COURSE OVERVIEW HE0406
Data Analysis of Environment, Health, Safety and Security Systems (EHSS)

Course Title
Data Analysis of Environment, Health, Safety and Security Systems (EHSS)

Course Reference
HE0406

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

Course Date/Venue

Session(s)	Date	Venue
1	April 13-17, 2025	Crowne Meeting Room, Crowne Plaza Al Khobar, KSA
2	July 06-10, 2025	Meeting Plus 9, City Centre Rotana, Doha Qatar
3	October 13-17, 2025	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	December 14-18, 2025	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Description

This practical and highly-interactive course includes real-life case studies 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 Data Analysis of Environment, Health, Safety and Security Systems (EHSS). It covers the importance of data-driven decision-making in EHSS including the key challenges in EHSS data collection and analysis; the regulatory and compliance requirements for EHSS data and EHSS reporting frameworks; the data collection in EHSS systems, data cleaning and preparation for EHSS analysis; the data analysis (EDA) in EHSS systems and key performance indicators (KPIs) in EHSS; and the EHSS data management platforms, spreadsheets and databases for EHSS data storage.

Further, the course will also discuss the integration of data from multiple EHSS sources; the data governance and security considerations; the types of environmental data and regulatory requirements for environmental data reporting; the data analysis of air quality and emissions, water quality and wastewater data analysis, waste management and hazardous materials data analysis; and the sustainability and carbon footprint analysis and environmental risk assessment using data analytics.

During this interactive course, participants will learn the sustainability and carbon footprint analysis and environmental risk assessment using data analytics; the ergonomic and human factors data analysis, behavioral safety and leading indicators analysis and predictive analytics for safety performance improvement; the security threat identification and data analysis, surveillance data and physical security analytics and cybersecurity and IT security data analysis; the emergency preparedness and crisis data management, insider threats and fraud detection using data analytics and integrating EHSS risk management and decision support systems; the machine learning and AI in EHSS analytics, big data and EHSS analytics, data visualization and dashboarding in EHSS and EHSS data-driven decision making; the emerging technologies in EHSS analytics and predictive and prescriptive analytics in EHSS; and the blockchain for EHSS data security and transparency and preparing for the future of EHSS analytics.

Course Objectives

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

- Apply and gain an in-depth knowledge on data analysis of environment, health, safety and security systems (EHSS)
- Discuss the importance of data-driven decision-making in EHSS including the key challenges in EHSS data collection and analysis
- Recognize regulatory and compliance requirements for EHSS data and EHSS reporting frameworks
- Carryout data collection in EHSS systems and data cleaning and preparation for EHSS analysis
- Apply exploratory data analysis (EDA) in EHSS systems and key performance indicators (KPIs) in EHSS
- Identify EHSS data management platforms and use spreadsheets and databases for EHSS data storage
- Integrate data from multiple EHSS sources and discuss data governance and security considerations
- Identify the types of environmental data and regulatory requirements for environmental data reporting
- Apply data analysis of air quality and emissions, water quality and wastewater data analysis, waste management and hazardous materials data analysis
- Carryout sustainability and carbon footprint analysis and environmental risk assessment using data analytics
- Employ incident and accident data analysis, occupational health data analysis, safety inspections and audit data
- Apply ergonomic and human factors data analysis, behavioral safety and leading indicators analysis and predictive analytics for safety performance improvement
- Employ security threat identification and data analysis, surveillance data and physical security analytics and cybersecurity and IT security data analysis
- Carryout emergency preparedness and crisis data management, identify insider threats and fraud detection using data analytics and integrate EHSS risk management and decision support systems

- Apply machine learning and AI in EHSS Analytics, big data and EHSS analytics, data visualization and dashboarding in EHSS and EHSS data-driven decision making
- Discuss the emerging technologies in EHSS analytics, apply predictive and prescriptive analytics in EHSS, identify blockchain for EHSS data security and transparency and prepare for the future of EHSS analytics

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 data analysis of environment, health, safety and security systems (EHSS) for EHSS professionals and practitioners, data and analytics professionals in EHSS, compliance and regulatory officers, operations and management professionals, researchers and academics and those who involved in managing EHSS data and decision-making.

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.

Accommodation

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

Course Fee

Doha	**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.
Dubai Al Khobar Abu Dhabi	**US$ 5,500** 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

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**. 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.

