COURSE OVERVIEW TM0040
Data-Driven Decision Making

Course Title
Data-Driven Decision Making

Course Date/Venue
July 07-11, 2025/Glasshouse Meeting Room,
Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
TM0040

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

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course is designed to provide participants with a detailed and up-to-date overview of Enabling Decision Making with Data. It covers the importance of data-driven decision-making in agriculture and food safety; the various types of data in agriculture and food; the decision-making process and the role of analytics in decision-making; the data storage platforms, data collection ethics and privacy laws and regulations in agriculture; the data collection techniques, data quality and validation and data management and storage; and the data integration, handling missing and inconsistent data and preparing metadata and documentation.

During this interactive course, participants will learn the data analysis, detecting patterns and trends and identifying anomalies; the statistical analysis techniques covering basic statistical methods, hypothesis testing and correlation and regression analysis; the data visualization best practices, predictive analytics and interpreting analysis results; the what-if analysis and risk assessment and management; the use of data for regulatory decisions, real-time decision-making and data in crisis management; measuring the impact of data-driven decisions, collecting feedback for improvement and iterative decision-making; the implementation plan, assigning roles and responsibilities and monitoring and evaluating plans; the collaborative decision-making and the emerging trends in agriculture and data; and the challenges in adoption and how to overcome them.

Course Objectives

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

- Apply and gain an in-depth knowledge on enable decision making with data in a professional manner
- Discuss the importance of data-driven decision-making in agriculture and food safety
- Identify the various types of data in agriculture and food including the decision-making process and the role of analytics in decision-making
- Recognize data storage platforms and apply data collection ethics and privacy laws and regulations in agriculture
- Carryout data collection techniques, data quality and validation and data management and storage
- Employ data integration, handle missing and inconsistent data and prepare metadata and documentation
- Apply data analysis, detect patterns and trends and identify anomalies
- Carryout statistical analysis techniques covering basic statistical methods, hypothesis testing and correlation and regression analysis
- Implement data visualization best practices, predictive analytics and interpreting analysis results
- Build decision models and apply what-if analysis and risk assessment and management
- Use data for regulatory decisions, real-time decision-making and data in crisis management
- Measure the impact of data-driven decisions, collect feedback for improvement and apply iterative decision-making
- Develop an implementation plan, assign roles and responsibilities and monitor and evaluate plans
- Carryout collaborative decision-making and discuss the emerging trends in agriculture and data including the challenges in adoption and how to overcome them

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 enable decision making with data for business analysts, data analysts/scientists, managers & team leaders, executives, product managers, marketing professionals, operations managers and those who want to leverage data to improve their decision-making processes.

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.

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.

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. Nikolas Karnavos, MSc, BSc, is a **Senior Analytical Chemist** with over **35 years** of extensive experience within the **Oil**, **Gas**, **Refinery** and **Petrochemical** industries. His expertise widely covers **Gas & Liquid Chromatograph Process Analysers**, **Process Analyzer Techniques** (**Online** & **Offline**), Laboratory Information Management System (**LIMS**), **Data & Method Validation in Analytical Laboratories**, Laboratory **Automation Techniques**, **Practical Problem Solving in Chemical Analysis**, **Data Analysis**, Techniques, **Statistics & Probability**, **Regression & Correlation**, **Discrete & Continuous Random Variables**, **Practical Statistical Analysis of Lab Data**, **Chemical Laboratory**, **Analytical Laboratory & Instrumentation**, Laboratory **Health & Safety**, **GLP**, Laboratory **Quality Management** (**ISO 17025**), **ISO 9001** and Medical Laboratory Quality Management (**ISO 15189**). Further, he is also well-versed in Environmental **Online Analyzers** (**Air** & **Water**), **Gas Chromatography** and various instrumental methods of analysis such as **Water Analysis & Quality Control**, **Water and Wastewater Chemical** Analysis, **Statistical Data and Laboratory Analysis**, **Gas** Analysis, **Qualitative Fuel** Analysis, **Environmental Chemical** Analysis, **Laboratory Environmental** Analysis including Water Quality Testing, Process Water and **Wastewater Effluents**, Oily **Sludge Treatment**, Atomic Absorption and Spectroscopic Methods in Analytical Chemistry, **Analytical Method Development** and **Methods of Environmental Measurements** (**Water**, **Air**, **Liquid** & **Solid Wastes**).

