COURSE OVERVIEW FE0863
AWS-CWEng Certified Welding Engineer Part 3 & 4



Course Title
AWS-CWEng Certified Welding Engineer Part 3 & 4

Course/Date/Venue
September 14-18, 2026/Abu Dhabi Meeting Room, The Tower Plaza Hotel Dubai, Dubai, UAE

Course/Exam Date/Venue
Exam Date : TBA
Exam Venue : TBA

Exam Closing Date
Exam Registration Closing Date: 8 weeks before the course date

Course Duration/Credits
Five days/4.0 CEUs/40 PDHs

Course Reference
FE0863

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.



This course covers the qualification requirements for Welding Engineers. It describes how qualifications are determined, and the practice by which qualification may be attained and maintained.

The course will evaluate the qualifications of each individual, and provide examinations to test the individual's knowledge in engineering skills and knowledge as well as their ability to apply the principles of welding engineering.



The course is intended to supplement the minimum requirements of employers, codes, other standards, or documents and shall not be construed as a preemption of the employer's responsibility for the work or for the performance of the work. It shall be the responsibility of employers to determine that their employee, who, having qualified as a Welding Engineer, is capable of performing the specific duties involved in their career assignments.

Further, the course will also discuss the NDE/Weld discontinuities, welding heat sources and arc physics; the differences between CC and CV designs, welding arc characteristics and electron emission; the arc temperature and degree of ionization; the magnetic arc blow, lorentz force, shielding gas drag force and weld penetration and width for different shielding gases; the various arc welding process and controls including resistance welding processes, high energy density welding processes, cutting processes, surfacing processing and solid-state welding processes; and the welding and joining metallurgy.

During this interactive course, participants will learn the weld design, brazing and soldering; the safety and health hazards relating to welding, safety hazards, precautions to avoid injury and possess a working knowledge of safety and fire codes; and the practical welding and related applications of welding engineering concepts in the areas of welding safety, weldment design, welding metallurgy, materials, welding process selection, NDE including visual weld inspection, quality assurance, quality control in accordance with codes, specifications other standards and/or drawings.

Moreover, a person with the demonstrated education, experience, and knowledge as defined by this information and who successfully passes the required examinations is considered qualified as an AWS Certified Welding Engineer (CWEng).

Course Objectives

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

- Get prepared for the AWS Certified Welding Engineer (CWEng) Part 3 and Part 4 exam and have enough knowledge and skills to pass such exam in order to get the AWS-CWEng Certification
- Recognize the NDE/Weld discontinuities covering NDE processes and symbols
- Determine welding heat sources and arc physics including power source static and dynamic characteristics as well as the differences between CC and CV designs, welding arc characteristics and electron emission
- Discuss arc temperature and degree of ionization as well as magnetic arc blow, lorentz force, shielding gas drag force and weld penetration and width for different shielding gases
- Explain the various arc welding process and controls including resistance welding processes, high energy density welding processes, cutting processes, surfacing processing and solid-state welding processes
- Describe welding and joining metallurgy covering crystal structure of metals, melting and solidification, phase transformations and phase diagrams, metallurgy and weld-ability of typical engineering materials, microstructure, mechanical properties, carbon equivalent, hydrogen assisted cracking, etc
- Illustrate weld design, brazing and soldering
- Employ safety and recognize health hazards relating to welding, safety hazards, precautions to avoid injury and possess a working knowledge of safety and fire codes

- Review practical welding and related applications of welding engineering concepts in the areas of welding safety, weldment design, welding metallurgy, materials, welding process selection, NDE including visual weld inspection, quality assurance, quality control in accordance with codes, specifications other standards and/or drawings

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 a wide understanding and deeper appreciation of welding engineering for inspection, piping and welding engineers who are seeking AWS CWEng certification. Other engineers, managers and technical staffs who are dealing with welding and fabrication will also benefit from this course.

Exam Eligibility & Structure

To qualify as a Certified Welding Engineer, you must have a combination of qualifying education and work experience, with supporting documentation and should match at least one of the combinations in any one of the grids below:-

MINIMUM EDUCATION	MINIMUM WORK EXPERIENCE
Bachelor of Science or Higher Degree in Engineering	Minimum of one (1) year welding-based work experience
Bachelor of Science in Engineering Technology	Minimum of two (2) years welding-based work experience
Other Related Bachelor of Science Degree	Minimum of five (5) years welding-based work experience
Associate in Applied Science (A.A.S.) Degree	Minimum of ten (10) years welding-based work experience
High School Diploma or Equivalent Program	Minimum of fifteen (15) years welding-based work experience

- Candidates are required to successfully complete Parts 1 and 2 of the CWEng examination before progressing to Parts 3 and 4. Upon passing Parts 1 and 2, candidates have one (1) year to apply for Parts 3 and 4.

