



COURSE OVERVIEW GE0039 **Data Analysis & Tools**

Course Title

Data Analysis & Tools

Course Date/Venue

August 18-22, 2025/Glasshouse Meeting Room,
Grand Millennium Al Wahda Hotel, Abu Dhabi,
UAE

Course Reference

GE0039

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 overview of Data Analysis. It covers the role of data in operations and production; the data collection techniques, central tendency and variability; visualizing data using histograms, boxplots and scatterplots; the importance of data cleaning, handling missing values and detecting and managing outliers; the right tool for the task using Excel, R, Python and other analytical tools; the relationship of correlation and causation between variables; and the simple linear regression and multiple regression.

During this interactive course, participants will learn the time series analysis, quality control and statistical process control (SPC) and experimental designing and analysis of variance (ANOVA); the non-parametric statistics and inventory management analysis and supply chain analytics; the demand forecasting, optimization techniques and Lean and Six Sigma analytics; the KPIs for operational excellence and operational metrics for decision making; the machine learning basics and predictive maintenance, production scheduling with data, risk management and scenario analysis; the operational and production reporting and data driven decision making; the advanced topics like Big Data and IoT in production; and the future trends in data analysis for production.



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
- Identify the role of data in operations and production including the types of data
- Carryout data collection techniques covering surveys, sensors, ERP systems and manual logging and ensure data quality at the source
- Measures central tendency and variability as well as visualize data using histograms, boxplots and scatterplots
- Recognize the importance of data cleaning, identify and handle missing values and detect and manage outliers
- Select the right tool for the task using Excel, R, Python and other analytical tools
- Explain the relationship of correlation and causation between variables and interpret correlation coefficients
- Carryout simple linear regression and multiple regression, assess model fit and make predictions
- Apply time series analysis, quality control and statistical process control (SPC) and experimental design and analysis of variance (ANOVA)
- Recognize non-parametric statistics and apply inventory management analysis and supply chain analytics
- Carryout demand forecasting, optimization techniques and Lean and Six Sigma analytics
- Design KPIs for operational excellence and visualize operational metrics for decision making
- Identify machine learning basics and apply predictive maintenance, production scheduling with data, risk management and scenario analysis
- Use data to guide production decision and enhance efficiency with automated recommendations
- Carryout data visualization, operational and production reporting and data driven decision making
- Discuss advanced topics like Big Data and IoT in production and recognize the future trends in data analysis for production

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 for business analysts, data analysts, financial analysts, data scientists, researchers, healthcare professionals and IT specialists.

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. Sydney Thoresson, PE, BSc, is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of extensive experience within the **Petrochemical, Utilities, Oil, Gas and Power** industries. His specialization highly evolves in **Hazardous Area Classification, Intrinsic Safety, Liquid & Gas Flowmetering, Custody Measurement, Ultrasonic Flowmetering, Loss Control, Gas Measurement, Process Control Instrumentation, Compressor Control & Protection, Control Systems, Programmable Logic Controllers (PLC), SCADA, Distributed Control Systems (DCS)** especially in **Honeywell DCS, H&B DCS, Modicon, Siemens, Telemecanique, Wonderware and Adrioit**. Moreover, he has vast experience in the field of **Safety Instrumented Systems (SIS), Safety Integrity Level (SIL), Emergency Shutdown (ESD), Flowmetering & Custody Measurement, Multiphase Flowmetering, Measurement and Control, Mass Measuring System Batching (Philips), Arc Furnace Automation-Ferro Alloys, Walking Beam Furnace, Blast Furnace, Billet Casting Station, Cement Kiln Automation, Factory Automation and Quality Assurance Accreditation (ISO 9000 and Standard BS 5750)**.

During Mr. Thoresson's career life, he has gained his thorough and practical experience through various challenging positions such as a **Project Manager, Contracts Manager, Managing Director, Technical Director, Divisional Manager, Plant Automation Engineer, Senior Consulting Engineer, Senior Systems Engineer, Consulting Engineer, Service Engineer and Section Leader** from several international companies such as **Philips, FEDMIS, AEG, DAVY International, BOSCH Instrumentation and Control, Billiton, Endress/Hauser, Petronet, Iscor, Spoornet, Eskom and Afrox**.

Mr. Thoresson is a **Registered Professional Engineering Technologist** and has a **National Higher Diploma (NHD) & a National Diploma in Radio Engineering** from the **Witwatersrand Technikon**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, an active member of the **International Society of Automation (ISA)** and the **Society for Automation, Instrumentation, Measurement and Control (SAIMC)**.

Accommodation

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

Course Fee

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.

