COURSE OVERVIEW FE0430

Welding Engineering & Technology: *Welding, Fabrication and Inspection (AWS, ASME and API Codes)*

Course Title

Welding Engineering & Technology*: Welding, Fabrication and Inspection (AWS, ASME and API Codes)*

Course Reference

FE0430

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	January 18-22, 2026	Olivine Meeting Room, Fairmont Nile City, Cairo, Egypt
2	August 02-06, 2026	Crowne Meeting Room, Crowne Plaza Al Khobar, Al Khobar, KSA
3	December 13-17, 2026	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt in the class will be applied using the following practical methods: -

(**1**) **Industrial Facility Visit:** Course participants will be taken to an industrial facility where they will practice welding, fabrication and inspection. In case that this course is organized inside client premises (In-House), then client shall provide access to its welding and fabrication workshop for practical sessions.

(**2**) **Welding Simulator:** Participants will use in the class the welding & fabrication software and AWS Tool Kit & Structural Weld Replica Kit to practice some of the skills learnt.

Welding Technology plays a major role in all maintenance and fabrication activities in the industry. Production equipment, a highly sophisticated welding technique and qualified personnel allow processing or production of steel products for different applications within short periods. This course provides a much-needed source of authoritative information on the complex subject of welding. It provides a comprehensive run-down of the complex science of welding- processes, selection of power sources, weld metallurgy, weldability of metals, testing and inspection techniques.

The course will cover welding processes (GTAW, SMAW, MIG, FCAW, SAW, OAW), welding consumables, design of welded joints, applied welding metallurgy and heat treating, welding quality control, non-destructive testing and major International Welding Codes and Standards such as AWS and API.

Each session will be conducted in a lecture/discussion format and videos designed to provide intensive instruction and guidance. The director will be available following each day's session to provide participants with further opportunity for discussion and consideration of specific problems.

The course includes detailed discussions about welding of pipelines and related facilities in accordance with API 1104, AWS D1.1, ASME IX and API 577 codes and standards.

Course Objectives

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

- Apply and gain an in-depth knowledge on welding engineering and technology including welding, fabrication and inspection in accordance with AWS, ASME and API codes and standards
- Differentiate the various welding process such as SMAW, GTAW, GMAW, FCAW and OAW
- Identify the arc welding consumables including welding wires, coated electrodes, sub arc wires and fluxes, neutral and active fluxes and shielding gases
- Describe the properties and strength of materials and carryout destructive testing
- Analyze the fatigue of welded structures, joint design as well as dissimilar welds and weld overlays
- Characterize the metallurgical properties of steel and heat treatment and implement welding quality control
- Practice the latest standards and procedure for welding pipeline and employ related facilities
- Discuss the history and structure of API 1104, AWS D1.1 and ASME code
- Explain the standards and specification of ASME Sec IX and practice the correct welding procedures as well as supplemental variables and special consideration for notch toughness
- Implement welding safety with proper procedure and specification
- Inspect welding in accordance with API 577 standard

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 welding engineering and technology including welding, fabrication and inspection in accordance with AWS, ASME and API codes for welding engineers, inspection engineers, facility integrity engineers, fabrication engineers, mechanical engineers, NDT personnel, quality assurance personnel, testing laboratory personnel, and maintenance personnel. Further, this course is a must for anyone involved in inspection of welding construction, qualifying welders, brazers and operators; or involved in writing and qualifying welding and brazing procedure specifications; those responsible for reviewing supplier procedures, auditing or reviewing in-house procedures and qualifications; and those who estimate jobs in compliance of ASME code.

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 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 **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. 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 **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, **Metallurgy Techniques**, **Metallurgical** Failure Analysis & Prevention, **Corrosion** Fabrication & Inspection, **Fabrication** & **Repair**, **Corrosion** Prevention, **Corrosion** Engineering, **Oilfield Corrosion Monitoring & Control**, **Corrosion Inhibition**, **Corrosion** Management in Process Operations, **Corrosion** & Prevention of Failures, **Material** Selection, **Cathodic Protection** Systems. 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.

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.

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.