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 EHSS Data Analytics*** *Importance of Data-Driven Decision-Making in EHSS • Key Challenges in EHSS Data Collection and Analysis • Regulatory and Compliance Requirements for EHSS Data • Overview of EHSS Reporting Frameworks (ISO 14001, ISO 45001, OSHA, etc.)*
0930 – 0945	*Break*
0945 – 1030	***Data Collection in EHSS Systems*** *Sources of EHSS Data (Incidents, Inspections, Audits, Environmental Monitoring) • Data Collection Methods (Manual, Automated, IoT Sensors, Mobile Apps) • Ensuring Data Accuracy and Integrity • Common Errors and Biases in EHSS Data Collection*
1030 – 1130	***Data Cleaning & Preparation for EHSS Analysis*** *Identifying Missing or Inconsistent Data • Methods for Data Standardization and Normalization • Handling Outliers and Data Anomalies • Data Validation Techniques for EHSS Systems*
1130 – 1215	***Exploratory Data Analysis (EDA) in EHSS Systems*** *Understanding Patterns and Trends in EHSS Data • Descriptive Statistics (Mean, Median, Mode, Standard Deviation) • Data Visualization Techniques (Histograms, Scatter Plots, Bar Charts) • Identifying Key Insights from EHSS Datasets*
1215 – 1230	*Break*
1230 – 1330	***Key Performance Indicators (KPIs) in EHSS*** *Defining Relevant EHSS KPIs • Leading versus Lagging Indicators in EHSS • Benchmarking EHSS Performance Against Industry Standards • Reporting and Dashboarding EHSS KPIs*
1330 – 1420	***Basics of EHSS Data Management Tools*** *Overview of EHSS Data Management Platforms (SAP EHS, Enablon, Cority, etc.) • Using Spreadsheets and Databases for EHSS Data Storage • Integrating Data from Multiple EHSS Sources • Data Governance and Security Considerations*
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	***Understanding Environmental Monitoring Data*** *Types of Environmental Data (Air, Water, Soil, Waste, Emissions) • Regulatory Requirements for Environmental Data Reporting • Continuous versus Discrete Environmental Data Monitoring • Sources of Environmental Pollution Data*
0830 – 0930	***Data Analysis of Air Quality & Emissions*** *Air Quality Indices and Emission Monitoring Standards • Techniques for Analyzing Air Pollution Trends • Predictive Modeling for Emissions Control • Case Studies on Air Quality Data Analysis*
0930 – 0945	*Break*
0945 – 1100	***Water Quality & Wastewater Data Analysis*** *Key Water Quality Parameters (pH, TDS, BOD, COD, etc.) • Water Pollution Sources and Treatment Effectiveness Analysis • Statistical Techniques for Analyzing Water Quality Data • Using GIS and Remote Sensing for Water Quality Monitoring*
1100 – 1215	***Waste Management & Hazardous Materials Data Analysis*** *Tracking Hazardous Waste Generation and Disposal • Life Cycle Analysis of Waste Streams • Predictive Analytics for Waste Reduction Strategies • Environmental Impact Assessments Using Data*
1215 – 1230	*Break*
1230 – 1330	***Sustainability & Carbon Footprint Analysis*** *Measuring Greenhouse Gas (GHG) Emissions • Carbon Accounting and Carbon Footprint Calculation • Strategies for Improving Energy Efficiency • Reporting Sustainability Performance to Stakeholders*
1330 – 1420	***Environmental Risk Assessment Using Data Analytics*** *Identifying Environmental Risk Factors • Probability and Impact Analysis of Environmental Hazards • Geographic Information Systems (GIS) for Environmental Risk Mapping • Case Study on Environmental Risk Data Analysis*
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	***Incident & Accident Data Analysis*** *Identifying Common Causes of Workplace Incidents • Root Cause Analysis and Failure Mode Effect Analysis (FMEA) • Time-Series Analysis of Incident Frequency • Predictive Modeling for Accident Prevention*
0830 – 0930	***Occupational Health Data Analysis*** *Monitoring Workplace Exposure to Hazardous Substances • Analyzing Occupational Illness Trends • Correlating Work Conditions with Health Outcomes • Case Study: Data-Driven Occupational Health Interventions*
0930 – 0945	*Break*
0945 – 1100	***Safety Inspections & Audit Data*** *Designing Data-Driven Safety Audits • Analyzing Safety Inspection Results • Tracking Compliance with Safety Standards • Using Mobile Technology for Real-Time Safety Audits*

