

<u>COURSE OVERVIEW PM0408</u> <u>Economic & Technical Evaluations in Engineering &</u> <u>Maintenance Project</u>

Course Title

Economic & Technical Evaluations in Engineering & Maintenance Project

Course Date/Venue

Session 1: August 10-14, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE Session 2: October 19-23, 2025/Meeting Plus 9, City Centre Rotana, Doha, Qatar

o CEUs

Course Reference PM0408

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-theart simulators.

This course is designed to provide participants with a detailed and up-to-date overview of Economic & Technical Evaluations in Engineering & Maintenance Project. It covers the engineering economics and its cost estimation and project feasibility types, assessment; the maintenance strategy, engineering project lifecycle and cash flow projections; calculating and interpreting net present value (NPV) and internal rate of return (IRR); the payback period, profitability index and cost-benefit analysis (CBA); the sensitivity and risk analysis and life cycle costing (LCC); and the technical performance indicators, asset criticality assessment, root cause and failure mode evaluation and condition monitoring techniques.

During this interactive course, participants will learn the decision making in equipment replacement including technical standards and regulatory compliance; the value engineering in maintenance projects, reliability engineering in economic context and maintenance optimization models covering total productive maintenance (TPM), maintenance cost curves, optimal interval setting and reliability-centered scheduling; the energy efficiency projects and sustainability in engineering decisions; the project risk management, decision support tools and contracting and procurement considerations; KPI development and the for engineering economics including project justification reports and presentations.



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Course Objectives

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

- Apply and gain an in-depth knowledge on economic and technical evaluations in engineering and maintenance project
- Discuss engineering economics and types of engineering projects as well as apply cost estimation and project feasibility assessment
- Carryout maintenance strategy, engineering project lifecycle and cash flow projections
- Calculate and interpret net present value (NPV) and internal rate of return (IRR)
- Identify payback period and profitability index and apply cost-benefit analysis (CBA), sensitivity and risk analysis and life cycle costing (LCC)
- Apply technical performance indicators, asset criticality assessment, root cause and failure mode evaluation and condition monitoring techniques
- Employ decision making in equipment replacement including technical standards and regulatory compliance
- Carryout value engineering in maintenance projects, reliability engineering in economic context and maintenance optimization models covering total productive maintenance (TPM), maintenance cost curves, optimal interval setting and reliability-centered scheduling
- Evaluate energy efficiency projects and sustainability in engineering decisions
- Apply project risk management, decision support tools and contracting and procurement considerations
- Implement KPI development for engineering economics including project justification reports and presentations

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 economic and technical evaluations in engineering and maintenance projects for professionals with a large range of technical and industrial background and varying levels of experience seeking to broaden their skills and abilities in economic and technical valuation techniques required across the industry. This course is also suitable for design, project, maintenance, and plant engineers, supervisors and professionals in the manufacturing, chemical processing, petrochemical, power, food, and other process industries, new graduates will benefit within the short period from the extensive practical experience of the instructor.



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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.



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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. Pan Kidis, MBA, BSc, is a Senior Project & Management Consultant with over 30 years of extensive experience in Project Scheduling & Cost Control, Project Planning, Scheduling & Cost **Production** Planning Control Professional, & Scheduling. Administration Skills, Project Management Essentials, Project Management Compliance, Strategic Planning, Mastering Contract Preparation, Contract and Risk Management, Value Engineering, Negotiation & Administration Techniques, Office Management