Required Codes & Standards

Listed below are the effective editions of the publications required for the current Welding Engineer Certification Examination. **Each student must purchase these documents separately and have them available for use during the class as their cost is not included in the course fees**:-

Reference Title	Author	Publisher
ANSI Z49.1 Safety in Welding, Cutting and Allied Processes		AWS
Applied Fluid Mechanics, 4th Ed.	Mott	Merrill Publishing Company
ASM Handbook Vol. 17, NDE		ASM
ASM Handbook Vol. 6 Welding/Brazing 10th Ed.		ASM
AWS D1.1 Structural Welding Code—Steel		AWS
Design of Weldments	Omer W. Blodgett	The James F. Lincoln Arc Welding Foundation
Engineer in Training Manual		
Essentials of Engineering Economics, 2nd Ed.	Riggs & West	McGraw Hill
Fracture & Fatigue Control in Structures, Application of Fracture Mechanics	John M. Barson & Stanley T. Rolfe	Prentice Hall Second Edition, 1987
Fundamentals of Engineering: The Most Effective FE/EIT Review	Merle C. Potter	Great Lakes Press
Fundamentals of Welding Technology, Modules 1 - 19		Gooderham Centre for Industrial Learning
Handbook of Arc Welding		James F. Lincoln Arc Welding Foundation
Introduction to the Practice of Statistics ISBN 0 7167 2250 X	Moore & McCabe	Freeman
Introductory Physical Metallurgy of Welding	Easterling	Butterworths
Introductory Welding Metallurgy		AWS
Manufacturing, Engineering & Technology ISBN 0 201 538460	Serope and Kalpakjian	Addison Wesley
Mark's Standard Handbook for Mechanical Engineers	Avallone and Baumeister	McGraw Hill
Mechanical Metallurgy	G. Dieter	McGraw Hill
Metals and How to Weld Them		James F. Lincoln Arc Welding Foundation, Second Edition, 1990
Modern Welding Technology, 4th Ed.	H. Cary	Prentice Hall
NFPA 51B Standard for Fire Prevention During Welding, Cutting, and Other Hot Work		National Fire Protection Association
Occupational Safety and Health Administration (OSHA). Code of Federal Regulations, Title 29 Labor, Part 1910 Subpart Q – Welding, Cutting, and Brazing		U.S. Government Printing Office

Occupational Safety and Health Administration (OSHA). Code of Federal Regulations, Title 29 Labor, Part 1910.1200 – Hazard Communication		U.S. Government Printing Office
Occupational Safety and Health Administration (OSHA). Code of Federal Regulations, Title 29 Labor, Part 1926 Subpart J– Welding and Cutting		U.S. Government Printing Office
Physics of Arc Welding	J. Lancaster	Pergamon
Product Design for Manufacture and Assembly ISBN 0 8247 9176 2	Boothroyd, Dewhurst & Knight	Marcel Dekker
Quality Control, 5th Ed.	Besterfield	Prentice Hall
Robots & Manufacturing Automation	Asfahl	John Wiley
Stainless Steel	R.A. Lula	ASM International, 1986
Statics & Strength of Materials, 3rd Edition, ISBN: 0-13-453201-5	Morrow	Prentice Hall
Statics & Strength of Materials: A Parallel Approach to Understanding Structures	Lawrence J. Wolf	Merrill Publishing Company
Welt IT CD, Computer Influence for Welding Personnel		Gooderham Centre for Industrial Learning
Weldability of Steels, 4th Edition, ISBN: 1-58145-430-9	R.D Stout	Welding Research Council
Welding Aluminum: Theory & Practice		The Aluminum Association, Second Edition, June 1991
Welding Design, Modules 30-39		Gooderham Centre for Industrial Learning
Welding Encyclopedia	Jefferson	AWS
Welding Handbook Vols. 1,2,3,4,8th Ed.		AWS
Welding Metallurgy	Sindo Kou	John Wiley & Sons
Welding Metallurgy	Linnert	AWS
Welding Metallurgy	J. Lancaster	Pergamon
Welding Metallurgy, Modules 8,9,12,20-23		Gooderham Centre for Industrial Learning

References for Taking the Part 3 Examination

The following are the reference book(s) used to draw exam questions. Candidates can bring the hard copy of these reference books to a test center.

