COURSE OVERVIEW TM0365
Advanced Solutions Analysis

Course Title
Advanced Solutions Analysis

Course Date/Venue
Session 1: July 13-17, 2025/Crowne Meeting Room, Crowne Plaza Al Khobar, an IHG Hotel, Al Khobar, KSA
Session 2: December 14-18, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Reference
TM0365

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

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 Advanced Solutions Analysis. It covers the advanced solutions in manufacturing planning and types of manufacturing planning problems; the frameworks for analyzing complex systems, data gathering and preprocessing and key performance indicators (KPIs); and the optimization techniques, simulation in manufacturing planning, advanced forecasting techniques and production planning optimization models.

Further, the course will also discuss the inventory optimization techniques, demand-supply balancing strategies and decision support systems (DSS); the structured problem-solving frameworks, root cause analysis tools and Lean Six Sigma in manufacturing planning; and the process capability and variability covering Cp, Cpk, and process capability indices, sources of process variation and control limits and specification limits.

During this interactive course, participants will learn the multi-criteria decision making (MCDM), advanced Excel for solution analysis, manufacturing execution systems (MES) integration and predictive analytics for manufacturing outcomes; the AI & machine learning applications comprising of clustering for pattern discovery, neural networks for complex predictions, reinforcement learning in scheduling and AI-enabled planning systems; the cloud-based manufacturing planning tools, digital twin in manufacturing analysis and enterprise integration in planning; the advanced scheduling and sequencing techniques, risk assessment and contingency planning; and the sustainability and energy optimization, performance review and continuous improvement.

Course Objectives

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

- Apply and gain an advanced knowledge on solutions analysis
- Discuss advanced solutions in manufacturing planning and types of manufacturing planning problems
- Describe frameworks for analyzing complex systems, data gathering and preprocessing and key performance indicators (KPIs) for manufacturing planning
- Carryout optimization techniques, simulation in manufacturing planning, advanced forecasting techniques and production planning optimization models
- Apply inventory optimization techniques, demand-supply balancing strategies and decision support systems (DSS)
- Employ structured problem-solving frameworks, root cause analysis tools and Lean Six Sigma in manufacturing planning
- Discuss process capability and variability covering Cp, Cpk, and process capability indices, sources of process variation and control limits and specification limits
- Apply multi-criteria decision making (MCDM), advanced Excel for solution analysis, manufacturing execution systems (MES) integration and predictive analytics for manufacturing outcomes
- Carryout AI & machine learning applications comprising of clustering for pattern discovery, neural networks for complex predictions, reinforcement learning in scheduling and AI-enabled planning systems
- Recognize cloud-based manufacturing planning tools, digital twin in manufacturing analysis and enterprise integration in planning
- Employ advanced scheduling and sequencing techniques, risk assessment and contingency planning
- Apply sustainability and energy optimization, performance review and continuous improvement

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 advanced solutions analysis for technical professionals, business and strategy roles, decision-makers and leaders, cross-functional teams and other technical staff.

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. Dimitry Rovas, CEng, MSc, PMI-PMP, SMRP-CMRP is a **Senior Maintenance Engineer** with extensive industrial experience in **Oil**, **Gas**, **Power** and **Utilities** industries. His expertise includes **Quality Management** Systems, **Process & Service** Design, **Quality Audits**, **Cost** of **Quality**, Measurement System Analysis (**MSA**), **Process Plant Shutdown & Turnaround**, **Maintenance Optimization & Best Practices**, **Maintenance Auditing & Benchmarking**, **Reliability** Management, **Rotating Equipment** Maintenance & Troubleshooting, **Integrity & Asset** Management, **Maintenance Management** Best Practices, **Material Cataloguing**, **Maintenance Planning & Scheduling**, Effective **Reliability Maintenance**, **Pump** Technology, **Pump** Selection & Installation, **Maintenance Contracting & Outsourcing**, **Centrifugal Pumps & Troubleshooting**, **Reciprocating & Centrifugal Compressors**, **Compressor** Control & Protection, **Gas & Steam Turbines**, **Turbine** Operations, **Gas Turbine** Technology, **Valves**, **Bearings & Lubrication**, Advanced **Machinery Dynamics**, **Rubber Compounding**, **Elastomers**, **Thermoplastic**, **Industrial Rubber Products**, **Rubber** Manufacturing Systems, **Heat Transfer**, **Vulcanization Methods**, **Energy Conservation**, **Energy Loss Management** in Electricity Distribution Systems, **Energy Saving**, **Thermal Power Plant** Management, **Thermal Power Plant** Operation & Maintenance, **Heat Transfer**, **Machine Design**, **Fluid Mechanics**, **Heating & Cooling Systems**, **Heat Insulation Systems**, **Heat Exchanger & Cooling Towers**, **Mechanical Erection**, **Heavy Rotating Equipment**, Material Unloading & Storage, Commissioning & Start-Up. Further, he is also well-versed in MS project & AutoCAD, EPC Power Plant, Power Generation, Combined Cycle Powerplant, Leadership & Mentoring, Project Management, Strategic Planning/Analysis, Construction Management, Team Formation, Relationship Building, Communication, Reporting and Six Sigma. He is currently the **Project Manager** wherein he is managing, directing and controlling all activities and functions associated with the domestic heating/cooling facilities projects.

