

COURSE OVERVIEW GE0039
Data Analysis

Course Title
 Data Analysis

Course Date/Venue
 Session 1: August 11-15, 2024/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
 Session 2: November 03-07, 2024/SAS Meeting Room, Holiday Inn Muscat al Seeb, an IHG Hotel, Muscat, Oman



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, sample video clips of the instructor’s actual lectures & practical sessions during the course 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: -

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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.

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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:



Dr. John Petrus, PhD, MSc, BSc, is a **Senior Engineer** with over **30 years of onshore & offshore** experience within the **Oil & Gas, Refinery and Petroleum** industries. His wide experience covers in the areas of **Data Analysis Techniques, Technical Report Writing, Design Engineering, Detailed Engineering Drawings, Piping & Process Equipment, Basis of Engineering & Design Data (BEDD), FEED & Basic Engineering, Pressure Design of Piping, Piping & Pipeline Codes, Piping & Instrumentation Diagrams (P&ID), P&ID**

Reading, Engineering Drawings, Codes & Standards, Interpretation & Developing, Drawing Interpretation, Piping System, Water Movement, Water Filtering, Mud Pumping, Sludge Treatment and Drying, Certified Environmental Manager (CEM), Advanced Analytics in Oil & Gas, Business Intelligence Data Analytics, Audit Analytics & Computer-Assisted Audit Techniques (CAATs), Basic Database Concepts & Data Formats, Data Analysis Cycle & Best Practices, Data Importing & Integrity Verification, Advanced Analytics Tools in Auditing, Leveraging AI & Machine Learning in Audits, Data Mining Techniques for Auditors, Data Analytics for Managerial Decision Making, Business Process Analysis, Mapping & Modeling, Research Methods & Analysis, Statistical Data Needs Analysis, Oil & Gas Industry Business Environment & Competitive Intelligence Gathering & Analysis, Petroleum Economics & Risk Analysis, Certified Data Analysis, Risk Management & SWIFT Analysis, Best Practices Management System (BPMS), GIS System Management, Database Management, Strategic Planning, Best Practices and Workflow, Quality Management, Project Management and Risk Assessment & Uncertainty Evaluation. Further, he is also well-versed in **seismic interpretation, mapping & reservoir modelling tools** like **Petrel** software, **LandMark, Seisworks, Geoframe, Zmap** and has extensive knowledge in **MSDos, Unix, AutoCAD, MAP, Overlay, Quicksurf, 3DStudio, Esri ArcGIS, Visual Lisp, Fortran-77 and Clipper.** Moreover, he is a world **expert in analysis and modelling of fractured prospects and reservoirs** and a **specialist and developer of fracture modelling software tools** such as **FPDM, FMX and DMX** Protocols.

During his career life, Dr. Petrus held significant positions and dedication as the **Executive Director, Senior Geoscience Advisor, Exploration Manager, Project Manager, Manager, Chief Geologist, Chief of Exploration, Chief of Geoscience, Senior Geosciences Engineer, Senior Explorationist, Senior Geologist, Geologist, Senior Geoscientist, Geomodeller, Geoscientist, CPR Editor, Resources Auditor, Project Leader, Technical Leader, Team Leader, Scientific Researcher and Senior Instructor/Trainer** from various international companies and universities such as the **Dragon Oil Holding Plc., ENOC, MENA, ENI Group of Companies, Ocre Geoscience Services (OGS), Burren RPL, Ministry of Oil-Iraq, Eni Corporate University, Stanford University, European Universities, European Research Institutes, NorskHydro Oil Company, Oil E&P Companies,** just to name a few.

Dr. Petrus has a **PhD in Geology and Tectonophysics** and **Master and Bachelor** degrees in **Earth Sciences** from the **Utrecht University, The Netherlands.** Further, he is a **Certified Instructor/Trainer, a Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management (ILM),** a Secretary and Treasurer of Board of Directors of Multicultural Centre, Association Steunfonds SSH/SSR and Founding Member of Sfera Association. He has further published several scientific publications, journals, research papers and books and delivered numerous trainings, workshops, courses, seminars 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.

Accommodation

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

Course Fee

Dubai	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.
Oman	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 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	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	<i>The Role of Data in Operations & Production</i> <i>Why Data Matters: Efficiency, Productivity & Insights • Historical Perspective & Current Trends</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Understanding Types of Data</i> <i>Continuous versus Categorical Data • Time Series, Cross-Sectional & Panel Data</i>
1030 – 1130	<i>Data Collection Techniques</i> <i>Surveys, Sensors, ERP systems & Manual Logging • Ensuring Data Quality at The Source</i>
1130 – 1215	<i>Introduction to Descriptive Statistics</i> <i>Measures of Central Tendency & Variability • Visualizing Data: Histograms, Boxplots & Scatterplots</i>
1215 – 1230	<i>Break</i>



