COURSE OVERVIEW FE0763-7D
ASNT NDT Level II Certification Program (MT, PT and UT)
(ASNT SNT-TC-1A)

Course Title
ASNT NDT Level II Certification Program (MT, PT and UT) *(ASNT SNT-TC-1A)*

Course Date/Venue
May 18-26, 2025/Meeting Plus 6, City Centre Rotana Doha, Doha, Qatar

Course Reference
FE0763-7D

Course Duration/Credits
Seven days/5.6 CEUs/56 PDHs

Course Description

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

This course is developed by Haward Technology in order to provide participants with the theoretical and practical training in the subject and certify them as an "ASNT Level-II" in the following Non-Destructive Testing (NDT) methods:-

a) Magnetic Particle Testing (MT)
b) Liquid Penetrant Testing (PT)
c) Ultrasonic Testing (UT)

The course is developed in compliance with the requirements of the American National Standards Institute (ANSI) and The American Society for Non-destructive Testing (ASNT) based on the ANSI/ASNT CP-105 Standard for qualification of non-destructive testing personnel and as per the ASNT Recommended Practice No. SNT-TC-1A for Personnel Qualification and Certification in Non-destructive Testing together with the extra specific requirements.

This covers the principles and theory of magnetic particle testing including magnets and magnetism; the flux fields, effects of discontinuities on materials and magnetization in circular and longitudinal field by means of electric current; the demagnetization procedures and the various types of equipment; the types of discontinuities in casting, ingots, wrought sections, parts and in welds; and the systematic evaluation techniques using various standards and appraising the defect.

Further, the course will also discuss the basic principles and process of various methods and equipment; the appropriate penetrant testing method and the discontinuities inherent in various materials, reason for indications, appearance of indications and time for indications to appear; the persistence of indications, effects of temperature and lightning, effects of metal smearing operations, preferred sequence for penetrant inspection and part preparation; the factors affecting indications for pre-cleaning, penetrant used, prior processing and technique used; the indications from cracks occurring during solidification, processing and service; and the indications from porosity and specific material forms that include forgings, castings, plate, welds and extrusions.

Moreover, the course covers true indications evaluations, false indications, relevant indications and non-relevant indications; the process control, control process variables, testing and maintaining materials; the proper inspection procedures and standards including applicable methods/processes and acceptance criteria; the basic methods of instruction; the ultrasonic technique, principle of ultrasonic, equipment, testing techniques and calibration; the evaluation of base-material product forms that include ingots, plate, sheet, bar, rod, pipe, tubular products, forgings and castings; and the composite structures and other product forms as applicable b rubber, glass, etc.

During this interactive course, participants will learn the evaluation of weldments, welding processes and weld geometries; the welding discontinuities, origin and typical orientation of discontinuities, response of discontinuities to ultrasound and applicable codes/standards; evaluating bonded structures through manufacturing processes, types of discontinuities, origin and typical orientation of discontinuities, response of discontinuities to ultrasound and applicable codes/standards; detecting discontinuity and identifying sensitivity to reflections, resolution, determination of discontinuity size and location of discontinuity; and the comparison procedures and object appraisal.

Sample Questions for general examinations are presented in the separate question booklets that can be obtained from ASNT International Service Center. Participants will further demonstrate familiarity with and ability to operate the necessary equipment for *MT, PT and UT*, record and analyse the resultant information to the degree required as well as test flawed specimen and component and analyse the results of NDT as part of the practical training.

At the completion of the course, participants will be appearing for a Level II exam. Each candidate will be a "*Certified ASNT NDT Level-II in MT, PT & UT*" upon successfully passing the examination with a minimum passing composite grade of at least 80 percent (%) which will be administered and graded by Haward Technology through its Certified ASNT Level-III instructors.

