COURSE OVERVIEW TM0790
Certified Reliability Engineer (CRE)
American Society for Quality (ASQ)
Exam Preparation Training

Course Title
Certified Reliability Engineer (CRE): American Society for Quality (ASQ) - *Exam Preparation Training*

Course Reference
TM0790

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

Course Date/Venue

Sessions	Date	Venue
1	January 19-23, 2025	TBA Meeting Room, Taksim Square Hotel, Istanbul, Turkey
2	April 06-10, 2025	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
3	August 11-15, 2025	Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	December 07-11, 2025	Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA

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.

Reliability engineers are professionals who understand the principles of performance evaluation and prediction to improve product/systems safety, reliability, and maintainability. This course complies with the Body of Knowledge (BOK) specified for ASQ's Reliability Engineer certification, which includes reliability fundamentals covering leadership foundations and reliability foundations; the benefits of reliability engineering; the supplier reliability assessments and performance monitoring; the basic reliability terminology; the corrective and preventive action, root cause analysis, six sigma methodologies, systems engineering and integration.

During this interactive course, participants will learn the risk management identification, risk management analysis and risk management mitigation; the basic concepts and data management of probability and statistics for reliability; the reliability, planning, testing and modelling; and the lifecycle reliability covering reliability design techniques, parts and system development and maintainability

Course Objectives

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

- Prepare for the next ASQ CRE exam and have enough knowledge and skills to pass such exam in order to be certified as a "*Certified Reliability Engineer (CRE)*" from an internationally recognized Accreditation Body (American Society for Quality – ASQ)
- Discuss reliability fundamentals covering leadership foundations and reliability foundations
- Identify the benefits of reliability engineering and carryout supplier reliability assessments and performance monitoring
- Define the basic reliability terminology and perform corrective and preventive action, root cause analysis, six sigma methodologies, systems engineering and integration
- Employ risk management identification, risk management analysis and risk management mitigation
- Recognize the basic concepts and data management of probability and statistics for reliability
- Employ reliability, planning, testing and modelling
- Illustrate lifecycle reliability covering reliability design techniques, parts and system development and maintainability

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 is essential for those who desire to reinforce their skills, knowledge and capacity to understand the reliability of the organizational excellence body of knowledge in preparation for taking ASQ certified reliability manager examination. Further, the course is also beneficial for reliability managers, reliability engineers, maintenance managers, maintenance engineers, HSE managers, HSE engineers, safety engineers, quality engineers, quality auditors, process engineers, quality managers, instrumentation & control engineers and those who are primarily involved in implementing reliability, quality and compliance within their organizations.

Exam Eligibility & Structure

- You must have eight years of on-the-job experience in one or more of the areas of the Certified Reliability Engineer Body of Knowledge
- A minimum of three years of this experience must be in a decision-making position. "Decision making" is defined as the authority to define, execute, or control projects/processes and to be responsible for the outcome. This may or may not include management or supervisory positions
- If you are now or were previously certified by ASQ as:-
  - Quality Engineer
  - Quality Auditor
  - Software Quality Engineer
  - Software Quality Professional or,
  - Manager of Quality/Organizational Excellence, experience used to qualify for certification in these fields applies to certification as a Reliability Engineer
- Candidate who have completed a degree from a college, university, or technical school with accreditation accepted by ASQ, part of the eight-year experience requirement will be waived, as follows (only one of these waivers may be claimed):-
  - Diploma from a technical or trade school–one year will be waived
  - Associate's degree–two years waived
  - Bachelor's degree–four years waived
  - Master's or doctorate–five years waived

Degrees or diplomas from educational institutions outside the United States must be equivalent to degrees from U.S. educational institutions