Skills, Survey Skills, Interviewing Skills, Interpersonal Skills, Communication Skills, Negotiation Skills, Presentation Skills, Manager Skills, Supervisory & Management Skills, Counselling Skills, Leadership Skills, Office Management, Code of Conduct, Train the Trainer, Logistics & Transportation Planning Methods, Forecasting Logistics Demands, Visual Network Model, Logistics Operations, Strategic Transport Planning, Transport System, Fleet Planning, Routing & Scheduling, Transport Cost Concepts & Elements, Costing Vehicles & Trips, Tariff Fixing, Supply Chain & Operations Management, Logistics & Production Planning, Cost Techniques, Inventory Management, Reduction Business Analysis, Risk Management, Production Management, Warehouse Management, Production Planning, Material Requirement Planning, Budgeting, Production & Shop Floor Scheduling, Cost Analysis, Database Design & Implementation, Business Administration, Production Data Acquisition & Analysis, Industrial Logistics, Process Improvement, Team Leadership & Training, Textile Manufacturing, Staff Reduction, Warehouse and Shipping. Further, he is also well-versed in Cash Flow Management, Decision Making Techniques, Production & Product Inventory Control, Inventory Analysis Tools, Stock Management Techniques, Material Handling, Process Improvement & Equipment Selection, Costing & Budgeting, Wastewater Treatment Plant Monitoring & Control, Volume Tank Measurements, Data Acquisition and Energy Conservation. He is currently the Business Analyst of Diasfalisis Ltd. wherein he is responsible in the design of the proposed business model and develop and evaluate new applications.

Mr. Kidis had occupied several significant positions as the Supply Chain Manager, Production Planning & Logistics Manager, Purchasing Office Manager, Project Manager, Assistant Dyeing Manager, Production Supervisor, Production **Coordinator** and Design & Analysis Intern for various international companies such as the Hellenic Fabrics, AKZO Chemicals Ltd. and EKO Refinery and Greek Navy Force.

Mr. Kidis has a Master's degree in Business Administration from the University of Kent, UK and a Bachelor degree in Chemical Engineering from the Aristotle University of Thessaloniki, Greece. Further, he is a Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer by the Institute of Leadership & Management (ILM) and has delivered numerous trainings, courses, workshops, seminars and conferences internationally.



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Training Methodology

All our Courses are including Hands-on Practical Sessions using equipment, Stateof-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.
Doha	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** Introduction to Engineering Economics Time Value of Money Principles • Cash Flow Analysis • Interest Rate & 0830 - 0930 *Compounding* • *Economic Equivalence* 0930 - 0945 Break Types of Engineering Projects Capital versus Operational Projects • Maintenance-Driven Projects • 0945 - 1030 *Greenfield versus Brownfield Evaluations* • *Asset Life-Cycle Considerations* **Cost Estimation Fundamentals** Direct & Indirect Costs • Fixed versus Variable Costs • Estimating Techniques 1030 - 1130(Top-Down, Bottom-Up) • Contingency & Risk Allowance **Project Feasibility Assessment** Technical Feasibility • Economic Feasibility • Environmental & Social Impact 1130 - 1215 • Regulatory & Legal Constraints 1215 - 1230 Break PM0408 - Page 5 of 9 ilm ACET





1230 - 1330	<i>Maintenance Strategy Basics</i> <i>Reactive versus Preventive Maintenance</i> • <i>Predictive & Condition-Based</i> <i>Approaches</i> • <i>Reliability-Centered Maintenance</i> (RCM) • <i>Maintenance</i> <i>Criticality Analysis</i>
1330 - 1420	Engineering Project Lifecycle Conceptual & Front-End Design • Detailed Engineering & Procurement • Construction, Commissioning & Handover • Operation, Maintenance & Decommissioning
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

Dav 2

	Cash Flow Projections
0730 - 0830	Initial Investment Cost • Operating & Maintenance Costs • Revenue &
	Salvage Value • Inflation & Tax Considerations
	Net Present Value (NPV) & Internal Rate of Return (IRR)
0830 - 0930	NPV Calculation & Interpretation • IRR Meaning & Decision Rules •
	Modified IRR (MIRR) • Comparison of Projects Using NPV/IRR
0930 - 0945	Break
	Payback Period & Profitability Index
0945 - 1100	Simple Payback versus Discounted Payback • Profitability Index Formula •
	Advantages & Limitations • Application in Maintenance Decisions
	Cost-Benefit Analysis (CBA)
1100 – 1215	Identifying Cost & Benefit Items • Monetizing Qualitative Factors • Decision
	Thresholds • Use in Public Infrastructure versus Private Sector
1215 – 1230	Break
	Sensitivity & Risk Analysis
1230 - 1330	Sensitivity Testing on Key Variables • Scenario Analysis (Best/Worst Case) •
	Breakeven Analysis • Use of Risk-Adjusted Discount Rates
	Life Cycle Costing (LCC)
1330 – 1420	Total Cost of Ownership • LCC in Procurement Decisions • LCC for Asset
	Replacement • Case Examples in Energy Systems
	Recap
1420 1420	Using this Course Overview, the Instructor(s) will Brief Participants about the
1420 - 1430	Topics that were Discussed Today and Advise Them of the Topics to be
	Discussed Tomorrow
1430	Lunch & End of Day Two