During his life career, Mr. Rovas has gained his practical and field experience through his various significant positions and dedication as the **EPC Project Manager**, **Maintenance Manager**, **Field Engineer**, **Preventive Maintenance Engineer**, **Researcher**, **Instructor/Trainer**, **Telecom Consultant** and **Consultant** from various companies such as the Podaras Engineering Studies, Metka and Diadikasia, S.A., **Hellenic Petroleum Oil Refinery** and COSMOTE.

Mr. Rovas is a **Chartered Engineer** of the **Technical Chamber** of **Greece**. Further, he has **Master's** degree in **Mechanical Engineering** and **Energy Production & Management** from the **National Technical University of Athens**. Moreover, he is a **Certified Instructor/Trainer**, a **Certified Maintenance and Reliability Professional** (**CMRP**) from the Society of Maintenance & Reliability Professionals (**SMRP**), a **Certified Project Management Professional** (**PMP**), a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and a **Certified Six Sigma Black Belt**. He is an active member of Project Management Institute (**PMI**), Technical Chamber of Greece and Body of Certified Energy Auditors and has further delivered numerous trainings, seminars, courses, workshops 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

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	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Advanced Solutions in Manufacturing Planning*** *Importance of Data-Driven Decision Making • Evolution of Manufacturing Planning • Key Challenges in Manufacturing Solutions • Integration with Enterprise Systems*
0930 – 0945	*Break*
0945 – 1030	***Types of Manufacturing Planning Problems*** *Deterministic versus Stochastic Planning • Discrete versus Continuous Systems • Short-Term versus Long-Term Planning • Capacity versus Demand-Focused Problems*
1030 – 1130	***Frameworks for Analyzing Complex Systems*** *Systems Thinking and Modeling • Bottleneck Identification Frameworks • Cause-Effect Mapping Techniques • Failure Mode and Effects Analysis (FMEA)*
1130 – 1215	***Data Gathering & Preprocessing*** *Data Sources in Manufacturing (ERP, MES, SCADA) • Data Cleansing and Validation • Handling Missing or Noisy Data • Preparing Data for Model Input*
1215 – 1230	*Break*
1230 – 1330	***Key Performance Indicators (KPIs) for Manufacturing Planning*** *Throughput and Cycle Time • Inventory Turnover and WIP Levels • Resource Utilization • OTIF (On Time in Full) Performance*

1330 – 1420	***Basics of Optimization Techniques*** *Linear Programming • Integer and Mixed-Integer Programming • Goal Programming • Constraint Satisfaction*
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	***Simulation in Manufacturing Planning*** *Role of Simulation in Decision Support • Discrete-Event Simulation (DES) Basics • Agent-Based and System Dynamics Simulation • Simulation Tools and Platforms*
0830 - 0930	***Advanced Forecasting Techniques*** *Time Series Modeling (ARIMA, Exponential Smoothing) • Machine Learning for Forecasting (SVR, Random Forest) • Forecast Accuracy Metrics • Scenario-Based Forecasting*
0930 – 0945	*Break*
0945 – 1100	***Production Planning Optimization Models*** *Lot Sizing and Scheduling • Capacity-Constrained Planning • Master Production Schedule (MPS) Modeling • Constraint-Based Planning versus Infinite Planning*
1100 – 1215	***Inventory Optimization Techniques*** *EOQ and Its Variants • Multi-Echelon Inventory Management • Safety Stock Optimization • Inventory Classification (ABC/XYZ)*
1215 – 1230	*Break*
1230 – 1330	***Demand-Supply Balancing Strategies*** *Heuristic versus Exact Methods • Lead Time and Order Cycle Considerations • Demand Prioritization Rules • Backorder and Shortage Analysis*
1330 – 1420	***Use of Decision Support Systems (DSS)*** *DSS Architecture and Components • Integration with Planning Tools • DSS for Scenario Comparison • Case Study: DSS in Automotive Manufacturing*
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	***Structured Problem-Solving Frameworks*** *PDCA (Plan-Do-Check-Act) • A3 Thinking and Problem Statements • DMAIC Approach • Practical Applications in Manufacturing*
0830 – 0930	***Root Cause Analysis Tools*** *5 Whys Methodology • Fishbone (Ishikawa) Diagrams • Pareto Analysis • Fault Tree Analysis*
0930 – 0945	*Break*
0945 – 1100	***Lean Six Sigma in Manufacturing Planning*** *Overview of Lean and Six Sigma • Waste Elimination in Planning • Value Stream Mapping • Control Charts for Planning Processes*