Training Methodology

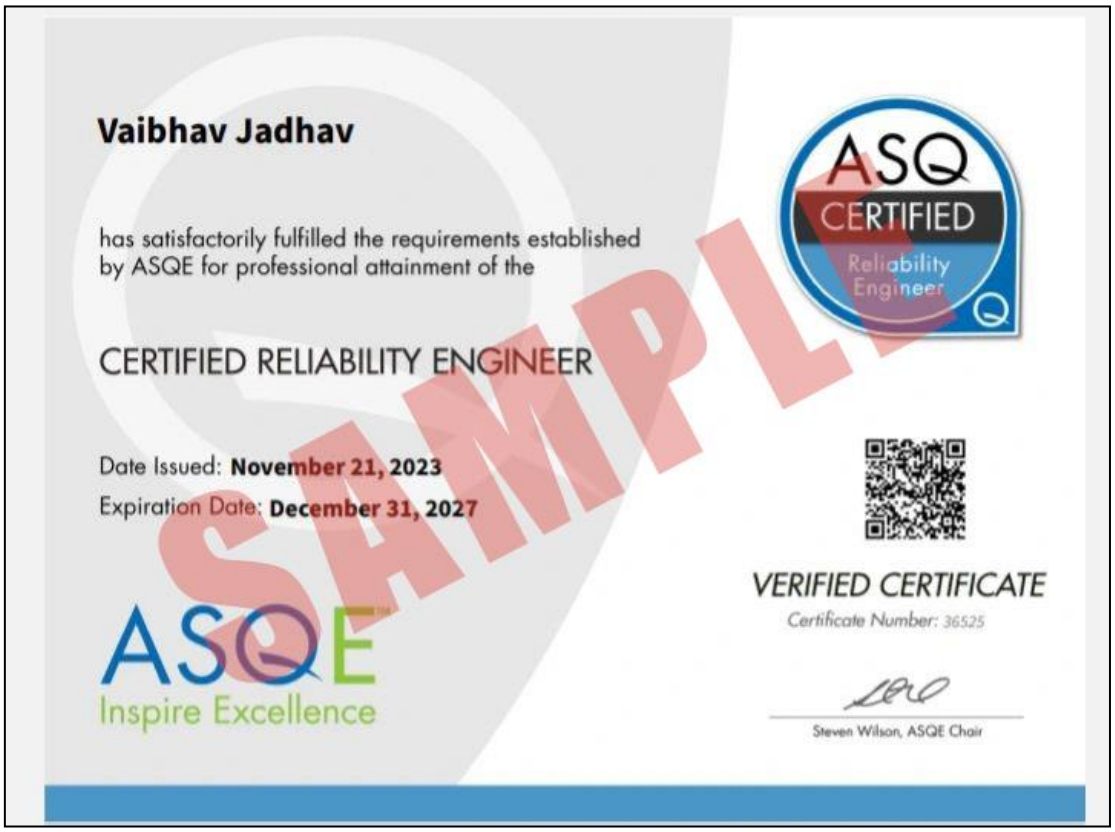
All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

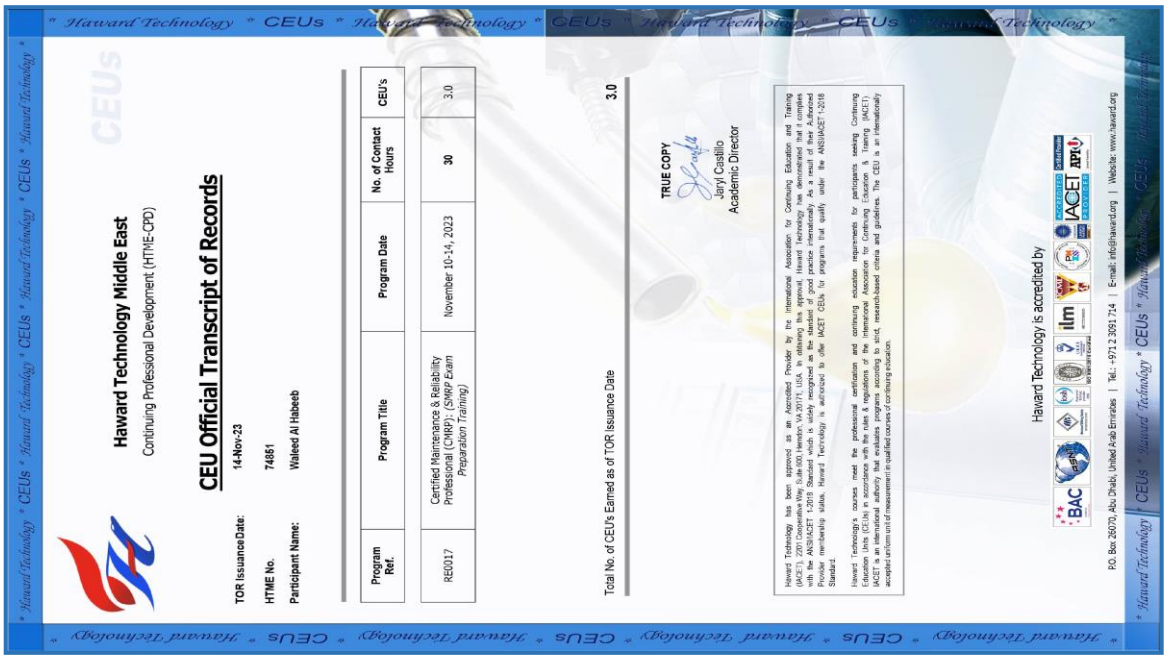
In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

