



NON-DESTRUCTIVE TESTING

Ujian Tanpa Musnah

Organised by



Recognition by



MY06/0164
ISO 9001:2015 since July 2018



I N T R O D U C T I O N

NON-DESTRUCTIVE TESTING

Ujian Tanpa Musnah

Non Destructive Testing (NDT) has become the crucial part in high stream industries all over the world. Infamous as the cost saving inspection, NDT becoming major entity in industry which made our life become safer and easier.

Non destructive and high quality inspection covers a wide group of analysis techniques which used to evaluate the properties of materials for pipeline, automotive industries, aircraft industries and high profile mega structure.

The quality, reliability and integrity of the materials used can be defined by the inspection and interpretation. In research and product evaluation, NDT techniques have been applied to the maximum to gain the new information that beyond our reach and at the same time ensure our safety.

Centre of Nuclear Excellence is the professional training provider, devoted to provide among the best NDT training in this country and has

been recognized as center of excellent for SKM training and examination by Department of Skills Development [DSD]. NDT programmes that have been offered are Industrial Radiography Level 1, 2, 3, Eddy Current Level 1, 2, 3, Interpretation and Evaluation of Radiograph, Surface Method Level 1, 2, 3, Industrial Digital Radiography and many more. All trainings not just conducted in our premise in Bangi, we also serve to your door and customize the training to fulfil your needs and demands.

With 20 years experience in the Non-Destructive Test technology, Centre of Nuclear Excellence never look back to expand the NDT experts horizon in Malaysia.

The emerging trend of NDT in Malaysia has boosted Nuclear Malaysia to take the responsibility to fill the growing need for NDT positions by this country and ahead. We are looking forward to meet and serve you. Please do come and join us.



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NON-DESTRUCTIVE TESTING

Ujian Tanpa Musnah

Kadar Yuran Peperiksaan Examination Fees

Code / Kod	Course Title / Judul Kursus	Level / Tahap	Warganegara Citizen	Bukan Warganegara Non-Citizen
NPT 100	Pre-Examination for Industrial Radiography <i>Pra-Peperiksaan untuk Radiografi Industri</i>	1	550.00	700.00
		2		
NPT 101	Examination Verification <i>Peperiksaan Penentusahan</i>	1&2	430.00	630.00

Code / Kod	Course Title / Judul Kursus	Level / Tahap	Warganegara Citizen	Bukan Warganegara Non-Citizen
	Industrial Radiography <i>Radiografi Industri</i>	1	950.00*	1,150.00*
	Eddy Current <i>Arus Pular</i>			
	Industrial Radiography <i>Radiografi Industri</i>	2	1,050.00*	1,250.00*
	Industrial Radiography (Direct Access) <i>Radiografi Industri (Kemasukan Terus)</i>			
	Eddy Current <i>Arus Pular</i>			
	Interpretation and Evaluation of Radiograph <i>Interpretasi dan Penilaian Radiograf</i>	3	1,150.00*	1,250.00*
	Industrial Radiography <i>Radiografi Industri</i>			
	Eddy Current <i>Arus Pular</i>	1	1,900.00*	2,300.00*
	Surface Method <i>Kaedah Permukaan</i>			
	Surface Method <i>Kaedah Permukaan</i>	2	2,000.00*	2,400.00*
	Surface Method <i>Kaedah Permukaan</i>	3	2,100.00*	2,500.00*
	Radiography Testing – Digital <i>Ujian Radiografi – Digital</i>	2	1050.00*	1250.00*

*Payment include examination fee for Nuklear Malaysia and Department of Skill Development.
Company must paid direct to Department of Skill Development



INTRODUCTION TO CONVENTIONAL AND ADVANCED NDT

Pengenalan kepada Ujian Tanpa Musnah Asas dan Lanjutan

INTRODUCTION

This course is designed to provide basic knowledge and introduction to the various NDT methods and techniques commonly used to detect and examine defect in engineering works. It consists of radiography, ultrasonic, magnetic particles, liquid penetration and Eddy Current.

