GE
Measurement & Control

Reach higher

with **Inspection Academy**—
GE's Inspection Technologies
Global Knowledge Center.

www.geinspectionacademy.com

imagination at work

Sharing knowledge.

Shaping technology.

At GE, we know the value of investing in your success.
That's why our Inspection Technologies business formed GE's Inspection Academy—with the primary goal of sharing the breadth and depth of our non-destructive testing (NDT) knowledge. And that knowledge is constantly growing. With our decades of global professional expertise, GE continues to shape NDT technology through substantial research, development, and collaboration efforts.

Our global presence helps ensure consistent quality education where you are and when you need it. Designed to meet your ongoing inspection training and certification needs, the Inspection Academy offers flexible training delivery options on an extremely broad range of inspection methods:

- **Classroom sessions** are held at our Customer Application Centers
- **eLearning Center** offers a growing selection of online courses that can be taken at your convenience
- **Educational collaboration** with universities, colleges, and industry leaders reveals the latest in NDT trends and technologies

In order to serve our customers across the globe, new languages and content are being added all the time.

Covering the major NDT modalities, advanced technologies, and more.
Whether you are an inspector, plant manager, maintenance engineer or third-party service provider, the Inspection Academy translates GE's industry leadership into real learning opportunities for you. Courses are available for the major NDT modalities, including ultrasonics, radiography, eddy current, magnetic particle, dye penetrant, and remote visual inspection.

Many of our courses offer Level I and Level II certification to the American Society for Nondestructive Testing's Recommended Practice SNT-TC-1A (North America). We also offer a number of courses on more advanced technologies or applications, such as phased array, Time of Flight Diffraction (TOFD), welds and composites as well as classes on specific GE products like the Rhythm software platform.

Classroom Sessions

Shaping the way customers perform.
The Inspection Academy's classroom sessions combine detailed course work with hands-on experience to deepen understanding and develop high-level competency of inspection theories and concepts. Participants build practical proficiency while working with GE's ultrasonic thickness gauges, digital flaw detectors, X-ray equipment, and a large selection of transducers, probes, calibration standards, and documented inspection samples—all under the direct supervision of our ASNT certified staff. Ultimately, better educated employees perform faster, higher quality inspections—which means overall improved productivity for you.

Classroom training features and benefits

- Interactive classroom settings help promote the exchange of ideas between the instructor and participants. Questions can be answered as they arise and group discussions can further illuminate topics.
- Practical hands-on training helps verify that the participant thoroughly understands the theory, principles, and application.
- Adherence to a structured and ASNT-validated class schedule ensures that training takes place in a short, set timeframe, while meeting ASNT requirements.

eLearning Center

Learn when and where you want.
GE's Inspection Academy is committed to providing you the flexibility to learn whenever and wherever you choose. That's why, in addition to our broad spectrum of classroom training courses, our eLearning Center continues to expand its selection of available online courses.

Our learning environment allows the theory and principles of each NDT method to be thoroughly covered and provides a number of impressive features that make these cost-effective, convenient courses a good choice in many scenarios.

eLearning features and benefits

- Participants learn at their own pace and on their schedule with online tools that provide flexibility for individual learning styles.
- Time online can be precisely tracked.
- Periodic quizzes keep participants on track. Subjects that require review can be repeated until they are mastered.
- A comprehensive final exam at the end of each course ensures that the certificate of completion is reflective of the learning by the participant.
- Interaction with an online instructor is available through email.
- Practical hands-on training, that complements our eLearning courses, will be available soon.

Classroom Session Course Descriptions

COURSE NAME	HOURS	TOPICS
Ultrasonic Testing Level I*	40	• Ultrasonic theory • Instrument operation • Inspection parameters • Thickness testing • Straight beam flaw detection and sizing • Calibration techniques for straight beam, dual element, delay-line, and angle beam transducers
Ultrasonic Testing Level II*	40	• Angle beam flaw location and evaluation • Special instrument features • Equipment quality control • Flaw, sizing, manufacturing processes, their flaws • Proper and correct ultrasonic inspection
Basic Phased Array and Phasor XS Operation	24	• Conventional probes • Introduction to phased array technology • Application and design considerations • Phased array ultrasonic imaging • Equipment operation • Storing data sets
Eddy Current Testing Level I*	40	• Eddy Current theory • Instrument operation • Inspection parameters • Applications of meters and impedance plane displays • Types of coils, surface probes, flaw evaluation, conductivity, and crack detection
Eddy Current Testing Level II*	40	• Theory and mathematics of alternating current and electrical circuits • Applications • Single- and multi-frequency crack detection • Plating and coating • Cladding and wall thickness • Conductivity measurement • Hardness and heat treatment • Inspection procedures • Calibration and acceptance standards • Categories of discontinuities
Magnetic Particle Level I*	16	• Principles of magnetics and magnetic fields • Flux patterns • Effects of discontinuities • Types of magnetization and demagnetization methods • Materials, methods, and equipment • Discontinuities and indications
Magnetic Particle Level II*	8	• Principles of magnetics and magnetic fields • Flux fields • Discontinuities • Method selection • Demagnetization equipment • Evaluation techniques • Quality control equipment and processes