ASQ-CRE Certificate(s)

(1) ASQ-CRE certificates will be issued to participants who have successfully passed the ASQ-CRE examination.



(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ASQ accredited Continuing Education Units (CEUs) earned during the course



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.

Accommodation

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

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 Mechanical & Maintenance Engineer** with extensive industrial experience in **Oil**, **Gas**, **Power** and **Utilities** industries. His expertise includes **Pipeline** System Design, Construction, Maintenance and Repair, Facilities & **Pipeline** Integrity Assessment, **Pipeline** Welding Practices, Internal **Corrosion of Pipelines, Pipeline Integrity Management & Risk Assessment**, **Thermal Insulation**, **Insulation** Standards & Regulations, **Insulation** Materials & Selection, **Piping System Insulation**, **Insulation Installation** Techniques, **Insulation** Inspection & Quality Control, **Insulation** Thickness Calculation, **Insulation** & Corrosion Protection, **Heat Exchanger & Boiler Insulation**, **Tanks & Vessels Insulation**, **Pipeline & Piping Insulation**, **Insulation** Testing & Quality Assurance, **Insulation** Maintenance & Repair, **Insulation** Retrofitting, **Impulse Tube** Installation & Inspection, **Parker Compression Fittings**, **Pipes & Fittings**, **PSV Inspection**, **Boiler** Operation, Maintenance & Inspection, **Root Cause Failure Analysis**, **Tank** Design & Engineering, **Tank Shell**, **Tanks & Tank Farms**, **Vacuum Tanks**, **Gas Turbine** Operating & Maintenance, **Diesel Engine**, **Engine Cycles**, **Governors & Maintenance**, **Crankshafts** & Maintenance, **Lubrication** System Troubleshooting & Maintenance, **Engines/Drivers**, **Motor** Failure Analysis & Testing, **Motor** Predictive Maintenance, **Engine** Construction & Maintenance, **HP Fuel Pumps & Maintenance**, **Fired Equipment** Maintenance, Combustion **Techniques**, **Process Heaters**, Glass Reinforced Epoxy (**GRE**), Glass Reinforced Pipes (**GRP**), Glass Reinforced Vent (**GRV**), **Mechanical Pipe Fittings**, **Flange Joint Assembly**, Adhesive Bond Lamination, **Butt Jointing**, **Joint & Spool Production**, **Isometric Drawings**, **Flange Assembly** Method, **Fabrication & Jointing**, Jointing & Spool Fabrication, **CAESAR**, **Pipe Stress Analysis**, **Pipe Cuttings**, **Flange Bolt Tightening** Sequence, **Hydro Testing**, **Pump** Technology, Fundamentals of **Pumps**, **Pump** Selection & Installation, **Centrifugal Pumps & Troubleshooting**, **Reciprocating & Centrifugal Compressors**, **Screw Compressor**, **Compressor** Control & Protection, **Gas & Steam Turbines**, **Turbine** Operations, **Gas Turbine** Technology, **Valves**, **Process Control Valves**, **Bearings & Lubrication**, Advanced **Machinery Dynamics**, **Rubber Compounding**, **Elastomers**, **Thermoplastic**, **Industrial Rubber Products**, **Rubber** Manufacturing Systems, **Heat Transfer**, **Vulcanization Methods**, **Process Plant Shutdown & Turnaround**, **Professional Maintenance Planner**, Advanced **Maintenance Management**, **Maintenance Optimization & Best Practices**, **Maintenance Auditing & Benchmarking**, **Material Cataloguing**, **Reliability** Management, **Rotating Equipment**, **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**, **Field Engineer**, **Thermal Insulation Engineer**, **Mechanical Engineer**, **Preventive Maintenance Engineer**, **Senior Thermal Insulation Technician**, **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 has a **Master's** degree in **Energy Production & Management** and **Mechanical Engineering** from the **National Technical University of Athens** (**NTUA**), **Greece**. Further, he is a **Certified Instructor/Trainer**, a **Certified Maintenance and Reliability Professional** (**CMRP**) from the Society of Maintenance & Reliability Professionals (**SMRP**), **Certified Project Management Professional** (**PMI-PMP**), **Certified Six Sigma Black Belt**, **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), **Certified Construction Projects Contractor**, **Certified Energy Auditor** and a **Chartered Engineer**. Moreover, he is an active member of **American Society for Quality**, Project Management Institute (**PMI**), **Body of Certified Energy Auditors** and **Technical Chamber of Greece**. He has further received various recognition and awards and delivered numerous trainings, seminars, courses, workshops and conferences internationally.