1230 – 1330	Importance of Data Cleaning <i>Identifying & Handling Missing Values • Outliers: Detection & Management</i>
1330 – 1420	Software Tools Overview <i>Introduction to Excel, R, Python & Other Analytical Tools • Selecting the Right Tool for the Task</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 One</i>

Day 2

0730 – 0830	Correlation & Causation <i>Understanding Relationships Between Variables • Correlation Coefficients & their Interpretation</i>
0830 – 0930	Regression Analysis <i>Simple Linear Regression & Multiple Regression • Assessing Model Fit & Making Predictions</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Time Series Analysis <i>Components of a Time Series: Trend, Seasonality, Noise • Forecasting Techniques such as ARIMA</i>
1100 – 1215	Quality Control & Statistical Process Control (SPC) <i>Control Charts & their Application in Production • Process Capability Analysis</i>
1215 – 1230	<i>Break</i>
1230 – 1330	Experimental Design & Analysis of Variance (ANOVA) <i>Designing Controlled Experiments • Analyzing the Impact of Factors on Production Outcomes</i>
1330 – 1420	Non-parametric Statistics <i>Situations Where Normal Distribution Assumptions Don't Hold • Rank-Based Tests & their Applications</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 Two</i>

Day 3

0730 – 0830	Inventory Management Analysis <i>Economic Order Quantity (EOQ) • Safety Stock Calculations & Reorder Points</i>
0830 – 0930	Supply Chain Analytics <i>Tracking & Optimizing the Supply Chain • Vendor Performance Analysis</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Demand Forecasting <i>Qualitative & Quantitative Forecasting Methods • Accuracy Assessment & Forecast Adjustments</i>
1100 – 1215	Optimization Techniques <i>Linear Programming & Integer Programming • Application in Production Scheduling & Resource Allocation</i>



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

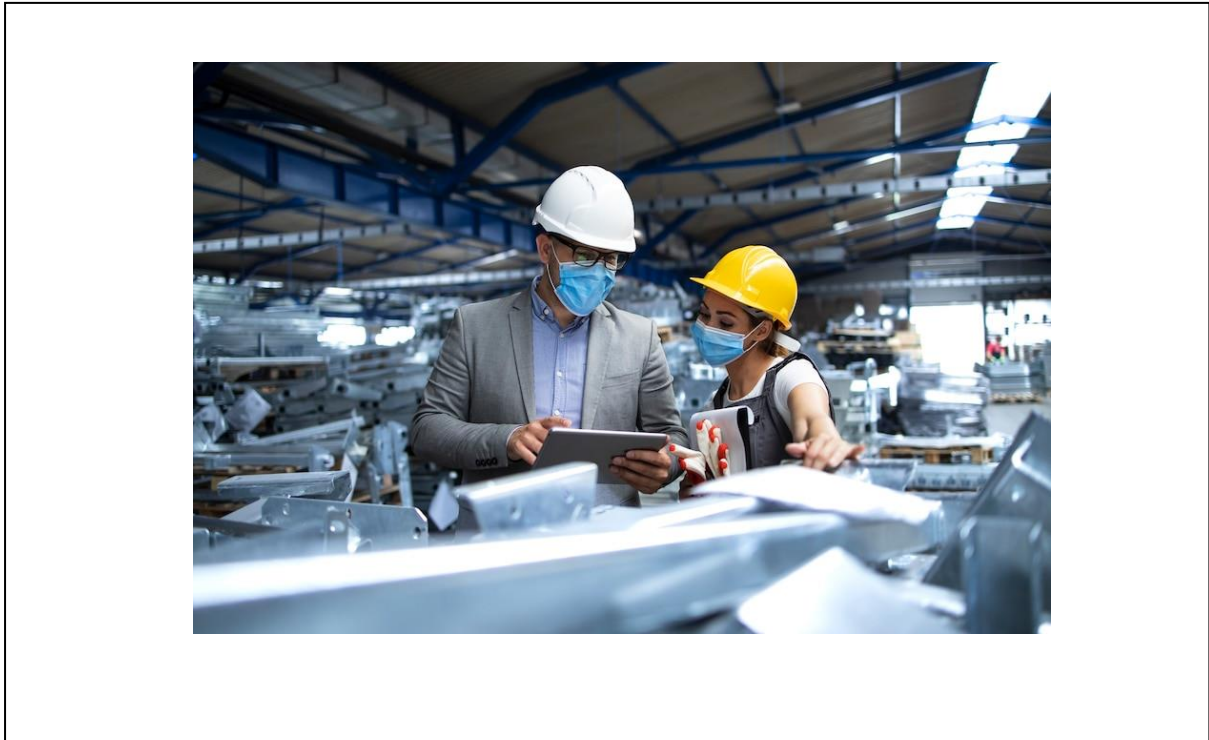
Day 5

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 <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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