Title	Publisher: URL	ISBN
ANSI Z49.1 Safety in Welding, Cutting and Allied Processes	AWS https://app.aws.org/technical/AWS_Z49.pdf	978-0-87171-809-9
AWS Welding Handbook Volume 1 (9th and 10th Editions)	AWS https://www.aws.org/publications/page/welding-handbook-9- edition-volume-1 AWS https://www.aws.org/publications/page/10th-edition-volume-1	0-87171-657-7 978-1-64322-015-4

AWS Welding Handbook Volume 2 (Ninth Edition)	AWS https://www.aws.org/publications/page/welding-handbook-9- edition-volume-2	0-87171-729-8
AWS Welding Handbook Volume 3 (Ninth Edition)	AWS https://www.aws.org/publications/page/welding-handbook-9- edition-volume-3	978-0-87171-053-6
AWS Welding Handbook Volume 4 (Ninth Edition)	AWS https://www.aws.org/publications/page/welding-handbook-9- edition-volume-4	978-0-87171-759-7
AWS Welding Handbook Volume 5 (Ninth Edition)	AWS https://www.aws.org/publications/page/welding-handbook-9thedition-volume-5	978-0-87171-856-3
Blodgett: Design of Weldments	James F. Lincoln Arc Welding Foundation https://www.jflf.org/ProductDetails.asp?ProductCode=DW	0-937390-13-5
Lippold & Kotecki: Welding Metallurgy and Weldability of Stainless Steels	Wiley https://www.wiley.com/enus/Welding+Metallurgy+and+Weldability+of+Stainless+Steels-p9780471473794	978-0-471-47379-4

References for Taking the Part 4 Examination

The AWS D1.1/D1.1M 24th Edition, 2020 is the only reference material that can be used during the exam. An electronic PDF copy of D1.1 will be available on the screen during the exam.

IMPORTANT! Candidates are allowed to bring a hard copy of D1.1 to test centers.

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.

Training Fee

US$ 6,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Exam Fees

US$ 1,100 per Delegate + **VAT**.

Accommodation

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

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.

Course Accreditations

Haward Technology is accredited by the following international accreditation organizations:-

- American Welding Society (AWS)

  Haward Technology is the **International Agent** of the **American Welding Society (AWS)** and the Authorized Provider of AWS international certification examinations outside the USA. Haward Technology exhibits compliance and adherence to **AWS Quality Control Standards** in the development, conduct and delivery of certification courses and exams for welding and inspection professionals on behalf of the American Welding Society.

  The American Welding Society's certification programs are internationally recognized and are used as a benchmark of quality workmanship and skills within the welding industry around the world.

- 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 **4.0 CEUs** (Continuing Education Units) or **40 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. George Poulos, MBA, MSc, BSc, CEng, is a **Senior Corrosion & Welding Engineer** with over **30 years** of extensive experience within the **Oil & Gas**, **Petrochemical, Refinery**, **Construction**, **Aircraft & Shipbuilding** Industry. His wide experiences covers in the areas of **Metallurgy**, **Corrosion & Prevention** of **Failures**, **Material Selection & Properties**, **Metallurgy** Techniques, **Metallurgical** Failure Analysis & Prevention, **Corrosion** Fabrication & Inspection, **Fabrication** & **Repair**, **Corrosion** Prevention, **Corrosion** Engineering, **Corrosion Control**, **Corrosion Inhibition**, **Corrosion** Management in Process Operations, **Corrosion** & Prevention of Failures, **Material** Selection, **Cathodic Protection** Systems, **Welding** & **Cutting**, **Welding** Inspection, **Welding** & **Machine** Techniques, **TIG** & **Arc Welding**, **Shielded Metal Arc Welding**, **Gas Tungsten** & **Gas Metal Arc Welding**, **Welding** Procedure Specifications & Qualifications, **Aluminium Welding**, **Hot & Cold Tapping** Techniques, **Hot Work-Safety**, **SMAW**, **GTAW**, **Welding** Techniques, **Pipeline Welding** Practices, **Welding** Engineering, **Welding** Fatigue & Fracture Mechanics, **Welding Inspection Technology**, **Welding Safety**, **Welding** Defects Analysis, **Welding Technology**, **Welding Problems**, **Welding & Non Destructive** Testing,. Further, he is also well-versed in **Hot Rolling** Process, **Hot Strip Mill**, **Mill** Operations, **Roll Mill**, **Steel Making** Process, **Steel** Manufacturing, **Electric Arc Furnace** (**EAF**), **Steel Forging**, **Steel** Manufacturing & Process Troubleshooting, **Slit Rolling**, **Carbon Steel Pipe** Wall Thickness & Grade Selection, **Ferro-Alloys**, **Steel Metallurgy**, **Steel** Structure Welding, **Steelmaking** Slag, **Steel** Making Application, **Heat Treatment** & **Prevention Techniques**, **Corrosion** Fabrication & Inspection and **Post Weld Heat Treatment**.