Training Fee

Dubai	**US$ 5,750** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Al Khobar	**US$ 5,750** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Abu Dhabi	**US$ 5,750** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	**US$ 6,250** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Exam Fee

US$ 715 per Delegate + **VAT**.

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

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Reliability Fundamentals: Leadership Foundation*** *Benefits of Reliability Engineering ● Interrelationship of Safety, Quality & Reliability ● Reliability Engineer Leadership Responsibilities ● Reliability Engineer Role & Responsibilities in the Product Lifecycle ● Function of Reliability in Engineering ● Ethics in Reliability Engineering ● Supplier Reliability Assessments ● Performance Monitoring*
0930 – 0945	*Break*
0945 – 1100	***Reliability Fundamentals: Reliability Foundations*** *Basic Reliability Terminology ● Drivers of Reliability Requirements & Targets ● Corrective & Preventive Action ● Root Cause Analysis ● Product Lifecycle Engineering Stages*
1100 – 1230	***Reliability Fundamentals: Reliability Foundations (cont'd)*** *Economics of Product Maintainability & Availability ● Cost of Poor Reliability ● Quality Triangle ● Six Sigma Methodologies ● Systems Engineering & Integration*
1230 – 1245	*Break*
1245 – 1400	***Risk Management Identification*** *Risk Management Techniques ● Types of Risk*
1400 – 1410	***Recap***
1410 – 1430	***Quiz***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	Review of Day 1
0830 – 0930	***Risk Management Analysis*** Fault Tree Analysis (FTA) ● Failure Modes & Effects Analysis (FMEA) ● Common Mode Failure Analysis ● Hazard Analysis ● Risk Matrix ● System Safety
0930 – 0945	Break
0945 – 1100	***Risk Management Mitigation*** Strategies to Minimize Risk ● Product Improvement ● End of Life Considerations
1100 – 1230	***Probability & Statistics for Reliability: Basic Concepts*** Basic Statistics ● Basic Probability Concepts ● Probability Distributions ● Probability Functions
1230 – 1245	Break
1245 – 1400	***Probability & Statistics for Reliability: Basic Concepts (cont'd)*** Sampling Plans for Statistics & Reliability Testing ● Statistical Process Control (SPC) & Process Capability Studies (C_p, C_{pk}) ● Confidence & Tolerance Intervals
1400 – 1410	***Recap***
1410 – 1430	***Quiz***
1430	Lunch & End of Day Two