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 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: Monday, 18th of August 2025

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	The Role of Data in Operations & Production Why Data Matters: Efficiency, Productivity & Insights • Historical Perspective & Current Trends
0930 – 0945	Break
0945 – 1030	Understanding Types of Data Continuous versus Categorical Data • Time Series, Cross-Sectional & Panel Data
1030 – 1130	Data Collection Techniques Surveys, Sensors, ERP systems & Manual Logging • Ensuring Data Quality at The Source
1130 – 1215	Introduction to Descriptive Statistics Measures of Central Tendency & Variability • Visualizing Data: Histograms, Boxplots & Scatterplots
1215 – 1230	Break
1230 – 1330	Importance of Data Cleaning Identifying & Handling Missing Values • Outliers: Detection & Management
1330 – 1420	Software Tools Overview Introduction to Excel, R, Python & Other Analytical Tools • Selecting the Right Tool for the Task
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: Tuesday, 19th of August 2025

0730 – 0830	Correlation & Causation Understanding Relationships Between Variables • Correlation Coefficients & their Interpretation
0830 – 0930	Regression Analysis Simple Linear Regression & Multiple Regression • Assessing Model Fit & Making Predictions

0930 – 0945	Break
0945 – 1100	Time Series Analysis Components of a Time Series: Trend, Seasonality, Noise • Forecasting Techniques such as ARIMA
1100 – 1215	Quality Control & Statistical Process Control (SPC) Control Charts & their Application in Production • Process Capability Analysis
1215 – 1230	Break
1230 – 1330	Experimental Design & Analysis of Variance (ANOVA) Designing Controlled Experiments • Analyzing the Impact of Factors on Production Outcomes
1330 – 1420	Non-parametric Statistics Situations Where Normal Distribution Assumptions Don't Hold • Rank-Based Tests & their Applications
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: Wednesday, 20th of August 2025

0730 – 0830	Inventory Management Analysis Economic Order Quantity (EOQ) • Safety Stock Calculations & Reorder Points
0830 – 0930	Supply Chain Analytics Tracking & Optimizing the Supply Chain • Vendor Performance Analysis
0930 – 0945	Break
0945 – 1100	Demand Forecasting Qualitative & Quantitative Forecasting Methods • Accuracy Assessment & Forecast Adjustments
1100 – 1215	Optimization Techniques Linear Programming & Integer Programming • Application in Production Scheduling & Resource Allocation
1215 – 1230	Break
1230 – 1330	Lean & Six Sigma Analytics Root Cause Analysis • Data-Driven Waste Elimination
1330 – 1420	Operational KPIs & Dashboards Designing KPIs for Operational Excellence • Visualizing Operational Metrics for Decision-Making
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: Thursday, 21st of August 2025

0730 – 0830	Machine Learning Basics Supervised versus Unsupervised Learning • Common Algorithms: Regression, Classification, Clustering
0830 – 0930	Predictive Maintenance Using Data to Predict Equipment Failures • Scheduling Maintenance to Minimize Downtime

0930 – 0945	<i>Break</i>
0945 – 1100	Simulation in Operations <i>Monte Carlo Simulations • Benefits of Simulating Operational Scenarios</i>
1100 – 1215	Production Scheduling with Data <i>Data-Driven Approaches to Efficient Scheduling • Addressing Constraints & Bottlenecks</i>
1215 – 1230	<i>Break</i>
1230 – 1330	Risk Management & Scenario Analysis <i>Quantifying Operational Risks • Planning for Various Production Scenarios</i>
1330 – 1420	Recommendation Systems in Production <i>Using Data to Guide Production Decisions • Enhancing Efficiency with Automated Recommendations</i>
1420 – 1430	Recap <i>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</i>
1430	<i>Lunch & End of Day Four</i>

Day 5: Friday, 22nd of August 2025

0730 – 0830	Data Visualization Principles <i>Importance of Clear, Impactful Visualizations • Tools & Techniques: Tableau, Power BI, etc.</i>
0830 – 0930	Operational & Production Reporting <i>Structuring Reports for Clarity & Impact • Automating Reporting Processes</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Data-Driven Decision Making <i>Building a Data Culture in Operations & Production • Enhancing Collaboration Between Data Analysts & Operations Teams</i>
1100 – 1230	Advanced Topics: Big Data & IoT in Production <i>Harnessing Large Datasets for Insights • Leveraging IoT Sensors for Real-Time Data Collection</i>
1230 – 1245	<i>Break</i>
1245 – 1345	Future Trends in Data Analysis for Production <i>Predictive Trends in the Industry • Preparing for the Future of Data-Driven Production</i>
1345 – 1400	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>



Practical Sessions

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



Course Coordinator

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