1100 – 1215	***Ergonomic & Human Factors Data Analysis*** *Identifying Ergonomic Risk Factors in the Workplace • Using Wearable Technology to Track Ergonomic Stress • Data-Driven Improvements for Workplace Design • Case Study: Reducing Musculoskeletal Disorders through Analytics*
1215 – 1230	*Break*
1230 – 1330	***Behavioral Safety & Leading Indicators Analysis*** *Measuring and Analyzing Employee Safety Behavior • Using Machine Learning for Safety Behavior Prediction • Developing a Proactive Safety Culture Through Analytics • Case Study: Leading Indicators for Accident Prevention*
1330 – 1420	***Predictive Analytics for Safety Performance Improvement*** *Identifying High-Risk Work Environments • Forecasting Workplace Accidents Using AI and ML • Developing Data-Driven Safety Intervention Programs • Case Study: Predictive Safety Analytics Implementation*
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	***Security Threat Identification & Data Analysis*** *Understanding Security Risks in Industrial and Corporate Environments • Data-Driven Threat Assessment Methodologies • Incident Reporting and Trend Analysis • Case Study: Analyzing Security Breaches*
0830 – 0930	***Surveillance Data & Physical Security Analytics*** *Leveraging AI for Video Surveillance Analytics • Analyzing Access Control and Entry-Exit Data • Identifying Security Breaches through Anomaly Detection • Case Study: Enhancing Security with Data Analytics*
0930 – 0945	*Break*
0945 – 1100	***Cybersecurity & IT Security Data Analysis*** *Monitoring and Analyzing Cybersecurity Threats • Data Breaches and Attack Pattern Recognition • Using Big Data for Cybersecurity Threat Detection • Case Study: Cybersecurity Incident Response with Data*
1100 – 1215	***Emergency Preparedness & Crisis Data Management*** *Data-Driven Emergency Response Planning • Analyzing Past Emergency Response Effectiveness • Predicting Future Security Risks Using Simulations • Case Study: Crisis Management and Data-Driven Decision-Making*
1215 – 1230	*Break*
1230 – 1330	***Insider Threats & Fraud Detection Using Data Analytics*** *Identifying Suspicious Patterns in Employee Behavior • Data Forensic Techniques for Fraud Detection • Predicting Insider Threats Using Behavioral Analytics • Case Study: Insider Threat Analysis in EHSS*
1330 – 1420	***Integrated EHSS Risk Management & Decision Support Systems*** *Building an Integrated EHSS Risk Assessment Model • Real-Time Monitoring of EHSS Risks • Decision-Making Frameworks Based on Data Analytics • Case Study: Implementing an EHSS Risk Management Dashboard*
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	***Machine Learning & AI in EHSS Analytics*** *Introduction to AI Applications in EHSS • Using Predictive Analytics for EHSS Decision-Making • Automating Risk Assessments with Machine Learning • Case Study: AI-Driven EHSS Analytics*
0830 – 0930	***Big Data & EHSS Analytics*** *Challenges of Big Data in EHSS • Integrating IoT and Real-Time Data in EHSS Analysis • Cloud Computing and Data Storage Considerations • Case Study: Big Data Applications in EHSS*
0930 – 0945	*Break*
0945 – 1100	***Data Visualization & Dashboarding in EHSS*** *Designing Interactive Dashboards for EHSS Reporting • Using Power BI and Tableau for EHSS Data Analysis • Creating Automated EHSS Performance Reports • Hands-On Session: Building a Safety Performance Dashboard*
1100 – 1215	***EHSS Data-Driven Decision-Making*** *Data-Driven Policy and Strategy Formulation • Communicating EHSS Insights to Stakeholders • Ethical Considerations in EHSS Data Usage • Case Study: Improving EHSS Strategy Using Data Insights*
1215 – 1230	*Break*
1230 – 1345	***Future Trends in EHSS Data Analytics*** *Emerging Technologies in EHSS Analytics • Predictive and Prescriptive Analytics in EHSS • Blockchain for EHSS Data Security and Transparency • Preparing for the Future of EHSS Analytics*
1330 – 1345	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about t Topics that were Covered During the Course*
1345 – 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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