1100 – 1215	***Process Capability & Variability*** *Cp, Cpk, and Process Capability Indices • Sources of Process Variation • Control Limits and Specification Limits • Linking Process Capability to Planning*
1215 – 1230	*Break*
1230 – 1330	***Multi-Criteria Decision Making (MCDM)*** *Analytical Hierarchy Process (AHP) • TOPSIS and ELECTRE Methods • Weight Assignment and Sensitivity Analysis • Use Cases in Equipment and Supplier Selection*
1330 – 1420	***Case Study Workshop*** *Identifying a Planning Bottleneck • Root Cause Identification • KPI Impact Analysis • Structured Presentation of Findings*
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

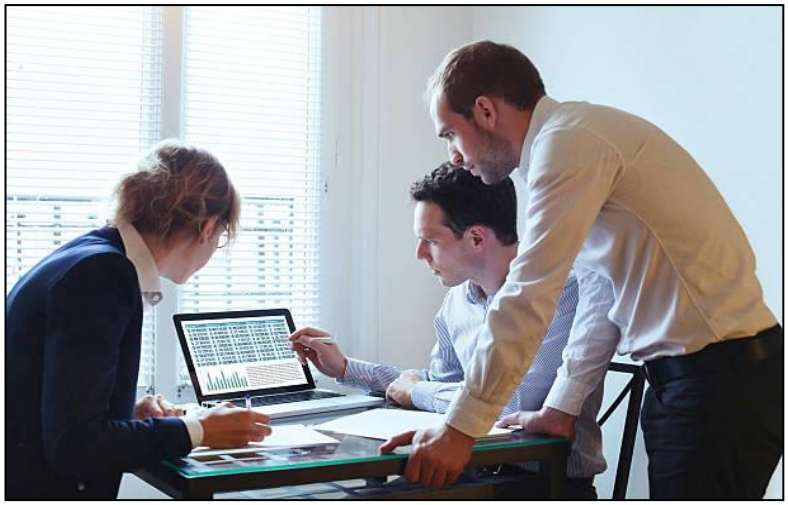
0730 – 0830	***Advanced Excel for Solution Analysis*** *Solver and Scenario Manager • Data Tables and Pivot Analysis • Conditional Formatting for Visual Alerts • VBA Macros for Automation*
0830 – 0930	***Manufacturing Execution Systems (MES) Integration*** *MES Functions in Real-Time Planning • Linking MES with ERP • Role in Performance Feedback Loops • Examples from Batch and Discrete Manufacturing*
0930 – 0945	*Break*
0945 – 1100	***Predictive Analytics for Manufacturing Outcomes*** *Regression Models in Planning • Classification for Defect Prediction • Feature Engineering and Model Selection • Evaluating Prediction Accuracy*
1100 – 1215	***AI & Machine Learning Applications*** *Clustering for Pattern Discovery • Neural Networks for Complex Predictions • Reinforcement Learning in Scheduling • AI-Enabled Planning Systems*
1215 – 1230	*Break*
1230 – 1330	***Cloud-Based Manufacturing Planning Tools*** *Benefits of Cloud Computing • SaaS Platforms for Planners • Cybersecurity in Cloud-Based Solutions • Real-Time Collaboration Across Sites*
1330 – 1420	***Digital Twin in Manufacturing Analysis*** *Concept and Architecture • Applications in Performance Testing • Real-Time Updates and Feedback Loops • Benefits in Continuous Improvement*
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	***Enterprise Integration in Planning*** *ERP, SCM, and CRM Data Alignment • Cross-Functional Planning Coordination • Data Pipelines and ETL Processes • Real-Time Dashboards and Analytics*
0830 – 0930	***Advanced Scheduling & Sequencing Techniques*** *Gantt Charts and Flow Shop Scheduling • Genetic Algorithms and Heuristics • Just-in-Time (JIT) and Kanban Scheduling • Comparison of Optimization Models*
0930 – 0945	*Break*
0945 – 1100	***Risk Assessment & Contingency Planning*** *Failure Impact Analysis • Risk Matrices for Decision Making • Risk-Adjusted Planning Scenarios • Building Resilient Supply Networks*
1100 – 1215	***Sustainability & Energy Optimization*** *Sustainable Planning KPIs • Energy Usage in Manufacturing Scheduling • Waste and Emissions Reduction Analysis • Case Examples from Green Factories*
1215 – 1230	*Break*
1230 – 1300	***Performance Review & Continuous Improvement*** *Planning Process Audits • Benchmarking Practices • Feedback Loops and CI Plans • Creating Action Plans Post-Analysis*
1300 – 1345	***Final Group Project & Presentation*** *Real-World Problem Definition • Data Modeling and Analysis • Optimization and Solution Proposal • Group Presentation and Peer Review*
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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