During his career life, Mr. Poulos has gained his practical and field experience through his various significant positions and dedication as the **Chief Executive**, **Head of Technical Studies**, **Manager**, **Senior Consultant**, **Lead Welding Engineer**, **Senior Welding Engineer**, **Design Engineer**, **Sales Engineer**, **Author**, **Welding Instructor**, **Visiting Lecturer** and **Technical Proposal Research Evaluator** from various international companies such as Greek Welding Institute, Hellenic Quality Forum and International Construction Companies such as Shipbuilding, Aircraft Industry and Oil and Gas Industry.

Mr. Poulos is a **Registered Chartered Engineer** and has a **Master's** degree in **Naval Architecture**, a **Bachelor's** degree in **Welding Engineering** and a Master of Business Administration (**MBA**) from the **Sunderland University**, **Aston University** and **Open University**, **UK**, respectively. Further, he is a **Certified Trainer/Instructor**, an active Member of Chartered Quality Institute (**CQI**), The British Welding Institute (**TWI**), The Royal Institution of Naval Architects (**RINA**) and American Welding Society (**AWS**), a Registered **EWF/IW** (European Welding Federation-International Welding Institute W/E) and an **IRCA** Accredited External Quality Systems Auditor through BVQI. He is an **Author** of Technical Book dealing with Protection/Health/Safety in the Welding/Cutting domain and delivered various trainings, seminars, conferences, workshops and courses globally.

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, 14th of September 2026***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 1000	***Part 3 – Welding Related Disciplines: NDE/Weld Discontinuities*** *NDE Processes (Radiographic, Ultrasonic, Magnetic Particle, Liquid Penetrant, Eddy Current, Etc. – Characteristics, Advantages and Limitations)*
1000 – 1015	*Break*
1015 - 1200	***Part 3 – Welding Related Disciplines: NDE/Weld Discontinuities (cont'd)*** *NDE Symbols*
1200 – 1300	*Lunch*
1300 – 1500	***Part 3 – Welding Related Disciplines: Welding Heat Sources & Arc Physics*** *Power Source Static and Dynamic Characteristics (Open Circuit Voltage and Short Circuiting Current, Slope) • Differences between CC and CV Designs (Principle of Self-Adjusting) • Welding Arc Characteristics (Current and Voltage Relationship, Arc Length Effect) • Electron Emission (Ionization Potential, Work Function, Electrode Material, Shielding Gas, Arc Stability)*
1500 – 1515	*Break*
1515 – 1630	***Part 3 – Welding Related Disciplines: Welding Heat Sources & Arc Physics (cont'd)*** *Arc Temperature and Degree of Ionization (Shielding Gas Influence) • Magnetic Arc Blow (Work Lead Location and Condition) • Lorentz Force (Effect on Droplet Detachment and on Adjacent Power Cables) • Shielding Gas Drag Force (Effect on Droplet Detachment and Metal Transfer Mode) Weld Penetration and Width for Different Shielding Gases*
1630 – 1730	***Distribute Homework & Recap***
1730	*End of Day One*

Day 2: ***Tuesday, 15th of September 2026***

0730 – 0830	***Homework Review***
0830 – 1000	***Part 3 – Welding Related Disciplines: Welding Processes & Controls*** *Arc Welding Processes (SMAW, GMAW, FCAW, GTAW, SAW, PAW) • Resistance Welding Processes (RW, High Frequency RW), High Energy Density Welding Processes (LBW, EBW)*
1000 – 1015	*Break*
1015 – 1200	***Part 3 – Welding Related Disciplines: Welding Processes & Controls (cont'd)*** *Cutting Processes (OFC, CAC, and PAC) • Surfacing Processing (SW, THSP) • Solid-State Welding Processes (FRW, FW)*