Course Objectives

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

- Get certified as a *"Certified ASNT NDT Level II in Magnetic Particle Testing, Liquid Penetrant Testing and Ultrasonic Testing"*
- Discuss the principles and theory of magnetic particle testing including magnets and magnetism
- Recognize flux fields covering direct current, direct pulsating current and alternating current
- Identify the effects of discontinuities on materials including design factors and the relationship to load-carrying ability

- Explain magnetization in circular and longitudinal field by means of electric current and select the proper method of magnetization
- Employ demagnetization procedures by identifying the need for demagnetization of parts, and the need for collapsing flux fields as well as describing the current, frequency, field orientation and heat factors and precautions
- List the various types of equipment consisting of portable, stationary, automatic, multidirectional units, liquids and powders, ultraviolet radiation and light-sensitive instruments
- Enumerate the types of discontinuities in casting, ingots, wrought sections, parts and in welds
- Implement systematic evaluation techniques using various standards and appraising the defect
- Review the basic principles and process of various methods and equipment
- Select the appropriate penetrant testing method and discuss the advantages and disadvantages of various methods
- Inspect and evaluate indications and identify the discontinuities inherent in various materials, reason for indications, appearance of indications and time for indications to appear
- Recognize the persistence of indications, effects of temperature and lightning, effects of metal smearing operations, preferred sequence for penetrant inspection and part preparation
- Discuss the factors affecting indications for pre-cleaning, penetrant used, prior processing and technique used
- Recognize the indications from cracks occurring during solidification, processing and service
- Discuss the indications from porosity and specific material forms that include forgings, castings, plate, welds and extrusions
- Evaluate true indications, false indications, relevant indications and non-relevant indications
- Interpret process control as well as control process variables, test and maintain materials
- Carryout proper inspection procedures and standards including applicable methods/processes and acceptance criteria
- Employ the basic methods of instruction
- Review ultrasonic technique, principle of ultrasonic, equipment, testing techniques and calibration
- Evaluate base-material product forms that include ingots, plate, sheet, bar, rod, pipe, tubular products, forgings and castings
- Identify composite structures and other product forms as applicable b rubber, glass, etc.
- Evaluate weldments and apply welding processes and weld geometries
- Recognize the welding discontinuities, origin and typical orientation of discontinuities, response of discontinuities to ultrasound and applicable codes/standards

- Evaluate bonded structures through manufacturing processes, types of discontinuities, origin and typical orientation of discontinuities, response of discontinuities to ultrasound and applicable codes/standards
- Detect discontinuity and identify sensitivity to reflections, resolution, determination of discontinuity size, location of discontinuity
- Apply comparison procedures and object appraisal

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 intended for those willing to be certified as ASNT Level-II in MT, PT & UT methods. Course participants shall be ASNT Level-I Certified, in addition to other course prerequisites as specified below.

Exam Eligibility & Structure

Exam Candidates shall have the following minimum pre-requisites:-

All Participants of this course must have Level-I in MT, PT and UT before they can attend this Level-II course.

MT Initial Training & Experience Levels			
Level	**Training Hours**	**Minimum Hours in Method**	**Total Hours in NDT**
I	12	70	130
II	8	210	400

PT Initial Training & Experience Levels			
Level	**Training Hours**	**Minimum Hours in Method**	**Total Hours in NDT**
I	4	70	130
II	8	140	270

UT Initial Training & Experience Levels			
Level	**Training Hours**	**Minimum Hours in Method**	**Total Hours in NDT**
I	40	210	400
II	40	630	1200

A person may be qualified directly to NDT Level II with no time as a certified NDT Level I, providing the recommended training and experience consist of the sum of the hours recommended for NDT Level I and Level II.

Examinations Category & Criteria

Vision Examinations

- Near-Vision Acuity
    - This examination will ensure natural or corrected (no pharmacological agents) near-distance acuity in at least one eye such that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at the distance designated on the chart but not less than 12 inches (30.5 cm) or a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable. This examination shall be administered annually.
    - Pharmacological agents (eye drops) that would improve or enhance visual acuity at any distance shall not be used
- Color Contrast Differentiation
    - This examination will demonstrate the capability of distinguishing and differentiating contrast among colors or shades of gray used in the method as determined by the employer. This shall be conducted upon initial certification and at five-year intervals thereafter.
    - Vision examinations expire on the last day of the month of expiration

General (Written)

- This examination will address the basic principles of the applicable method
- The NDT Level III will select or devise appropriate questions covering the applicable method and techniques described by the employer's written practice and the applicable elements of the outline in ANSI/ANT CP-105
- The minimum number of examination questions that will be given is 40
- A valid ACCP, ASNT NDT or ASNT 9712 Level II certificate may be accepted as fulfilling the General examination criteria for each applicable method if the NDT Level III has determined that the ASNT examinations meet the requirements of the employer's written practice. This acceptance should be documented

Specific (Written)