COURSE NAME	HOURS	TOPICS
Mag Flux Level I**	20	• History of flux leakage testing • Principles of magnetic fields • Indirect magnetism • Magnetization variables • Flux leakage • Search coils • Hall effect search units • Signal processing • Readout mechanisms
Max Flux Level II**	40	• Flux leakage and magnetic theory • Types of sensing probes • Factors affecting flux leakage • Signal/noise ratios • Magnetization methods • Coupling • Signal processing and applications
Visual Testing Level I*	8	• Principles of examining and evaluating results through direct visual examination • Basic principles of optics, light, material conditions, and discontinuities • Identification and evaluation • Hand tool measuring devices (callipers, micrometers, weld gauges, depth gauges – typical) • Visual aids (mirrors, magnifiers, and flashlights) • Borescopes (rigid) and fiberscopes (flexible) • Typical standards, codes, procedures, and reports
Visual Testing Level II**	16	• Principles of examining and evaluating results through direct visual examination • Level I review • Vision • Lighting • Material attributes • Environmental and physiological factors • Visual perception • Equipment (borescopes, CCT cameras, fiberscopes, gauges and micrometers, RVI systems, magnifiers and mirrors) • Applications • Acceptance and rejection criteria • Typical standards, codes, procedures, and reports
Advanced Digital X-Ray Testing	40	• Advanced computed radiography • Digital detector array • Digital image conversion • Imaging techniques • Pixel depth • Digital technique information
Intermediate Digital X-Ray Testing	40	• Intermediate computed radiography • Digital detector array • Digital image conversion and imaging techniques • Pixel depth • Digital technique information

* This course meets or exceeds the criteria of ASNT SNT-TC-1A–2011 edition
** This course meets or exceeds the requirements of ASNT SNT-TC-1A–2011 edition and ANSI/ASNT CP 105–2011 edition

eLearning Course Descriptions

COURSE NAME	HOURS	DESCRIPTION
Introduction to Nondestructive Testing	5	This course is designed to familiarize participants with the major Nondestructive Testing disciplines: Visual Testing (VT), Penetrant Testing (PT), Magnetic Particle Testing (MT), Radiographic Testing (RT), and Ultrasonic Testing (UT). It also presents the benefits and limitations of each method as well as an overview of the various discontinuities that may be encountered. There are also examples of different applications stressing the most appropriate methods to be used. This is an ideal program for those who are interested in gaining a basic understanding of the technology and is especially beneficial for managers, engineers, auditors, supervisors and other personnel who will not actually be performing the examinations.
Visual Testing Levels I – II	4	Visual Testing (VT) is the oldest and most widely used Nondestructive Test method. This online course is appropriate for individuals with little or no inspection training and is an ideal course to begin one's career in NDT. Subjects include illumination requirements, surface conditions, test specimen attributes to be evaluated, and the various discontinuities and conditions that may be encountered. Both direct and indirect (remote) visual techniques are thoroughly presented and demonstrated. The different visual tools, gages and other measuring devices in addition to the VT instruments are discussed and demonstrated. A wide range of common applications are included making this course a must for anyone considering a future in NDT or inspection fields. This course is highly recommended for those planning to take other NDT courses or for personnel who are planning to become certified in VT.
Penetrant Testing Levels I – II	4	Penetrant Testing (PT) is considered by some as an extension to VT. This is a widely used NDT method that is capable of detecting very small discontinuities that are open to the surface and can detect those flaws well below the VT threshold. Virtually any solid, nonabsorbent object can be examined with PT. The two major families of Penetrant Tests include visible and fluorescent penetrants and can be used in remote locations or in the shop. Considered an effective surface NDT method, it is usually used in conjunction with a volumetric method such as Radiographic Testing or Ultrasonic testing. There are a number of techniques that make this method suitable for a wide range of parts, regardless of size or quantity. The participant will understand these techniques, which will be demonstrated along with a description of widely used applications. This course will be especially beneficial to those who require a thorough understanding of the method as well as those pursuing certification. Managers, engineers and audit personnel will also find this course very useful.
Magnetic Particle Testing Levels I – II	3	Magnetic Particle Testing (MT) is one of the most widely used Nondestructive Tests. It is a quick and effective test for the detection of discontinuities at or very close to the surface of the object being examined. As with PT, MT is usually performed in addition to a volumetric NDT. It is limited to those materials that can be effectively magnetized. Fine ferromagnetic particles are applied to the surface of the magnetized parts and align themselves in areas of magnetic flux leakage—indicating the presence of discontinuities. In this course, the participants will learn the principles of magnetism as it relates to the detection of flaws in ferromagnetic materials. There are a number of techniques that make MT suitable for a wide range parts with various shapes and sizes. MT can be performed with portable equipment or stationary systems. This course will be useful for those pursuing a certification in NDT as well as for supervisors, auditors, and others interested in acquiring a comprehensive understanding of this unique test method.

