COURSE OVERVIEW ME0409
Caesar II

Course Title
Caesar II

Course Reference
ME0409

Course Duration
Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	May 04-08, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
2	July 21-25, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
3	October 06-10, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	December 07-11, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Description

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

Ensuring your plant's piping systems adhere to international codes and standards plays an integral role in keeping your plant operational. CAESAR II software makes it easy to input and display all the data needed to accurately define a piping system analysis model. It evaluates the structural responses and stresses of your piping systems to international codes and standards and enables you to access and modify, if necessary, input element by element or globally.

This course is designed to provide participants with a detailed and up-to-date knowledge on CAESAR II. It covers the software's basic features, applications and user interface; the setup, configuration and data input methods of CAESAR II; the fundamental concepts in pipe stress analysis; the piping codes, components and supports; the steel structure supports and sustained loads versus spring hanger design; the expansion joints design and analysis and flange assessment; the stress intensification factors for elbows and interconnections; the expansion loops and buried pipeline analysis; and the piping evaluation for fatigue due to seismic and wind loads and other occasional loads with static equivalents.

During this interactive course, participants will learn the local stresses in vessels and nozzles; the pump and nozzle flexibility according to API 610 standards; the RFP piping systems and transmission lines; the finite element analysis tools available in CAESAR II; the concepts learned in CAESAR II to real-world model analysis; the basic theory of dynamics in relation to CAESAR II; the harmonics analysis, spectral analysis, relief valve analysis, history analysis, seismic design and system responses evaluation; the flow induced vibration, impact load analysis and dealing with complex piping systems; and the common errors in pipe stress analysis and how to mitigate them.

Course Objectives

At the end of this course the Trainee will be able to fully utilize the CAESAR II software application:

- Appy and gain a comprehensive knowledge on Caesar-II software
- Understand the software's basic features, applications and user interface
- Set-up and configure CAESAR II as well as input data into the software
- Discuss the fundamental concepts in pipe stress analysis and how they are applied in CAESAR II
- Identify the various piping codes used in CAESAR II as well as the components and supports typically involved in pipe stress analysis
- Design and analyze steel structure supports in CAESAR II as well as differentiate sustained loads versus spring hanger design and the crucial concepts in pipe stress analysis
- Explore how to design and analyze expansion joints in CAESAR II and apply flange assessment
- Calculate and interpret stress intensification factors for elbows and interconnections
- Design and analyze expansion loops, analyze buried pipelines and evaluate piping for fatigue due to seismic and wind loads and other occasional loads with static equivalents
- Analyze local stresses in vessels and nozzles including pump and nozzle flexibility according to API 610 standards
- Model and analyze RFP piping systems and transmission lines as well as use finite element analysis tools available in CAESAR II
- Apply the concepts learned in CAESAR II to real-world model analysis and discuss the basic theory of dynamics in relation to CAESAR II
- Understand the different modes of vibration and how they are analyzed in CAESAR II
- Carryout harmonics analysis, spectral analysis, relief valve analysis, history analysis, seismic design and system responses evaluation
- Interpret flow induced vibration, conduct an impact load analysis and deal with complex piping systems
- Recognize the common errors in pipe stress analysis and how to mitigate 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 CAESAR II for those who are involved with piping in the petroleum, chemical, power, gas transmission and related industries. Further, mechanical/design engineers, piping vessel maintenance engineers, engineering managers, piping designers, plant managers, draftsmen, new and experienced CAESAR-II users can benefit from this up-to-date, information-packed short course, whether they use other pipe stress programs – or don't use any.

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:-

100% Hands-on Practical Exercises, Case Studies and Simulation

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.