Mr. Karnavos was the **Laboratory Manager** of **Exxon** wherein he was responsible for **ISO 17025 certification**, upgrading laboratory equipment in **refinery**, **petrochemical** and **polypropylene** plants, upgrading and extending LIMS, handling the transition plan process of the existing laboratory to a new as well as formulating and executing the plans for applied research and technology transfer. During his career life, he had occupied several significant positions as the **Laboratory Analyst**, **Laboratory Professor**, **Quality Manager**, **Partner & Managing Director**, **Environmental Engineer**, **Process Engineer**, **Environmental Management Corporate Department Head** and **Quality Control & Plastics Application Head** with different international companies like the **AQUACHEM**, **Hellenic Petroleum** (**EXXON**) and **Technological Institute**.

Mr. Karnavos holds a **Master** degree in **Chemical Engineering** and **Bachelor** degrees in **Mechanical Engineering** and **Petroleum Engineering** from the **Aristotelian University of Thessaloniki**, **Technological Institute** and **KATEE Kavala** respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), an **Accredited Trainer** for the Organization for the Certifications & Vocational Guidance (**EOPPEP**), a **Registered Associate Environmental Auditor** from the **IEMA** and an **EARA Approved** in **Environmental Auditing**. Moreover, he is an active member of various professional engineering bodies internationally like the Institute of Environmental Management & Assessment (**IEMA**), **Greek Association of Chemical Engineers** and the **Technical Chamber** of Greece. He has further **published numerous books** and **scientific papers** and delivered various trainings, workshops, seminars 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.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Monday, 07th of July 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 - 0930	***Introduction to Data-Driven Decision-Making*** *Definition and Benefits • Importance in Agriculture and Food Safety • Real-World Case Studies • Challenges and Opportunities*
0930 – 0945	*Break*
0945 – 1030	***Types of Data in Agriculture and Food*** *Structured versus Unstructured Data • Data Sources: Sensors, Surveys, Satellites • Key Datasets: Climate, Crop, Livestock, and Food Safety Data • Data Governance in Company*
1030 – 1115	***Understanding the Decision-Making Process*** *Decision-Making Models • Role of Data at Each Stage • Types of Decisions: Strategic, Operational, and Tactical • Case Examples from Agriculture*
1115 – 1200	***Role of Analytics in Decision-Making*** *Descriptive, Predictive, and Prescriptive Analytics • Tools and Techniques Overview • Value of Visualization in Decision-Making • Application in Food Safety and Agriculture*
1200 - 1230	***Basics of Key Tools and Technologies*** *Overview of Tools: Excel, Tableau, Power BI • Data Storage Platforms: Cloud versus Local • Introduction to AI and ML in Agriculture • Company's Current Tools and Technology Landscape*
1230 – 1245	*Break*
1245 - 1415	***Ethics & Data Privacy*** *Data Collection Ethics • Privacy Laws and Regulations in Agriculture • Ethical AI and ML in Decision-Making • Ensuring Transparency and Fairness*
1415 – 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, 08th of July 2025

0730 – 0830	***Data Collection Techniques*** *Primary and Secondary Data Sources • Use of Iot Sensors and Drones in Agriculture • Surveys and Sampling Methods • Crowdsourcing Agricultural Data*
0830 - 0930	***Data Quality & Validation*** *Characteristics of Quality Data (Accuracy, Completeness, Timeliness) • Identifying and Fixing Errors in Datasets • Data Validation Techniques • Maintaining Data Integrity*
0930 – 0945	*Break*
0945 – 1040	***Data Management & Storage*** *Principles of Database Management • Cloud Storage for Agricultural Data • Data Organization and Retrieval • Tools for Managing Big Data*
1040 - 1135	***Data Integration*** *Combining Datasets from Multiple Sources • Challenges in Data Integration • Tools and Techniques for Integration • Examples in Food Safety and Agriculture*
1135 - 1230	***Handling Missing & Inconsistent Data*** *Identifying Missing Data • Techniques for Handling Gaps (Imputation, Deletion) • Dealing with Outliers • Consistency Checks in Agricultural Datasets*
1230 - 1245	*Break*
1245 - 1415	***Metadata & Documentation*** *Importance of Metadata • Creating Documentation for Datasets • Standards for Metadata in Agriculture • Practical Exercises*
1415 – 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, 09th of July 2025