COURSE NAME	HOURS	DESCRIPTION
Radiographic Testing Level I	6	In the Radiographic Testing (RT) Level I course, the participant will learn the theory and principles of radiation and how they apply to the basics of radiography. There are many variables to be controlled in order to produce a high quality image. RT is one of the major volumetric methods with Ultrasonic Testing being the other. Subjects also include the development of RT techniques for a wide range of applications, handling and processing radiographic film, and the safe use of RT equipment. Safety is of paramount concern when dealing with radiation sources and the means of monitoring and minimizing exposure is essential. Both X-ray and Gamma Ray sources are discussed along with technique development guidance. This program is the beginning step for those who will be seeking a career in RT as practitioners. It is also appropriate for other personnel who want to understand the basics of Industrial Radiography. Common applications as well as the need to maintain complete records are also presented.
Radiographic Testing Level II	5	Radiographic Testing Level II is a continuation of the RT Level I course and expands on the duties and responsibilities of the RT practitioner. It begins with a review of the basic Level I subjects and continues with a more in-depth presentation of how to control the variables to produce an acceptable radiographic image. Emphasis is placed on how to achieve high sensitivity through optimizing contrast, definition and film processing. The quality level of an RT image is established by devices referred to as "Image Quality Indicators" or IQIs. The acceptability of the radiograph is determined by the image of these IQIs. The interpretation and evaluation of the radiograph is a key element of RT and is covered in depth. This course is essential for those who have completed RT I and want to advance to this higher certification level.
Ultrasonic Testing Level I	5	The Ultrasonic Testing (UT) Level I course includes a basic introduction to the theory and principles of ultrasound, including frequency, velocity, and wavelength. It addresses the variables related to the propagation, reflection, and attenuation of sound as well as the responses from discontinuities. The participant will learn to understand the display and be able to calibrate the UT instrument and identify the location of reflectors in various test specimens. UT equipment and transducers are demonstrated. UT is also used for precise thickness measurements and the basic procedure for this is also covered. A number of techniques and applications will also be presented, including discussions on the data required for precise reporting. This course is essential for those desiring to enter and specialize in UT. It is also beneficial for those who will not be practitioners but who want to have a general understanding of the basic principles of Ultrasonic Testing.
Ultrasonic Testing Level II	5	Ultrasonic Testing (UT) Level II is an extension of UT Level I and delves into the theory and principles to a much greater depth. After a review of the basic UT Level I subjects, variables such as beam profile, dead, near and far zones, acoustic impedance, absorption and scattering are presented. Other subjects essential for performing angle beam inspection of welds, including mode conversion, refraction, and attenuation, are covered. Calibration of the UT instruments is demonstrated as well as the examination of several test specimens. Immersion and through transmission are discussed along with a variety of other techniques. The evaluation and interpretation of test results along with the need for complete and accurate test reporting are presented. This is an essential course for those practitioners who will be pursuing a career in Ultrasonic Testing and for those striving for certification as a Level II.

Educational Collaboration

Knowledge is a journey of discovery that never ends.
That is why we collaborate with universities, colleges, and industry leaders to make sure we are on the forefront of new NDT techniques and technologies. GE's significant resources—such as GE Global Research and our Customer Application Centers—help forge the strong relationships that provide the scale necessary to learn, develop, and shape the NDT industry.

If you have a challenge to overcome or you are ready to explore, we invite you to join us on this journey.

Pledge of Excellence

Our commitment to improving the skills of our customers extends to our employees as well. Investing in the education of our world-class NDT teams, across our portfolio of offerings, allows us to provide true experts in the inspection industry.

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