COURSE OBJECTIVES

- Understanding the principles of NDT methods, application and limitation.
- Providing necessary knowledge and ability in identification and selection of NDT methods according to the conditions of the test specimens.

WHO SHOULD ATTEND

New NDT practitioner, manager, supervisor, engineer, lecturer, contractor, consultant, researcher, contractor, supplier, consultant, researcher and worker in NDT.

YOUR INVESTMENT

PAYMENT	FEES
Single Registration per pax	RM 1,590.00
After IPTN	RM 1,510.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,510.00
After IPTN	RM 1,434.00

CONTENTS

RADIOGRAPHY

- Basic principles, film processing, technique, application and limitation.

ULTRASONIC

- Basic principles, calibration, technique, application and limitation.

SURFACE METHODS

- (Magnetic Particle and Liquid Penetrant) Basic principles, processing, technique, application and limitation.

EDDY CURRENT

- Basic principles, technique, application and limitation.
- Material processes and defect.

NDT FOR SUPERVISORY WORK

Ujian Tanpa Musnah untuk Kerja-Kerja Penyeliaan

INTRODUCTION

This course is designed to provide basic knowledge and introduction to the various NDT methods and techniques commonly used to detect and examine defect in engineering works. It consists of radiography, ultrasonic, magnetic particals, liquid penetration and Eddy Current.

COURSE OBJECTIVES

- 💡 Understanding the principles of NDT methods, application and limitation.
- 💡 Providing necessary knowledge and ability in identification and selection of NDT methods according to the conditions of the test specimens.

WHO SHOULD ATTEND

New NDT practitioner, manager, supervisor, engineer, lecturer, contractor, consultant, researcher, contractor, supplier, consultant, researcher and worker in NDT.

YOUR INVESTMENT

PAYMENT	FEES
Single Registration per pax	RM 1,260.00
After IPTN	RM 1,197.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,195.00
After IPTN	RM 1,135.00

CONTENTS

RADIOGRAPHY

- 💡 Basic principles, film processing, technique, application and limitation.

ULTRASONIC

- 💡 Basic principles, calibration, technique, application and limitation.

SURFACE METHODS

- 💡 (Magnetic particle and liquid penetrant) Basic principles, processing, technique, application and limitation.

EDDY CURRENT

- 💡 Basic principles, technique, application and limitation. Material processes and defects.

NON-DESTRUCTIVE AWARENESS

Kesedaran Ujian Tanpa Musnah

INTRODUCTION

Non - Destructive Testing (NDT) is a field of engineering encompassing the testing, inspection of materials and equipment to evaluate condition, find flaws and defects, extend the useful life of the infrastructure all around us. The five most frequently used test methods are RT, ET, UT, MT and PT. Among these methods, RT is the only method that uses either x-ray or gamma ray to examine the internal structure of manufactured components identify any flaws or defects. The use of ionizing radiation demands a comprehensive implementation of the Atomic Energy Licensing Act. Therefore, these 2 days course is designed to create the awareness on the radiation safety and to continuously refresh their knowledge in the subject after from time to time and in line with the latest act, codes, standard and procedure.

WHO SHOULD ATTEND

NDT worker, NDT contractor, NDT practitioners, personnel engaged in oil and gas industry, power plant (construction and maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive.

Asset owners, Academicians, Managers, College & university students, Safety and Health Officer, Radiation Protection Officer

YOUR INVESTMENT

PAYMENT	FEES
Single Registration per pax	RM 825.00
After IPTN	RM 783.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 780.00
After IPTN	RM 741.00

COURSE OBJECTIVES

- To describe the basic principles and the application of the common NDT methods
- To understand the best applications, limitations and problems relating to the use of each NDT method
- To explain the difference between artificial and natural radioactive sources
- To enhance knowledge the significance and application of codes, standards, specifications and procedures; components and controls.