0730 – 0830	***Data Analysis*** *Types of Analysis: Descriptive, Diagnostic, Predictive • Tools for Analysis: Excel, Python, R • Applications in Agriculture and Food Safety • Interactive Exercises*
0830 - 0930	***Exploratory Data Analysis (EDA)*** *Understanding Datasets Through Visualization • Detecting Patterns and Trends • Identifying Anomalies • Practical Case Study*
0930 - 0945	*Break*
0945 – 1040	***Statistical Analysis Techniques*** *Basic Statistical Methods: Mean, Median, Mode, Standard Deviation • Hypothesis Testing • Correlation and Regression Analysis • Application in Crop Yield Prediction*
1040 – 1135	***Data Visualization Best Practices*** *Importance of Effective Visualization • Choosing the Right Chart or Graph • Using Tools Like Tableau and Power BI • Storytelling with Data*
1135 - 1230	***Predictive Analytics*** *Basics of Machine Learning• Predictive Models for Agriculture (E.G., Crop Yield, Disease Outbreaks) • Tools and Frameworks • Case Studies*

1230 – 1245	*Break*
1245 - 1415	***Interpreting Analysis Results*** *Making Sense of Data Outputs • Avoiding Misinterpretation • Translating Insights into Actions • Group Exercise: Analyzing Company-Specific Data*
1415 – 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, 10th of July 2025

0730 - 0830	***Building Decision Models*** *Frameworks for Decision-Making • Role of KPIs in Agriculture • Creating Decision Trees • Real-World Examples*
0830 - 0930	***Scenario Planning & Simulations*** *Introduction to What-if Analysis • Simulating Agricultural Scenarios • Risk Assessment and Management • Hands-On Group Activity*
0930 - 0945	*Break*
0945 – 1040	***Data-Driven Policy Making*** *Using Data for Regulatory Decisions • Case Studies: Food Safety Regulations • Tools for Policy Simulation • Interactive Policy Exercise*
1040 – 1135	***Real-Time Decision-Making*** *Importance of Real-Time Data • Applications of IoT and AI • Examples: Pest Control, Water Management • Practical Application*
1135 - 1230	***Data in Crisis Management*** *Using Data During Agricultural Emergencies • Early Warning Systems for Food Safety • Decision-Making Under Uncertainty • Role of Dashboards in Crisis Management*
1230 - 1245	*Break*
1245 - 1415	***Feedback & Continuous Improvement*** *Measuring the Impact of Data-Driven Decisions • Collecting Feedback for Improvement • Iterative Decision-Making • Case Study Discussion*
1415 – 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: Friday, 11th of July 2025

0730 – 0930	***Developing an Implementation Plan*** *Steps for Turning Insights into Actions • Assigning Roles and Responsibilities • Monitoring and Evaluation Plans • Group Exercise: Implementation Planning*
0930 – 0945	*Break*
0945 – 1040	***Collaborative Decision-Making*** *Cross-Departmental Collaboration • Sharing Data Across Stakeholders • Building a Culture of Data-Driven Decision-Making • Tools for Collaboration*
1040 – 1135	***Emerging Trends in Agriculture & Data*** *AI and ML Advancements • Precision Agriculture and Smart Farming • Blockchain in Food Safety and Traceability • Climate Resilience Through Data*

1135 - 1230	***Case Studies & Best Practices*** *In-Depth Case Studies from Global Agriculture • Success Stories of Data-Driven Farming • Lessons Learned for Company • Open Discussion*
1230 – 1245	*Break*
1245 – 1345	***Challenges in Adoption & How to Overcome Them*** *Common Barriers to Implementation • Change Management Strategies • Scaling Data-Driven Initiatives • Addressing Resistance*
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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