- This examination will address the equipment, operating procedures and NDT techniques that the individual may encounter during specific assignments described by the employer's written practice and the applicable elements of the outline in ANSI/ASNT CP 105
- The specific examination will also cover the specifications or codes and acceptance criteria used in the NDT conducted by the employer
- The minimum number of examination questions that will be given is 20

Practical

- The candidate shall demonstrate familiarity with and ability to operate the necessary NDT equipment, record and analyse the resultant information to the degree required
- At least one flawed specimen or component shall be tested and the results of the NDT analysed by the candidate
    - Phased Array Ultrasonic Testing and Time of Flight Diffraction Practical Examination. Flawed samples used for practical examinations should be representative of the components and/or configurations that the candidates would be testing under this technique and approved by the NDT Level III

  - Film Interpretation Limited Certification. The Practical examination should consist of review and grading of a sufficient number of radiographs to demonstrate satisfactory performance to the satisfaction of the NDT Level III. The number of radiographs should be addressed in the employer's written practice

- The description of the specimen, the NDT procedure including checkpoints and the results of the examination shall be documented
- Specimens. Proficiency shall be demonstrated in selecting and performing the applicable NDT technique within the method and in interpreting and evaluating the results on one or more flawed specimens as appropriate for the method and approved and documented by the NDT Level III (Grading Key)
- Evaluation. The candidate should detect all discontinuities and conditions specified and documented by the NDT Level III. The written practice should address the acceptance detection rate as well as the maximum number of falls calls acceptable
- Grading. A checklist containing at least ten (10) different checkpoints requiring an understanding of NDT variables and the employer's procedural requirements will be included. While it is normal to score the Practical on a percentile basis *(80% required)*, the practical examination checklist should also contain a single checkpoint or multiple checkpoints that failure to successfully complete will result in failure of the examination. This requirement should be clearly marked on the checkpoint(s)
- A valid ACCP or ASNT 9712 Level II certificate may be accepted as fulfilling the Practical examination criteria for each applicable method if the NDT Level III has determined that the ASNT examinations meet the requirements of the employer's written practice. This acceptance should be documented. If this assessment cannot be accomplished, an employer-administered Practical examination should be completed

Additional Criteria

All written examinations will be closed-book except that necessary data such as graphs, tables, specifications, procedures, codes, etc., may be provided during the examination. All questions are approved by the responsible NDT Level III.

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$ 8,500 per Delegate. 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.

Magnetic Particle Testing Qualification Certificate(s)

(1) Internationally recognized Qualification Certificates will be issued to participants who have successfully completed the course and passed the exam at the end of the course. Successful candidate will be certified as a *"Certified ASNT NDT Level II in Magnetic Particle Testing"*. Qualification Certificate is valid for 5 years.

Sample of Certificates

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

Qualification Certificate

Haward Technology Middle East

الشركة السعودية للكهرباء
Saudi Electricity Company

This is to certify that

Ahmed Al-Hajri

has met the established & published Requirements for Certification by ASNT in accordance with SNT-TC-1A (2020) and the company's Written Practice as

ASNT NDT Level II

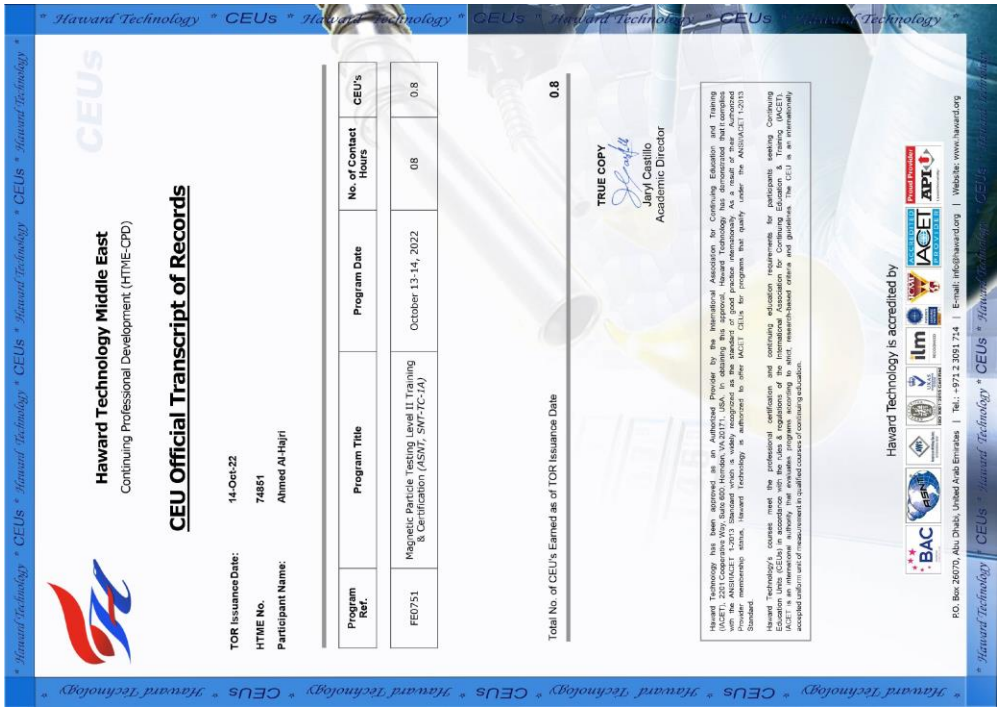
in the following Nondestructive Testing Methods:

Method	Product Form	Certificate No.	Issue Date	Expiry Date
Liquid Penetrant Testing	All Forms	74851/01/FE0731-1.5D/DIA/14.10.22	10/22	10/27

ASNT Level III Examiner
Mr. Luis Lopez (ASNT# 219655)
Signature & Stamp:

Mr. Jaryl Castillo
Academic Director

(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-Oct-22
HTME No. 74851
Participant Name: Ahmed Al-Hajri

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
FE0751	Magnetic Particle Testing Level II Training & Certification (ASNT, SNT-TC-1A)	October 13-14, 2022	08	0.8

Total No. of CEU's Earned as of TOR Issuance Date: 0.8

TRUE COPY
Jaryl Castillo
Academic Director

Haward Technology has been approved as an Authorized 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 1-2013 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 1-2013 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 unit of measurement in qualified courses of continuing education.

Haward Technology is accredited by

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Liquid Penetrant Testing Qualification Certificate(s)

(1) Internationally recognized Qualification Certificates will be issued to participants who have successfully completed the course and passed the exam at the end of the course. Successful candidate will be certified as a *"Certified ASNT NDT Level II in Liquid Penetrant Testing"*. Qualification Certificate is valid for 5 years.

Sample of Certificates

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

Qualification Certificate

Haward Technology Middle East

الشركة السعودية للكهرباء
Saudi Electricity Company

This is to certify that

Ahmed Al-Hajri

has met the established & published Requirements for Certification by ASNT in accordance with SNT-TC-1A (2020) and the company's Written Practice as

ASNT NDT Level II

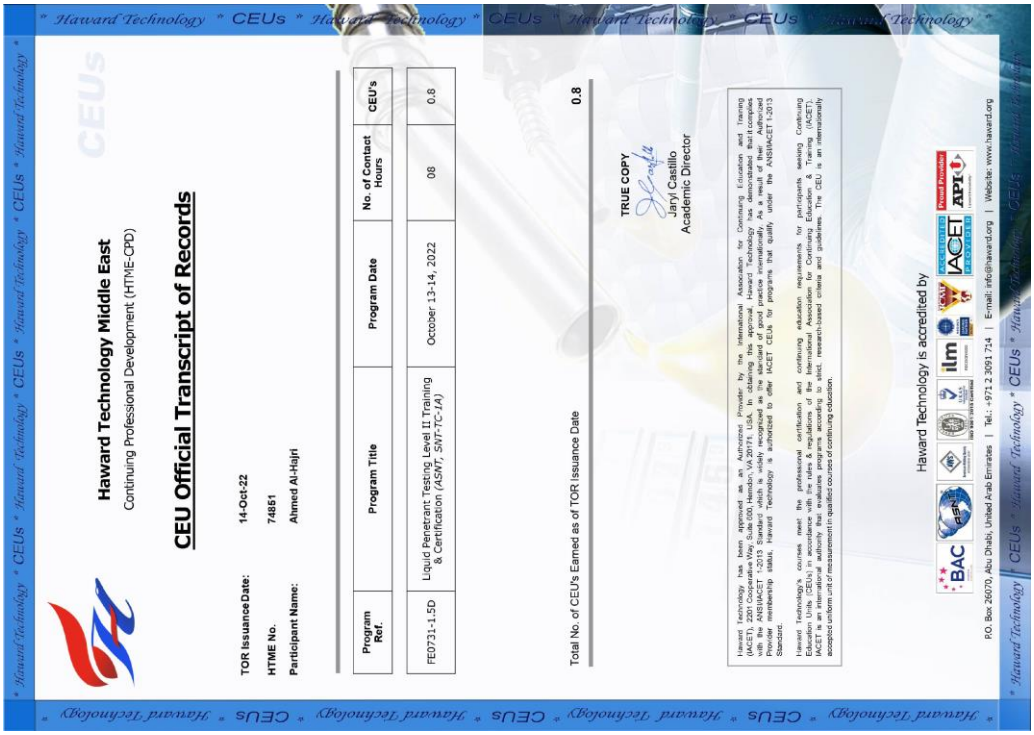
in the following Nondestructive Testing Methods:

Method	Product Form	Certificate No.	Issue Date	Expiry Date
Magnetic Particle Testing	All Forms	74851/01/FE0751/DMM/14.10.22	10/22	10/27

ASNT Level III Examiner
Mr. Gert Viljoen (ASNT# 219656)
Signature & Stamp:

Mr. Jaryl Castillo
Academic Director

(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-Oct-22
HTME No. 74851
Participant Name: Ahmed Al-Hajri

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
FE0731-1.5D	Liquid Penetrant Testing Level II Training & Certification (ASNT, SNT-TC-1A)	October 13-14, 2022	08	0.8

Total No. of CEU's Earned as of TOR Issuance Date 0.8

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Jaryl Castillo
Academic Director

Haward Technology is accredited by

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Ultrasonic Testing Qualification Certificate(s)

(1) Internationally recognized Qualification Certificates will be issued to participants who have successfully completed the course and passed the exam at the end of the course. Successful candidate will be certified as a *"Certified ASNT NDT Level II in Ultrasonic Testing"*. Qualification Certificate is valid for 5 years.

Sample of Certificates

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

Qualification Certificate

Haward Technology Middle East

الشركة السعودية للكهرباء
Saudi Electricity Company

This is to certify that

Ahmed Al-Hajri

has met the established & published Requirements for Certification by ASNT in accordance with SNT-TC-1A (2020) and the company's Written Practice as

ASNT NDT Level II

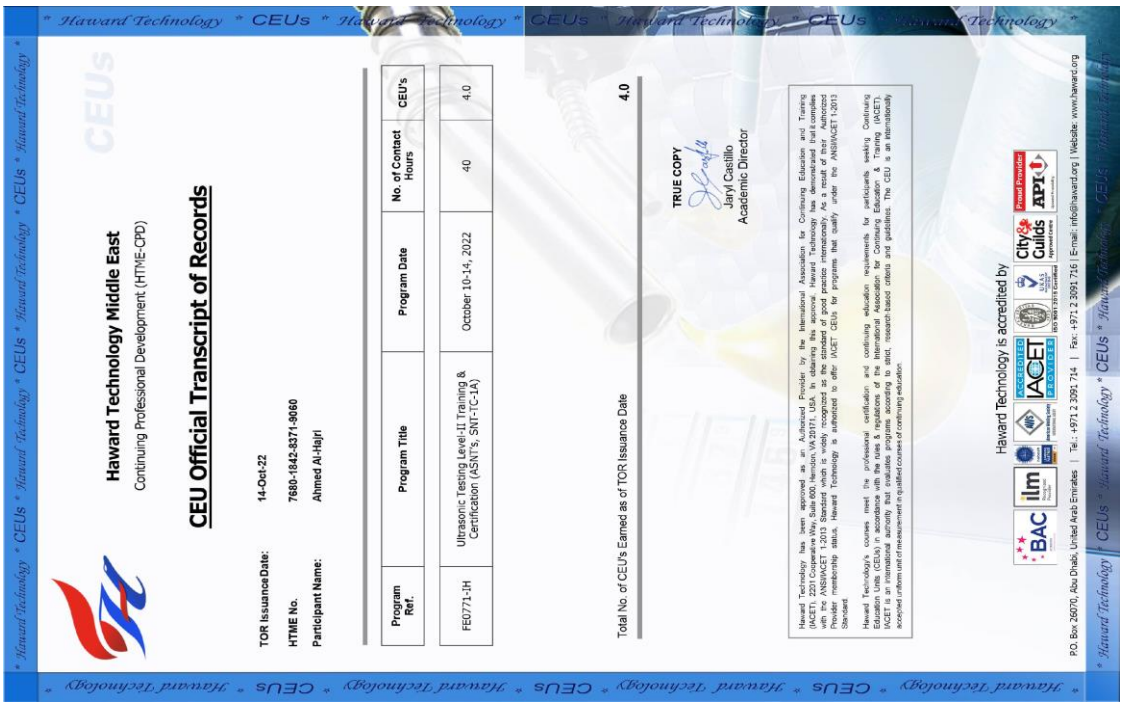
in the following Nondestructive Testing Methods:

Method	Product Form	Certificate No.	Issue Date	Expiry Date
Ultrasonic Testing	All Forms	7680-1842-8371-9060	10/22	10/27

ASNT Level III Examiner
Dr. Mohammed Elsaady (ASNT# 219655)
Signature & Stamp:

Mr. Jaryl Castillo
Academic Director

(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-Oct-22
HTME No. 7680-1842-8371-9060
Participant Name: Ahmed Al-Hajri

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
FE0771-IH	Ultrasonic Testing Level-II Training & Certification (ASNT's, SNT-TC-1A)	October 10-14, 2022	40	4.0

Total No. of CEU's Earned as of TOR Issuance Date 4.0

TRUE COPY
Jaryl Castillo
Academic Director

Haward Technology has been approved as an Authorized 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 1-2013 Standard which is widely recognized as the standard of good practice internationally. As a result of this Authorized Provider approval, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2013 Standard.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking Continuing Education Units (CEUs) in accordance with the standards 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

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Course Accreditations

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

- The American Society For Nondestructive Testing (ASNT)

Haward Technology's instructors are certified by **The American Society for Nondestructive Testing** (**ASNT**) and are authorized to conduct ASNT's certification programs for specific NDT methods in accordance with ASNT-TC-1A (2016). ASNT is the world's largest technical society for nondestructive testing (NDT) that provides a forum for exchange of NDT technical information, NDT educational materials and programs, and standards and services for the qualification and certification of NDT personnel.

- 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 **5.6 CEUs** (Continuing Education Units) or **56 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. Luis Lopez is a **Senior Inspection Engineer** with extensive experience within the **Oil & Gas**, **Petrochemical** and **Refinery** industries. His expertise widely covers in the areas of **Thermography**, **Thermal Infrared** Testing, **Radiographic Film** Interpretation, **Visual** Testing, **Phased Array Ultrasonic** Testing, **Ultrasonic** Testing, **Magnetic Particle** Testing, **Liquid Penetrant** Testing, **Non-destructive Testing**, **NDT** Methods & Applications, **Electromagnetic** Testing, **Hydrostatic Leak** Testing, **Eddy Current** Testing, **Valve Inspection & Testing**, Codes & Standards Interpretation, **Corrosion** Engineering, **Corrosion & Metallurgy**, **Welding & Corrosion** Engineering, **Welding** Metrology, International Welding Codes, Practical **Welding** Technology, Plastic Pipe Welding, **Welding** Inspection, **Welding** Defects Analysis, **Welding** Joints & Coating Inspection, Post Weld Heat Treatment, Hardness Testing, **Welding** Electrodes Monitoring & Control, **Pipe** Testing, **Piping** System, **Steel** Structures, Metals Casting, Crane Functional Testing & Load Testing, **Hydrotesting**, **Pressure Testing** Procedure, **Pressure Equipment** Calibration, Stream Inspection, **Corrosion** Evaluation, **Casting** Products Inspection and Raw Materials Inspection. He is currently the **Senior NDT Instructor** of **SETE** wherein he is deeply involved in thermography, NDT qualification and certification of personnel.

During his career life, Mr. Lopez gained his practical and field experience through his various significant positions and dedication as the **Technical Manager**, **NDT Instructor**, **NDT Manager & Instructor**, **NDT Inspector**, **NDT Offshore Inspector & Quality Control**, **Phased Array Ultrasonic Technician** and **Radiographic Testing Technician** for various international companies such as the JP Inspections, Nova Inspection, NSD Services, Cotemar, UNISPEC Inspection and Ruiver.