CONTENTS

- Introduction to non-destructive testing (NDT)
- Material processes and defects
- Physical principles of the test
- Radiography equipment and radiation sources
- Personal Safety and Radiation Protection
- Safety and emergency procedure for radiographic work
- Law and regulation Pertaining to Industrial radiography

BASIC METALLURGY IN NDT

Asas Metalurgi untuk Ujian Tanpa Musnah

INTRODUCTION

Safety and reliability of industrial plants rely to a great extent on the effectiveness of the inspection program adopted by the organization. Effectiveness of inspection program on the other hand depends mainly on the ability of those involved in this program to execute the inspection activities as well as to interpret and evaluate results and data gathered by inspectors. Since plant

inspections mainly involved scrutinizing integrity of metallic objects such as pressure vessels, pipings, condensers, etc, then knowledge on metallurgical aspects of these metals are essential to those involved in it. This 5 days training course is designed to impart some basic metallurgical knowledge and experience to those involved in plant inspection activities. The course materials are selected so that it may help to improve the ability of plant inspectors, plant engineers, NDT inspectors, quality control/quality assurance personnel and those alike, in interpreting and evaluating results and data.



COURSE OBJECTIVES

- 🔑 To provide basic knowledge of metallurgy, material technology and testing.
- 🔑 To appreciate the roles of NDT in metallurgy
- 🔑 To enhance knowledge on the relationship between metallurgy and destructive / non-destructive testing practices in manufacturing industries.
- 🔑 To gain appropriate knowledge and experience related to the metallurgical aspects of inspection in industrial plants.
- 🔑 To gain practical experience in basic metallurgical examination and inspection using replication methods.

CONTENTS

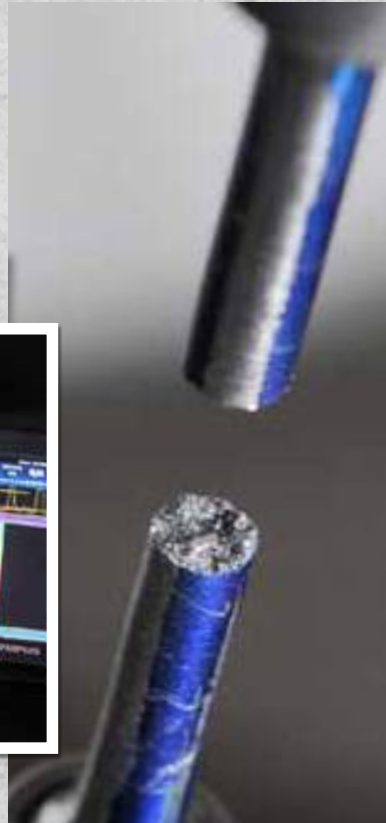
- Basic metallurgy
- Steel making
- Heat treatments and its application
- Forging and welding
- Principle of casting and its defects
- Mechanical testing
- Fractography
- Corrosion process and protection
- Corrosion monitoring techniques
- Non destructive and destructive testings
- Materials and their properties
- Metallurgical processes and defects associated to them
- In service defects (including corrosion, fatigue, creep, etc)

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

Inspection engineer, Maintenance engineer, Quality assurance and quality control engineer, NDT inspector (RT, UT, MT, PT, ET), NDT trainers and any individual who involved in plant inspection activities.



YOUR INVESTMENT

PAYMENT	FEE
Single Registration per pax	RM 1,590.00
After IPTN	RM 1,510.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,510.00
After IPTN	RM 1,434.00



FAILURE ANALYSIS

Analisis Kegagalan









INTRODUCTION

An investigation of systems failure/materials can be very complex, and may require multidisciplinary testing and analysis to determine the root cause of failure. Final conclusion must be able to be made with high degree of certainty to ensure that proper replacement materials are selected and that the most effective engineering calculations and design methods are utilized.

COURSE OBJECTIVES

-  To provide basic knowledge of failure analysis, the technology and testing.
-  To appreciate the relationship between failure analysis and destructive/non-destructive testing practices in manufacturing industries.

