Health**, **Safety & Environmental Director**, **HSE Manager**, **Senior Safety Officer**, **HSE Engineer**, **Safety Supervisor** and **Safety Officer** for various companies like the Al Darwish Engineering, Doosan Heavy Industries and Construction, SATCO, STS Electro/Mechanical, Al Habtoor Engineering Enterprises, Dolphin Energy, United Engineers, Contrack Company, Hyundai for Engineering & Construction, C.C.C JV ORASCOM, BSIX-ORASCOM JV Company, Campenon Bernard SGE Company just to name a few.

Mr. Mohamed has an **International Diploma Level VI** in **Safety & Health** from the **National Association of Safety Professionals**, **UK**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), an **Approved Tutor** in **NEBOSH** International General Certificate in Occupational Health & Safety (IG), a **Certified ISO 45001 Lead Auditor** and a **Certified ISO 9001 Internal Auditor**. He has further delivered numerous courses, trainings, conferences, workshops and seminars globally.

Sessions 3&4: Mr. Andrew Ladwig

Mr. Andrew Ladwig is a **Senior Process & Safety Engineer** with over **25 years** of extensive experience within the **Oil & Gas**, **Refinery**, **Petrochemical & Power** industries. His expertise widely covers in the areas of **Accident/Incident Investigation**, **PHA**, **HAZOP**, **HAZCOM**, **HAZMAT**, **HAZID**, **Behavior Based Safety**, **Hazardous Materials & Chemicals** Handling, **Pollution Control**, **Environment, Health & Safety** Management, **Process Risk** Analysis, **Hazard & Risk Assessment**, **Emergency Response Procedures** Behavioural Based Safety (**BBS**), **Confined Space Entry**, **Fall Protection**, **Emergency Response**, H_2S, Safety Management System (**ISO 45001**), **Risk Assessment**, **SCE FMEA Failure Investigations**, Site Management Safety Training (**SMSTS**), **Occupational Health & Safety and Industrial Hygiene, Crisis Management & Damage Control** in Oil & Gas Industry, **Enhancing HSSE Safety Performance & Effectiveness**, **Overhead & Gantry Crane Safety**, **HSSE Principles & Practices Advanced**, **HAZOP** Study, Sampling & Analysis, **Training** Analysis, **Job Analysis** Techniques, Storage & Handling of **Toxic Chemicals & Hazardous Materials**, **Hazardous Material** Classification & Storage/Disposal, **Dangerous Goods**, Environmental Management System (**EMS**). Further, he is also well-versed in **Ammonia Manufacturing & Process Troubleshooting**, **Ammonia Storage & Loading** Systems, **Ammonia Plant** Operation, Troubleshooting & Optimization, **Ammonia Recovery**, **Ammonia Plant Safety**, Hazard of **Ammonia Handling**, Storage & Shipping, **Operational Excellence** in **Ammonia Plants**, **Fertilizer Storage** Management (Ammonia & Urea), **Fertilizer Manufacturing** Process Technology, **Sulphur Recovery**, Phenol Recovery & Extraction, **Wax Sweating & Blending**, **Petrochemical & Fertilizer** Plants, **Nitrogen Fertilizer** Production, **Petroleum Industry Process** Engineering, **Separators** in **Oil & Gas** Industry, **Gas Testing & Energy** Isolations, Gas Liquor Separation, **Industrial Liquid Mixing**, **Wax Bleachers**, **Extractors**, **Fractionation**, Operation & Control of **Distillation**, Process of **Crude ATM & Vacuum Distillation** Unit, **Water Purification**, **Steam & Electricity**, **Flame Arrestors** and **Coal Processing**, **Environmental Emission Control**.

During his career life, Mr. Ladwig has gained his practical experience through his various significant positions and dedication as the **Mechanical Engineer**, **Project Engineer**, **Reliability & Maintenance Engineer**, **Maintenance Support Engineer**, **Process Engineer**, **HSE Supervisor**, **Warehouse Manager**, **Quality Manager**, **Business Analyst**, **Senior Process Controller**, **Process Controller**, **Safety Officer**, **Mechanical Technician**, **Senior Lecturer** and **Senior Consultant/Trainer** for various companies such as the Sasol Ltd., Sasol Wax, Sasol Synfuels, just to name a few.