Accommodation

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

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	***Welding Processes*** *Fundamentals ● SMAW (Shielded Metal Arc) ● GTAW (Gas Tungsten Arc) ● GMAW (or MIG) (Gas Metal Arc) ● FCAW (Flux Cored Arc)*
0930 – 0945	*Break*
0945 – 1030	***Welding Processes (cont'd)*** *SAW (Submerged Arc) ● Stud Welding ● OAW (Oxy Acetylene) ● High Energy, Special & Hybrid Welding Processes ● Power Sources for Arc Welding ● Brazing & Cutting Processes*
1030 – 1130	***Classification of Arc Welding Consumables*** *Coated Electrodes ● GMAW & GTAW Wires ● FCAW Wires*
1130 – 1230	***Classification of Arc Welding Consumables (cont'd)*** *Sub Arc Wires & Fluxes ● Neutral & Active Fluxes ● Shielding Gases*
1230 – 1245	*Break*
1245 – 1420	***Properties & Strength of Materials*** *Material Properties ● Destructive Testing*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Fatigue of Welded Structures*** *Fatigue Mechanisms ● Weld Finish Classifications*
0830 – 0930	***Joint Designs*** *Joints ● Symbols ● Preparation ● Design for Productivity*
0930 – 0945	*Break*
0945 – 1045	***Dissimilar Welds & Weld Overlays***
1045 – 1215	***Metallurgical Properties of Steel & Heat Treatment*** *Metallurgical Properties of Steel ● Preheating ● Post Weld Heat Treatment (PWHT) ● Field Heat Treating Equipment ● Plans for PWHT*
1215 – 1230	*Break*
1230 – 1420	***Welding Quality Control*** *Planning for QC ● Welding Problems & Defects ● Visual Inspection ● Employment of NDT ● Welder Training & Qualification ● CSWIP vs. ASNT Qualification*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0845	***Welding of Pipelines & Related Facilities (API 1104)*** *General ● Referenced Publications ● Definition of Terms ● Specifications ● Qualification of Welding Procedures for Welds Containing Filler-Metal Additives ● Qualification of Welders ● Design & Preparation of a Joint for Production Welding*
0845 – 0945	***Welding of Pipelines & Related Facilities (API 1104) (cont'd)*** *Inspection & Testing of Production Welds ● Acceptance Standards for Nondestructive Testing ● Repair & Removal of Defects ● Alternative Acceptance Standards for Girth Welds ● In-Service Welding*
0945 – 1000	*Break*
1000 – 1115	***Welding of Pipelines & Related Facilities (API 1104) (cont'd)*** *Procedures for Nondestructive Testing ● Automatic Welding ● Automatic Welding without Filler-Metal Additions*
1115 – 1230	***API 1104 & AWS D1.1: History & Structure*** *Historical Development of AWS D1.1 & API 1104 ● Pre-Qualification & Qualification of Welding Procedures ● The Use of Pre-qualified Procedures ● Base Metal Classifications to AWS & API*
1230 – 1245	*Break*
1245 – 1420	***ASME Code, History & Structure*** *Historical Development of Section IX ● Relationship of Section IX to Other Codes (ASME V111 & B31.3) ● Organization, Structure & Mechanics of Using Section IX–Essential, Non-Essential & Supplemental Essential Variables*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0900	***ASME Section IX: Base & Filler Metal Specifications*** *P numbers & Base Metal Classifications ● F-numbers ● A-Numbers ● SFA & Non-SFA Filler Metal Specifications ● The Use of Standard Welding Procedures*
0900 – 0930	*Break*

0930 – 1130	***ASME Section IX: Selecting & Preparing the Test Coupon for Both Procedure & Welder Qualifications*** *Obtaining Maximum Cost-Effectiveness from Test Coupons ● Preparation & Welding of the Test Coupon ● Recording Both Necessary & Worthwhile Data ● Demonstrating Code Compliance*
1130 – 1230	***ASME Section IX: Writing Welding Procedure Specification*** *Meeting Code Requirements ● Addressing Customer Requirements ● Providing Direction to the Welder ● Sources of Information for Preparing Intelligent & Meaningful Welding Procedure Specifications*
1230 – 1245	*Break*
1245 – 1420	***ASME Supplemental Variables – Special Consideration for Notch-Toughness*** *How Welding Influences Toughness ● Toughness Requirements of Construction Codes ● Measuring & Recording Heat Input Data ● Translating Heat Input Data Into Useful Directions for a Welder ● Typical Construction Code Requirements*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