Mr. Lopez holds a **Diploma** in **Professional Mechanical & Electrical Technician**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), a **Certified ASNT-NDT Level III Inspector** in Infrared & Thermal Testing (**IR**), Liquid Penetrant Testing (**PT**), Magnetic Particle Testing (**MT**), Ultrasonic Testing (**UT**), Visual Testing (**VT**), Radiography Testing (**RT**), Leak Testing (**LT**), Electromagnetic Testing (**ET**), Certified Welding Inspection & Metallurgy Professional (**API 577**) and a **Certified AWS-CWI Welding Inspector**. He has further delivered numerous trainings, courses, workshops, seminars 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 course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Magnetic Particle Testing: Sunday, 18th of May 2025

0730 – 0745	*Registration & Coffee*
0745 – 0800	*Welcome & Introduction*
0800 – 0815	***PRE-TEST***
0815 – 0830	***Principles*** *Theory ● Magnets & Magnetism*

0830 – 0845	***Flux Fields*** *Direct Current ● Direct Pulsating Current ● Alternating Current*
0845 – 0900	***Effects of Discontinuities on Materials*** *Design Factors ● Relationship to Load-Carrying Ability*
0900 – 0915	***Magnetization by Means of Electric Current*** *Circular Techniques ● Longitudinal Technique*
0915 – 0930	*Break*
0930 – 1000	***Selecting the Proper Method of Magnetization*** *Alloy, Shape & Condition of Part ● Type of Magnetizing Current ● Direction of Magnetic Field ● Sequence of Operations ● Value of Flux Density*
1000 – 1030	***Demagnetization Procedures*** *Need for Demagnetization of Parts ● Current, Frequency & Field Orientation ● Heat Factors & Precautions ● Need for Collapsing Flux Fields*
1030 – 1100	***Equipment*** *Portable Type ● Stationary Type ● Automatic Type ● Multidirectional Units ● Liquids & Powders ● Ultraviolet Radiation Type ● Light-Sensitive Instruments*
1100 – 1130	***Types of Discontinuities*** *In Castings ● In Ingots ● In Wrought Sections & Parts ● In Welds*
1130 – 1200	***Evaluation Techniques*** *Use of Standards-e.g. ASTM E 1444, E 3024, E 709 ● Defect Appraisal*
1200 – 1230	***Quality Control of Equipment & Processes*** *Malfunctioning of Equipment ● Proper Magnetic Particles & Bath Liquid ● Bath Concentration ● Test for Ultraviolet Radiation Intensity*
1230 – 1330	*Lunch Break*
1330 – 1530	***Theoretical Examination***
1530 – 1545	*Break*
1545 – 1630	***Theoretical Examination (cont'd)***
1630 – 1650	***Practical Examination***
1650 – 1700	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1700	*End of Day One*

Day 2: Liquid Penetrant Testing: Monday, 19th of May 2025

0730 – 0930	***Review*** *Basic Principles ● Process of Various Methods ● Equipment*
0930 – 0945	*Break*
0945 – 1030	***Selection of the Appropriate Penetrant Testing Method*** *Advantages of Various Methods ● Disadvantages of Various Methods*
1030 – 1130	***Inspection & Evaluation of Indications*** *General ● Factors Affecting Indications ● Indications from Cracks ● Indications from Porosity ● Indications from Specific Material Forms ● Evaluation of Indications*
1130 – 1200	***Inspection Procedures & Standards*** *Inspection Procedures (Minimum Requirements) ● Standards/Codes*
1200 – 1230	***Basic Methods of Instruction***
1230 – 1330	*Lunch Break*

1330 – 1530	***Theoretical Examination***
1530 – 1545	*Break*
1545 – 1630	***Theoretical Examination (cont'd)***
1630 – 1650	***Practical Examination***
1650 – 1700	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1700	*End of Day Two*

Day 3: Ultrasonic Testing: Tuesday, 20th of May 2025

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Review of Ultrasonic Technique Course*** *Principle of Ultrasonics ● Equipment*
0930 – 0945	*Break*
0945 – 1200	***Review of Ultrasonic Technique Course (cont'd)*** *Testing Techniques ● Standardization*
1200 – 1300	*Lunch*
1300 – 1400	***Evaluation of Base-Material Product Forms*** *Ingots ● Plate & Sheet ● Bar & Rod ● Pipe & Tubular Products*
1400 – 1415	*Break*
1415 – 1650	***Evaluation of Base-Material Product Forms (cont'd)*** *Forgings ● Castings ● Composite Structures ● Other Product Forms as Applicable - Rubber, Glass, etc.*
1650 – 1700	***Recap***
1700	*End of Day One*