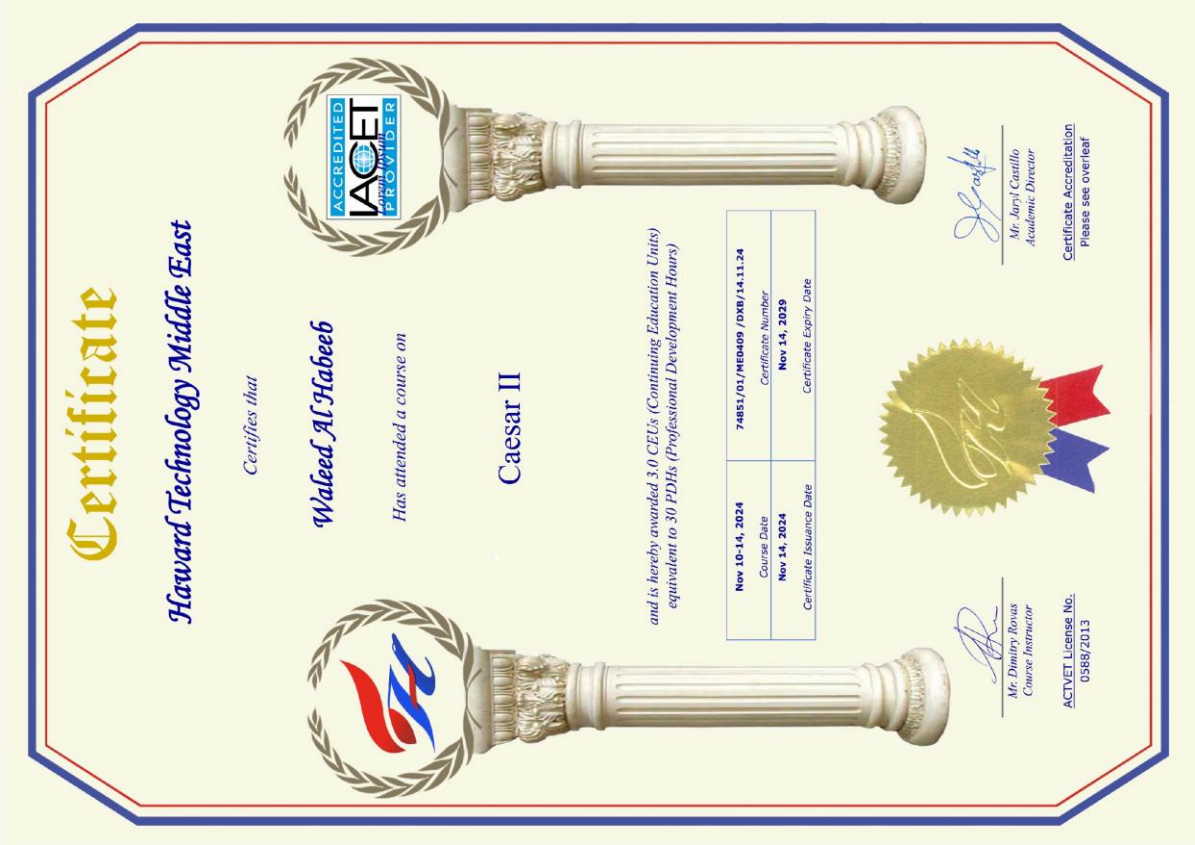
Course Certificate(s)

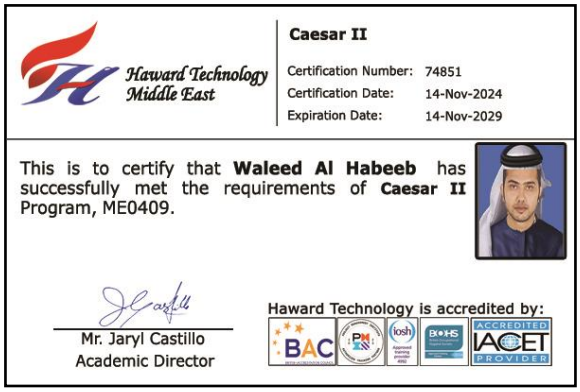
(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-





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

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-24

HTME No. 74851

Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
ME0409	Caesar II	Nov 10-14, 2024	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Jaryl Castillo
Academic Director

Haward Technology has been approved as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2018 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2018 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 Association 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 is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

Certificate Accreditations

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**. 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 Mechanical & Maintenance Engineer** with extensive industrial experience in **Oil**, **Gas**, **Power** and **Utilities** industries. His expertise includes **CAESAR**, **Pipe Stress Analysis**, **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, **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.