Dav 3

0730 - 0830	Technical Performance Indicators Efficiency & Output Metrics • Reliability, Availability, Maintainability (RAM) • MTBF & MTTR • Utilization Factor
0830 - 0930	Asset Criticality Assessment Defining Critical Equipment • Risk-Based Prioritization • Impact of Failure Modes • Maintenance Prioritization Matrix
0930 - 0945	Break
0945 - 1100	Root Cause & Failure Mode Evaluation Failure Mode & Effects Analysis (FMEA) • Fault Tree Analysis (FTA) • Reliability Block Diagram (RBD) • Case Study: Rotating Equipment



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1100 - 1215	Condition Monitoring Techniques Vibration Analysis • Infrared Thermography • Oil Analysis • Ultrasonic Inspection
1215 – 1230	Break
1230 - 1330	Decision Making in Equipment ReplacementTechnical Obsolescence• Economic Replacement Threshold• RemainingUseful Life (RUL)• Replace versus Repair Analysis
1330 - 1420	Technical Standards & Regulatory Compliance ISO 55000 in Asset Management • API, IEC & ASME Codes • Risk-Based Inspection (RBI) Programs • Local Regulatory Frameworks
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

Dav 4

Value Engineering in Maintenance Projects
<i>Function Analysis</i> • <i>Cost versus Function Trade-Offs</i> • <i>Design Alternatives</i> •
VE in Shutdown & Turnaround Planning
Reliability Engineering in Economic Context
Reliability Modeling • Economic Impact of Failures • Optimization of Spares
Inventory • Investment in Redundancy
Break
Maintenance Optimization Models
Total Productive Maintenance (TPM) • Maintenance Cost Curves • Optimal
Interval Setting • Reliability-Centered Scheduling
Evaluation of Energy Efficiency Projects
Energy Audit Basics • Cost Savings Estimation • Techno-Economic
Evaluation • Green Energy Payback Calculations
Break
Sustainability in Engineering Decisions
Environmental Impact Assessment • Triple Bottom Line (TBL) Framework •
Circular Economy in Asset Management • ESG Indicators in Project
Evaluation
Case Study Workshop: Technical + Economic Integration
Review of Real Engineering Case • Define Assumptions & Inputs • Perform
NPV & LCC • Group Presentation & Critique
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
Lunch & End of Day Four

Day 5

	Project Risk Management
0730 - 0830	Risk Identification & Categorization • Risk Matrix & Scoring • Mitigation
	Planning • Risk Influence on Cost/Benefit Outcomes
	Decision Support Tools
0830 - 0930	Decision Trees • Monte Carlo Simulations • Multi-Criteria Decision Analysis
	(MCDA) • Software Tools (Primavera, Crystal Ball)
0930 - 0945	Break



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	Contracting & Procurement Considerations
0945 – 1100	Impact of Contract Types on Cost & Risk • EPC versus Design-Bid-Build •
	Performance-Based Maintenance Contracts • Supplier Evaluation & Scoring
	KPI Development for Engineering Economics
1100 - 1230	Cost Performance Index (CPI) • Schedule Performance Index (SPI) •
	Maintenance Cost Per Asset • Availability & Downtime Metrics
1230 - 1245	Break
	Project Justification Reports & Presentations
1245 - 1345	<i>Structure of a Business Case</i> • <i>Economic Summary for Executives</i> • <i>Technical</i>
	Argumentation Techniques • Visual Tools & Dashboards
	Course Conclusion
1345 - 1400	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

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using "Primavera P6", "Mindview Software" and "Raidlog Simulator".





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