Mr. Ladwig has a **Bachelor's** degree in **Chemical Engineering** and a **Diploma** in **Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and has delivered various trainings, workshops, seminars, courses 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 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:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Safety Data*** *Definition and Importance of Safety Data • Types of Safety Data (Incident, Audit, Observation) • Role in Risk Management • Regulatory and Organizational Context*
0930 – 0945	*Break*
0945 – 1030	***Safety Metrics & KPIs*** *Leading versus Lagging Indicators • Common KPIs (TRIR, LTIFR, Near-Miss Rates) • Measuring Safety Performance • Limitations of Traditional Metrics*
1030 – 1130	***Data Sources in Safety Management*** *Incident Reports and Logs • Safety Audits and Inspections • Sensor and IoT Data • Employee Reporting Systems*
1130 – 1215	***Data Collection Methods*** *Manual versus Automated Data Collection • Designing Effective Reporting Forms • Data Validation at Entry Point • Common Collection Errors*

1215 – 1230	*Break*
1230 – 1330	***Data Quality & Integrity*** *Accuracy, Completeness, Consistency • Data Cleaning Basics • Handling Missing Data • Ensuring Reliability*
1330 – 1420	***Basics of Data Analysis Tools*** *Overview of Excel and Spreadsheets • Introduction to Databases • Basic Statistical Tools • Visualization Platforms Overview*
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	***Data Cleaning Techniques*** *Identifying Duplicates • Handling Missing Values • Standardizing Formats • Error Detection Methods*
0830 – 0930	***Data Structuring & Organization*** *Tabular Data Structures • Data Normalization Basics • Coding and Categorization • Metadata Importance*
0930 – 0945	*Break*
0945 – 1100	***Exploratory Data Analysis (EDA)*** *Purpose of EDA • Identifying Patterns and Trends • Outlier Detection • Initial Insights Generation*
1100 – 1215	***Descriptive Statistics*** *Mean, Median, Mode • Variance and Standard Deviation • Frequency Distributions • Percentiles and Quartiles*
1215 – 1230	*Break*
1230 – 1330	***Data Visualization Basics*** *Types of Charts (Bar, Line, Pie) • Selecting Appropriate Visuals • Visual Storytelling Principles • Common Visualization Mistakes*
1330 – 1420	***Safety Data Classification*** *Incident Severity Levels • Risk Categories • Root Cause Categories • Industry Classification Standards*
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	***Probability Concepts in Safety*** *Basic Probability Principles • Event Likelihood Estimation • Conditional Probability • Risk Probability Interpretation*
0830 – 0930	***Trend Analysis*** *Time Series Data Basics • Identifying Trends and Seasonality • Moving Averages • Trend Forecasting Basics*

0930 – 0945	*Break*
0945 – 1100	***Correlation & Relationships*** *Correlation versus Causation • Scatter Plot Analysis • Correlation Coefficients • Misinterpretation Risks*
1100 – 1215	***Root Cause Analysis Techniques*** *5 Whys Method • Fishbone (Ishikawa) Diagram • Fault Tree Analysis • Barrier Analysis*
1215 – 1230	*Break*
1230 – 1330	***Risk Analysis Methods*** *Risk Matrices • Likelihood versus Consequence • Risk Scoring Systems • Prioritization Techniques*
1330 – 1420	***Benchmarking & Comparison*** *Internal Benchmarking • Industry Benchmarking • Performance Gap Analysis • Continuous Improvement Insights*
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	***Predictive Safety Analytics*** *Introduction to Predictive Models • Identifying Leading Indicators • Predicting Incidents • Limitations of Prediction*
0830 – 0930	***Regression Analysis Basics*** *Linear Regression Concepts • Independent versus Dependent Variables • Model Interpretation • Practical Safety Examples*
0930 – 0945	*Break*
0945 – 1100	***Incident Trend Forecasting*** *Forecasting Methods • Seasonal Trend Analysis • Scenario-Based Forecasting • Risk Anticipation*
1100 – 1215	***Human Factors Analysis*** *Behavioral Safety Data • Human Error Classification • Fatigue and Performance Data • Organizational Culture Impact*
1215 – 1230	*Break*
1230 – 1330	***Safety Performance Dashboards*** *Designing Dashboards • KPI Visualization • Real-Time Monitoring • User-Focused Design*
1330 – 1420	***Data Integration*** *Combining Multiple Data Sources • Data Pipelines Basics • Interoperability Challenges • Data Governance Principles*
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	***Safety Reporting Techniques*** *Writing Effective Reports • Structuring Findings • Visual Reporting • Executive Summaries*
0830 – 0930	***Data-Driven Decision Making*** *Translating Data into Action • Prioritizing Interventions • Cost-Benefit Analysis • Decision Frameworks*
0930 – 0945	*Break*
0945 – 1100	***Communicating Safety Insights*** *Tailoring Communication to Audience • Storytelling with Data • Visual Communication Strategies • Overcoming Resistance*
1100 – 1230	***Continuous Improvement in Safety*** *PDCA Cycle (Plan-Do-Check-Act) • Monitoring Improvements • Feedback Loops • Lessons Learned Systems*
1230 – 1245	*Break*
1245 – 1345	***Compliance & Standards*** *OSHA and International Standards • Regulatory Reporting Requirements • Audit Readiness • Documentation Practices*
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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