Day 4: Ultrasonic Testing: Wednesday, 21st of May 2025

0730 – 0930	***Evaluation of Weldments*** *Welding Processes*
0930 – 0945	*Break*
0945 – 1200	***Evaluation of Weldments (cont'd)*** *Weld Geometries*
1200 – 1300	*Lunch*
1300 – 1400	***Evaluation of Weldments (cont'd)*** *Welding Discontinuities*
1400 – 1415	*Break*
1415 – 1650	***Evaluation of Weldments (cont'd)*** *Origin and Typical Orientation of Discontinuities*
1650 – 1700	***Recap***
1700	*End of Day Two*

Day 5: Ultrasonic Testing: Thursday, 22nd of May 2025

0730 – 0930	***Evaluation of Weldments (cont'd)*** *Response of Discontinuities to Ultrasound*
0930 – 0945	*Break*
0945 – 1200	***Evaluation of Weldments (cont'd)*** *Applicable Codes/Standards*
1200 – 1300	*Lunch*
1300 – 1400	***Evaluation of Bonded Structures*** *Manufacturing Processes*
1400 – 1415	*Break*
1415 – 1650	***Evaluation of Bonded Structures (cont'd)*** *Types of Discontinuities*
1650 – 1700	***Recap***
1700	*End of Day Three*

Day 6: Ultrasonic Testing: Sunday, 25th of May 2025

0730 – 0930	***Evaluation of Bonded Structures (cont'd)*** *Origin and Typical Orientation of Discontinuities ● Response of Discontinuities to Ultrasound*
0930 – 0945	*Break*
0945 – 1200	***Evaluation of Bonded Structures (cont'd)*** *Applicable Codes/Standards*
1200 – 1300	*Lunch*
1300 – 1400	***Discontinuity Detection*** *Sensitivity to Reflections ● Resolution*
1400 – 1415	*Break*
1415 – 1650	***Discontinuity Detection (cont'd)*** *Determination of Discontinuity Size*
1650 – 1700	***Recap***
1700	*End of Day Four*

Day 7: Ultrasonic Testing: Monday, 26th of May 2025

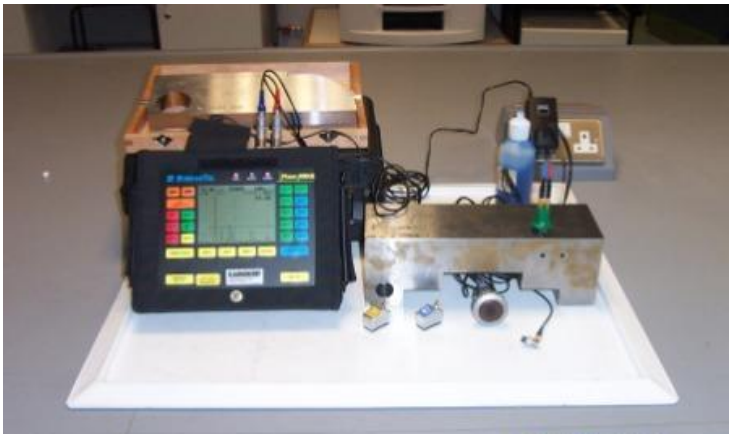
0730 – 0930	***Discontinuity Detection (cont'd)*** *Location of Discontinuity*
0930 – 0945	*Break*
0945 – 1100	***Evaluation*** *Comparison Procedures ● Object Appraisal*
1100 – 1115	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1115 – 1215	*Lunch*
1215 – 1400	***Theoretical Examination***
1400 – 1415	*Break*
1415 – 1530	***Theoretical Examination (cont'd)***
1530 – 1600	***Practical Examination***
1645 – 1700	*Presentation of Course Certificates*
1700	*End of Course*

Practical Sessions

Practical sessions which client shall provide will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout NDT inspection using the "Magnetic Particle Testing (MT) Equipment", "Liquid Penetrant Testing (PT) Equipment, "Ultrasonic Testing (UT) Equipment", and our specifically designed flawed specimen test components.

Magnetic Particle Testing (MT) Equipment

Liquid Penetrant Testing (PT) Equipment



Ultrasonic Testing (UT) Equipment

Ultrasonic Testing Package USM 36

Flawed Specimen Test Components

Course Coordinator

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