COURSE OVERVIEW GE0039
Data Analysis

Course Title
Data Analysis

Course Date/Venue
Session 1: January 26-30, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar
Session 2: July 20-24, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar

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

Certificates are accredited by the following international accreditation organizations: -

- 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.

- 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.

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 Eric Horne, MBA, PMP, NHDPM, NDOWS, T3 (Mech), is a **Senior Project Manager & Statistics Expert** with over **35 years** of extensive experience. His expertise lies extensively in the areas of **Projects**, **Contracts**, **Operations**, **Quality Control**, **Production**, **Finance** and **Supply Chain** Management. Further, Mr. Horne was exposed to **Data Analysis Techniques**, **Sampling and Sampling Distributions**, **Linear Regression & Correlation Analysis**, **Time Series Analysis**, **Graphical Representation**, **Interpretation of Data**, **Measures of Dispersion**, **Hypothesis Testing**, **Warehouse** & **Logistics** Management, **Data & Record** Management, Managerial **Economics**, **Marketing** Management, **Value Engineering**, **Change** Management, **Communication** Management, **Planning**, **Budgeting** & **Cost Control**, **Re-Engineering**, **Risk** Management, **Production Planning** & **Control**, and Service Level Agreements (**SLA**). He is also well-versed in Business Law, Labour Law, Strategy Formulation, Resource Allocation, Continuous Improvement and Productivity Improvement. He is currently the **Project & Training Manager** of **BHP Billiton** wherein he is responsible for the complete project life cycle including **initiating**, **planning**, **executing**, **monitoring & controlling** and **closing** as well as developing and presenting of various trainings within their organization.

Mr. Horne has worked for many blue chip companies such as **BHP Billiton**, **Eskom**, **Telecast Engineering**, **Adcorp**, **3M** and many more wherein he gained technical and broad experience in all facets of well-renowned large companies in various industries. His work started on the shop floor as a Work Study Officer, **Industrial Engineer**, Senior Work Study Officer, **Lecturer**, **Project Engineer** and rising up to managerial positions like **Project Manager**, **Contracts Manager**, **Marketing Manager**, **National Marketing & Training Manager**, **Change Manager**, **Regional Manager** and **Project & Training Manager**.

Mr. Horne has a **Master** degree in **Business Administration**, a **Higher National Diploma** in **Production Management** and a **National Diploma** in **Organisation** & **Work Study**. Further, he is a **Certified Instructor/Trainer**, a **Certified T3** in **Mechanical Engineering**, a **Certified PMI Risk Management Professional** (**PMI-RMP**), a **Certified Project Manager Professional** (**PMP**), a **Qualified Assessor** at **SETA** and a **Certified Trainer/Assessor** by the **Institute of Leadership & Management** (**ILM**). He has further delivered numerous trainings, courses, workshops and conferences worldwide.

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

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.

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	***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

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

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

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	*Break*
0945 – 1100	***Simulation in Operations*** *Monte Carlo Simulations • Benefits of Simulating Operational Scenarios*
1100 – 1215	***Production Scheduling with Data*** *Data-Driven Approaches to Efficient Scheduling • Addressing Constraints & Bottlenecks*
1215 – 1230	*Break*
1230 – 1330	***Risk Management & Scenario Analysis*** *Quantifying Operational Risks • Planning for Various Production Scenarios*
1330 – 1420	***Recommendation Systems in Production*** *Using Data to Guide Production Decisions • Enhancing Efficiency with Automated Recommendations*
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	***Data Visualization Principles*** *Importance of Clear, Impactful Visualizations • Tools & Techniques: Tableau, Power BI, etc.*
0830 – 0930	***Operational & Production Reporting*** *Structuring Reports for Clarity & Impact • Automating Reporting Processes*
0930 – 0945	*Break*
0945 – 1100	***Data-Driven Decision Making*** *Building a Data Culture in Operations & Production • Enhancing Collaboration Between Data Analysts & Operations Teams*
1100 – 1230	***Advanced Topics: Big Data & IoT in Production*** *Harnessing Large Datasets for Insights • Leveraging IoT Sensors for Real-Time Data Collection*
1230 – 1245	*Break*
1245 – 1345	***Future Trends in Data Analysis for Production*** *Predictive Trends in the Industry • Preparing for the Future of Data-Driven Production*
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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