Day 3

0730 – 0830	Review of Day 2
0830 – 0930	***Probability & Statistics for Reliability: Data Management*** Sources & Uses of Reliability Data ● Types of Data ● Data Collection Methods
0930 – 0945	Break
0945 – 1100	***Probability & Statistics for Reliability: Data Management (cont'd)*** Data Summary & Reporting ● Failure Analysis Methods ● Failure Reporting, Analysis & Corrective Action System (FRACAS)
1100 – 1230	***Reliability Planning*** Reliability Test Strategies ● Environmental & Conditions of Use Factors ● Failure Consequences ● Failure Criteria ● Test Environment
1230 – 1245	Break
1245 – 1400	***Reliability Testing*** Testing ● Accelerated Life Tests ● Stress Screening ● Qualification/Demonstration Testing ● Degradation ● Software Testing
1400 – 1410	***Recap***
1410 – 1430	***Quiz***
1430	Lunch & End of Day Three

Day 4

0730 – 0830	Review of Day 3
0830 – 0930	***Reliability Modeling*** Reliability Block Diagrams & Models ● Physics of Failure (Pof) & Failure Mechanisms ● Failure Models
0930 – 0945	Break
0945 – 1100	***Reliability Modeling (cont'd)*** Reliability Prediction Methods ● Design Prototyping
1100 – 1230	***Lifecycle Reliability: Reliability Design Techniques*** Design Evaluation Techniques (Validation & Verification) ● Stress-Strength Analysis ● Design of Experiments (DOE) ● Reliability Optimization

1230 – 1245	*Break*
1245 – 1400	***Lifecycle Reliability: Reliability Design Techniques (cont'd)*** *Human Factors ● Design for X (DFX) ● Design for Reliability (DfR)*
1400 – 1410	***Recap***
1410 – 1430	***Quiz***
1430	*Lunch & End of Day Four*

Day 5

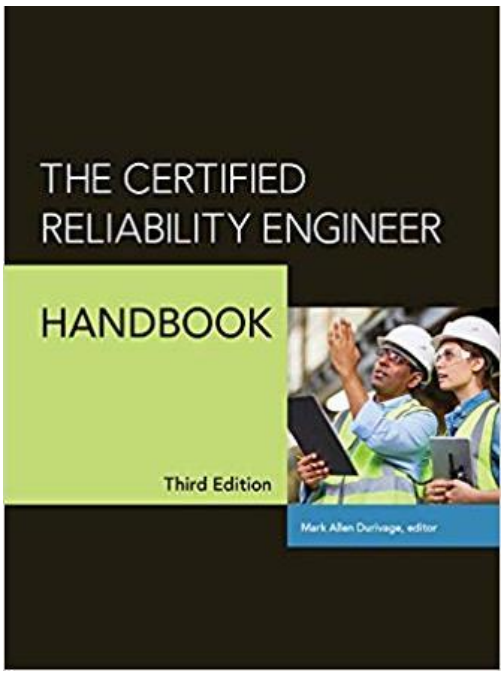
0730 – 0800	*Review of Day 4*
0800 – 0930	***Lifecycle Reliability: Parts & Systems Development*** *Materials & Components Selection Techniques*
0930 – 0945	*Break*
0945 – 1100	***Lifecycle Reliability: Parts & Systems Development (cont'd)*** *Parts Standardization & System Simplification*
1100 – 1230	***Lifecycle Reliability: Maintainability*** *Maintenance Strategies ● Preventive Maintenance (PM) Analysis*
1230 – 1245	*Break*
1245 – 1345	***Lifecycle Reliability: Maintainability (cont'd)*** *Corrective Maintenance Analysis*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

MOCK Exam

Upon the completion of the course, participants have to sit for a MOCK Examination similar to the exam of the Certification Body through Haward's Portal. Each participant will be given a username and password to log in Haward's Portal for the MOCK exam during the 30 days following the course completion. Each participant has only one trial for the MOCK exam within this 30-day examination window. Hence, you have to prepare yourself very well before starting your MOCK exam as this exam is a simulation to the one of the Certification Body.

Book(s)

As part of the course kit, the following e-book will be given to all participants:-



Title : The Certified Reliability Engineer Handbook
ISBN : 9788174890580
Author : Mark Allen Durivage
Publisher : ASQ Quality Press

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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