1200 – 1300	*Lunch*
1300 – 1500	***Part 3 – Welding Related Disciplines: Welding & Joining Metallurgy*** *Crystal Structure of Metals (FCC, BCC, HCP, Unit Cells, Lattice Parameter, C/A Ratio, Atom Positions, Interstitial Positions) • Melting and Solidification, Phase Transformations and Phase Diagrams (Eutectic, Eutectoid, Peritectic and Monotectic, Lever Rule Calculation) Metallurgy & Weld-Ability of Typical Engineering Materials (Low Carbon Structural Steels, Cast Irons, Stainless Steels, Nickel Alloys, Aluminum Alloys, Titanium Alloys, Etc.) Microstructure (e.g., Ferrous Alloys – Grain Boundary Ferrite, Acicular Ferrite, Bainite, Martensite, Austenite, Delta Ferrite, etc.) and Mechanical Properties • Carbon Equivalent (CE_{IIW}, P_{cm}, Expressions, Alloying Content and Carbon Content Effect)*
1500 - 1515	*Break*
1515 – 1630	***Part 3 – Welding Related Disciplines: Welding & Joining Metallurgy (cont'd)*** *Hydrogen Assisted Cracking (Heat-Affected Zone Cracking, Cold Cracking) Base Metal Matching (e.g., Electrodes with High Strength Steels) • Solidification Cracking (Segregation of Impurity Atoms, Shrinkage Cracking, Lamellar Tearing) • Delta Ferrite in Stainless Consumables, Specifications for Consumables (Categories: All Position, Rutile, Basic) • Flux-Metal Reactions (Oxygen and Sulfur Control in Weld Pool) • Typical Temperature Range of a Heat Source*
1630 – 1730	***Distribute Homework & Recap***
1730	*End of Day Two*

Day 3: ***Wednesday, 16th of September 2026***

0730 – 0830	***Homework Review***
0830 – 1000	***Part 3 – Welding Related Disciplines: Welding & Joining Metallurgy (cont'd)*** *Temperature Distribution in a Weldment • HAZ Formation • Multipass Thermal Experience, Reheated Weld Metal Properties • Weld Macro and Micro-Graph Interpretation • Solidification Profile and Preferred Grain Orientation (Epitaxial Growth)*
1000 – 1015	*Break*
1015 – 1200	***Part 3 – Welding Related Disciplines: Welding & Joining Metallurgy (cont'd)*** *Origin of Weld Ripples • Special Attributes of Base Metal (As-Cast Structure, Deformation Texture, Oxide on Flame-Cut Surfaces) • Thermal Treatments (Preheat, Postheat, Interpass Influence on Weld Cooling Rate and Residual Stress Distribution) • Solid-State Transformations in Welds (Different Forms of Ferrite, Bainite and Martensite, Sigma Phase in Stainless Steels, Guinier-Preston Type Precipitates Zones and Aging in Aluminum Alloys) • Corrosion (Sensitization In Stainless Steel Welds, Stress Corrosion Cracking*
1200 – 1300	*Lunch*
1300 – 1500	***Part 3 – Welding Related Disciplines: Weld Design*** *Structural Fabrication Requirements, Sectional Properties, Stress Gradient • Stress Triaxiality, Weld Symbols, Hardness and Microhardness (e.g., Across a Weld Cross Section)*

1500 - 1515	*Break*
1515 – 1630	***Part 3 – Welding Related Disciplines: Weld Design (cont'd)*** *Tensile Properties, Ductility, Toughness, Fillet Break Test (Influence of Second Phase & Porosity) • Ductile Fracture, Brittle Fracture, Fatigue (Initiation, Propagation, Failure, High-Cycle, Low-cycle) • Temperature & Strain Rate Effect*
1630 – 1730	***Distribute Homework & Recap***
1730	*End of Day Three*