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 CAESAR II:*** *Understanding the Software's Basic Features, Applications & User Interface*
0930 – 0945	*Break*
0945 – 1030	***Setup/Configuration/Data Input Methods of CAESAR II:*** *Detailed Explanation of How to Set Up & Configure CAESAR II as well as How to Input Data into the Software*
1030 – 1130	***Introduction to Pipe Stress Analysis Basics:*** *Fundamental Concepts in Pipe Stress Analysis & How They are Applied in CAESAR II*
1130 – 1215	***Piping Codes, Components & Supports:*** *An Overview of the Various Piping Codes Used in CAESAR II as well as the Components & Supports Typically Involved in Pipe Stress Analysis*
1215 – 1230	*Break*
1230 – 1330	***Steel Structure Supports:*** *A Detailed Look at How to Design & Analyze Steel Structure Supports in CAESAR II*
1330 – 1420	***Understanding Sustained Loads vs Spring Hanger Design:*** *An In-depth Comparison Between These Two Crucial Concepts in Pipe Stress Analysis*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Expansion Joints Design & Analysis:*** *Exploring How to Design & Analyze Expansion Joints in CAESAR II*
0830 – 0930	***Flange Assessment:*** *An In-Depth Discussion on Flange Assessment in CAESAR II*
0930 – 0945	*Break*
0945 – 1100	***Stress Intensification Factors for Elbows & Interconnections:*** *Understanding How to Calculate & Interpret Stress Intensification Factors*
1100 – 1215	***Expansion Loops:*** *A Detailed Look at the Design & Analysis of Expansion Loops in CAESAR II*
1215 – 1230	*Break*
1230 – 1330	***Buried Pipeline Analysis:*** *Exploring the Unique Considerations & Methods for Analyzing Buried Pipelines in CAESAR II*
1330 – 1420	***Fatigue Evaluation of Piping:*** *Understanding How to Evaluate Piping for Fatigue Due to Seismic & Wind Loads & Other Occasional Loads with Static Equivalents*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Local Stresses in Vessels/Nozzles:*** *Learning How to Analyze Local Stresses in Vessels & Nozzles in CAESAR II*
0830 – 0930	***API 610 Analysis of Pump & Nozzle Flexibility****: In-depth Analysis of Pump & Nozzle Flexibility According to API 610 Standards*
0930 – 0945	*Break*
0945 – 1100	***Modelling/Analysis of RFP Piping Systems & Transmission Lines:*** *Detailed Explanation on Modelling & Analyzing RFP Piping Systems & Transmission Lines*
1100 – 1215	***Finite Element Analysis Tools & Mode Shapes:*** *Introduction to the Finite Element Analysis Tools Available in CAESAR II & Understanding the Concept of Mode Shapes*
1215 – 1230	*Break*
1230 – 1330	***Model Analysis:*** *Applying the Concepts Learned in CAESAR II to Real-World Model Analysis*
1330 – 1420	***Dynamics (Basic Theory):*** *Understanding the Basic Theory of Dynamics in Relation to CAESAR II*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Modes of Vibration:*** *Understanding the Different Modes of Vibration & How they are Analyzed in CAESAR II*
0830 – 0930	***Harmonics Analysis:*** *Exploring the Theory & Application of Harmonics Analysis in CAESAR II*
0930 – 0945	*Break*
0945 – 1100	***Spectral Analysis:*** *Detailed Overview of Spectral Analysis in CAESAR II*
1100 – 1215	***Relief Valve Analysis:*** *Learning About the Design & Analysis of Relief Valves using CAESAR II*
1215 – 1230	*Break*
1230 – 1330	***Time History Analysis & Seismic Design:*** *Exploring the Application of Time History Analysis for Seismic Design in CAESAR II*
1330 – 1420	***Evaluation of System Responses:*** *Understanding How to Evaluate System Responses in CAESAR II*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

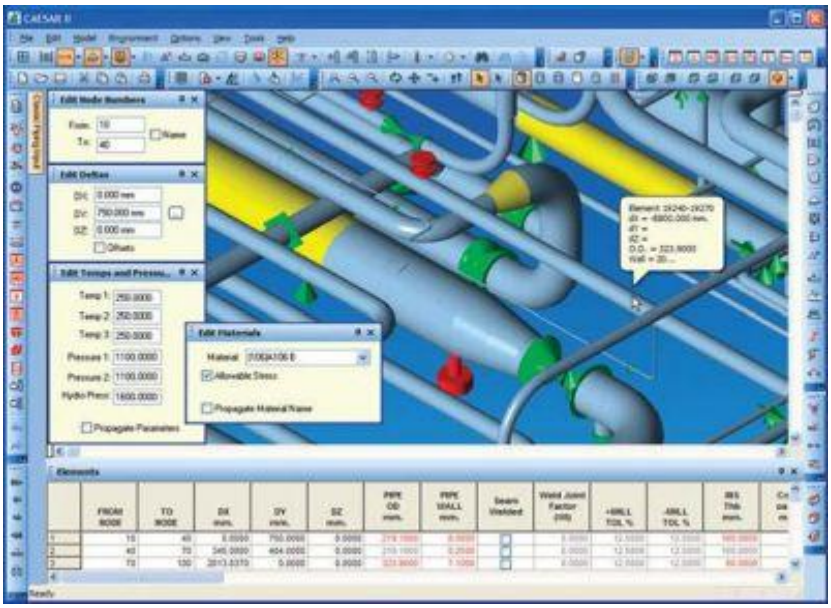
Day 5

0730 – 0830	***Flow Induced Vibration:*** *An Overview of Flow Induced Vibration & How It's Analyzed in CAESAR II*
0830 – 0930	***Impact Load Analysis:*** *A Detailed Look at How to Conduct an Impact Load Analysis in CAESAR II*
0930 – 0945	*Break*
0945 – 1100	***Dealing with Complex Piping Systems:*** *Strategies & Best Practices for Dealing with Complex Piping Systems in CAESAR II*
1100 – 1215	***Understanding & Mitigating Errors:*** *Understanding Common Errors in Pipe Stress Analysis & How to Mitigate Them*
1215 – 1230	*Break*

1230 – 1315	***Tips & Tricks for Efficient Use of CAESAR II:*** *Sharing Some Insider Knowledge for Maximizing Efficiency in CAESAR II*
1300 – 1315	***Course Conclusion***
1315 – 1415	***COMPETENCY EXAM***
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 the state-of-the-art "CAESAR II Software".



CAESAR II

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org