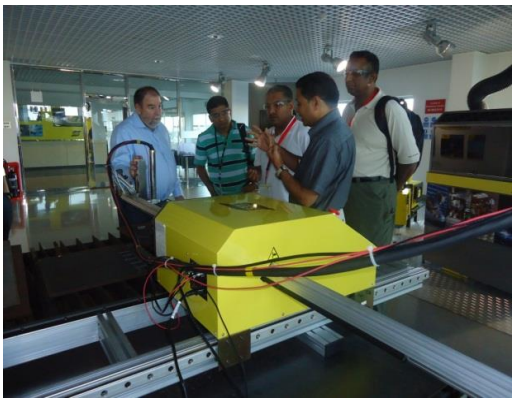
Day 5

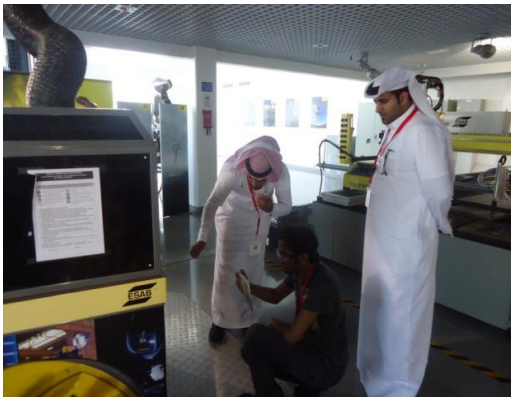
0730 – 0900	***Welding Safety*** *Electric Shock ● Radiation ● Fire & Explosions ● Eye Injuries ● Fume ● Hearing Impairment*
0900 – 0915	*Break*
0915 – 1100	***Procedure Specification*** *Use of Section IX Form ● Other Formats ● Procedure Qualification Record Forms ● Revisions to Records & Procedures ● Take-Home Test*
1100 – 1230	***API 577 Welding Inspection*** *Welding Inspection Procedure ● NDT*
1230 – 1245	*Break*
1245 – 1345	***API 577 Welding Inspection (cont'd)*** *Metallurgy ● Refinery & Petrochemical Plant Welding Issues*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

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

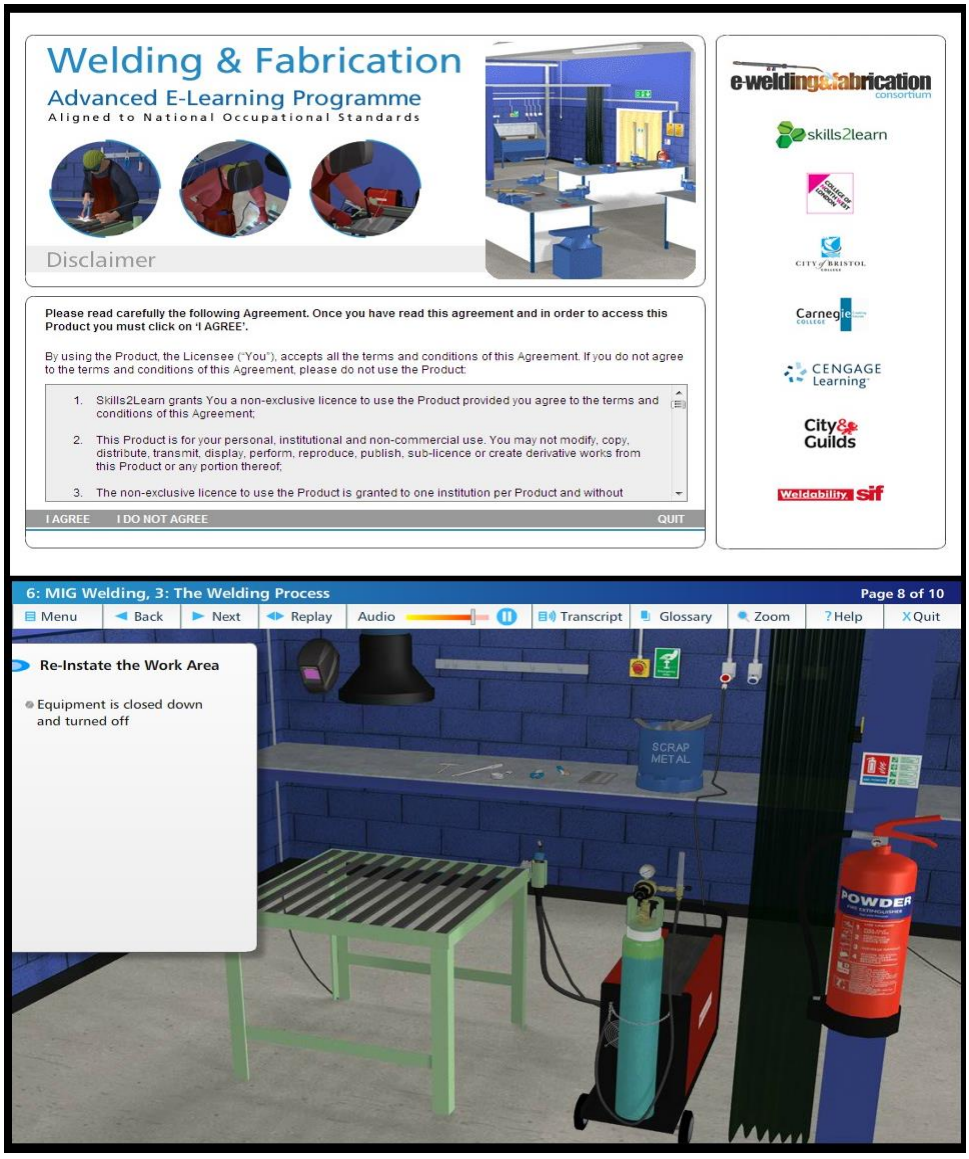




Simulator (Hands-on Practical Sessions)

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 one of our state-of-the-art simulators “E-Welding & Fabrication”.



E-Welding & Fabrication

AWS Tool Kit

Structural Weld Replica Kit

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