Day 4: ***Thursday, 17th of September 2026***

0730 – 0830	***Homework Review***
0830 – 1000	***Part 3 – Welding Related Disciplines: Brazing & Soldering*** *Characteristics of Brazing and Soldering, Fluxes and Substrates, Capillary Action, Wetting and Spreading, Contact Angle, Joint Clearance, Viscosity, Liquidus and Solidus, Flow of Molten Filler in Horizontal and Vertical Joints (Maximum Penetration and Rate), Filler Metal Systems (Sn-Pb Solders, Ni and Cu Based Alloys, Ag-Cu Based Brazing Alloys) and Intermetallic Compound Formation*
1000 – 1015	*Break*
1015 – 1200	***Part 3 – Welding Related Disciplines: Brazing & Soldering (cont'd)*** *Characteristics of Brazing and Soldering, Fluxes and Substrates, Capillary Action, Wetting and Spreading, Contact Angle, Joint Clearance, Viscosity, Liquidus and Solidus, Flow of Molten Filler in Horizontal and Vertical Joints (Maximum Penetration and Rate), Filler Metal Systems (Sn-Pb Solders, Ni and Cu Based Alloys, Ag-Cu Based Brazing Alloys) and Intermetallic Compound Formation (cont'd)*
1200 – 1300	*Lunch*
1300 – 1500	***Part 3 – Welding Related Disciplines: Safety*** *Recognize Health Hazards Relating to Welding, (Fumes, Toxic Gases, Noise, Radiation). Recognize Safety Hazards, (Electric Shock, Compressed Gases, Fire, Welding in a Confined Space, Welding on Containers and Piping, Moving Equipment). Recognize Precautions to Avoid Injury and Possess a Working Knowledge of Safety and Fire Codes*
1500 - 1515	*Break*
1515 – 1630	***Part 3 – Welding Related Disciplines: Safety (cont'd)*** *Recognize Health Hazards Relating to Welding, (Fumes, Toxic Gases, Noise, Radiation). Recognize Safety Hazards, (Electric Shock, Compressed Gases, Fire, Welding in a Confined Space, Welding on Containers and Piping, Moving Equipment). Recognize Precautions to Avoid Injury and Possess a Working Knowledge of Safety and Fire Codes (cont'd)*
1630 – 1730	***Distribute Homework & Recap***
1730	*End of Day Four*

Day 5: ***Friday, 18th of September 2026***

0730 – 0830	***Homework Review***
0830 – 1000	***Part 4 – Practical Welding & Related Applications: Exam using References on the Application of Welding Engineering Concepts in the Areas of*** *Welding Safety • Weldment Design*
1000 – 1015	*Break*

1015 – 1200	***Part 4 – Practical Welding & Related Applications: Exam using References on the Application of Welding Engineering Concepts in the Areas of (cont'd)*** *Welding Metallurgy • Materials • Welding Process Selection*
1200 – 1300	*Lunch*
1300 – 1500	***Part 4 – Practical Welding & Related Applications: Exam using References on the Application of Welding Engineering Concepts in the Areas of (cont'd)*** *NDE including Visual Weld Inspection, Quality Assurance, Quality Control in Accordance with Codes*
1500 – 1515	*Break*
1515 – 1645	***Part 4 – Practical Welding & Related Applications: Exam using References on the Application of Welding Engineering Concepts in the Areas of (cont'd)*** *Specifications • Other Standards and/or Drawings*
1645 – 1700	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1700 – 1715	***POST-TEST***
1715 – 1730	*Presentation of Course Certificates*
1730	*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 60 days following the course completion. Each participant has only one trial for the MOCK exam within this 60-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.

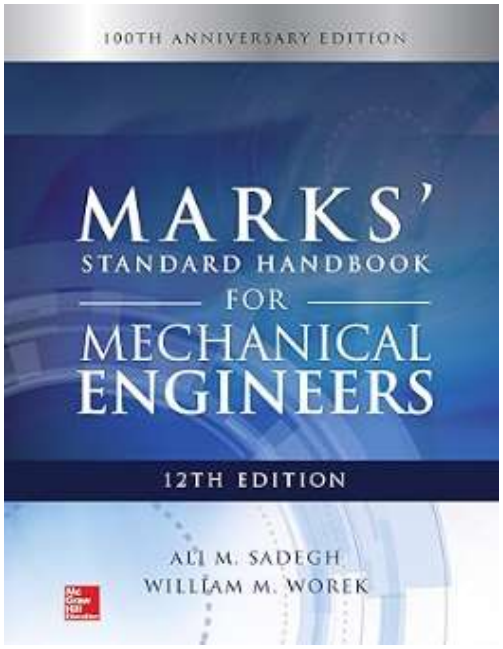
Practical Sessions

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



Book(s)

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



Title : Marks' Standard Handbook For Mechanical Engineers
ISBN :978-1259588501
Author : Ali Sadegh, William Worek
Publisher : McGraw Hill

Course Coordinator

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