CONTENTS

-  Introduction to failure analysis
-  Fracture mechanisms
-  Material process and defects
-  General practice in failure analysis
-  Fractography
-  Causes of failure
-  Introduction to corrosion
-  Type of corrosion and prevention

METHODOLOGY

Lecture, tutorial, practical/demonstration.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

NDT personnel, supervisors, NDT trainers, contractors and researchers and those who are interested in this course.

YOUR INVESTMENT

PAYMENT	FEES
Single Registration per pax	RM 1,590.00
After IPTN	RM 1,510.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,510.00
After IPTN	RM 1,434.00

INTRODUCTION TO NDT FOR CIVIL ENGINEERING

Pengenalan NDT dalam Kejuruteraan Awam

INTRODUCTION

Concrete is the most consumed man made material on the face of this planet. Due to cost and availability, it has become the most preferred material to be used for the construction of many gigantic and critical structures such as residential and commercial buildings, bridges, dams and many others. The usage of reinforced concrete in the construction of 451.9 meter high petronas tower illustrated the importance of concrete in the development of our nation.

Non-destructive Testing (NDT) is a very powerful tool for quality that attributes significantly toward ensuring the integrity of concrete structures. NDT methods such as ultrasonic, radiography, ground penetrating radar, electromagnetic methods, etc have been well accepted for this purpose, especially in the developed countries. However, it is still considered as new in many developing countries.

For this reason the International Atomic Energy Agency (IAEA) have utilized Malaysian expert from Malaysian Nuclear Agency to disseminate this technology to member states such as Sri Lanka, Ghana, Uzbekistan, Pakistan, Lebanon, Syria and many others.

Malaysian Nuclear Agency is now extending this effort to share this technology with member of civil engineering and NDT communities in Malaysia. This training course is designed to expose the interested parties with various NDT method applicable for civil engineering purpose. Both theoretical and practical aspects of methods that include radiography, ultrasonic, ground penetrating radar electromagnetic methods, thermography, etc will be discussed and demonstrated to provide an optimum understanding and appreciation to all participants toward this subject matter.

COURSE OBJECTIVES

- To have adequate knowledge and experience to perform or to supervise NDT inspection applicable for civil engineering structures.
- To have good understanding on the advantages and limitations of various NDT methods applicable for concrete inspections

CONTENTS

- Introduction to NDT in concrete
- Radiography method
- Ultrasonic methods (pulse velocity, impact echo)
- Ground penetrating radar
- Electromagnetic covermeter
- Radioisotope method
- Thermography methods
- Rebound hammer and penetration test methods, etc.



METHODOLOGY

Lecture, tutorial, practical/demonstration.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

Authorities engaged in building safety and integrity, NDT managers and practitioners, Academicians in area of civil engineering and civil consultant and contractors.

YOUR INVESTMENT

PAYMENT	FEES
Single Registration per pax	RM 1,260.00
After IPTN	RM 1,195.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,197.00
After IPTN	RM 1,135.00

CONCRETE INSPECTION USING NDT

Pemeriksaan Konkrit menggunakan Teknik NDT

INTRODUCTION

Malaysia has been very fortunate in the sense that we do not have a serious earthquake threat. In this respect our concrete constructions such as buildings, bridges, dams, tunnels etc are not suppose to be subjected to vibration that may lead to damage of building and may be collapse. However, despite this advantage, a number of building damage and collapse were reported recently. Such a phenomenon together with that experienced by our neighboring countries suggested that quality buildings, bridges and other concrete construction is necessary.

Non-Destructive Testing (NDT) technology has been known to have a significant contribution in ensuring the integrity of buildings, bridges, dams etc throughout the world. Such an expertise was developed in Nuclear malaysia as a result of years of experience and extensive research. It is our commitment to disseminate and share the knowledge and experience for the betterment of our national construction industries.

This training course is designed to equip the participants with the necessary knowledge of the NDT methods applicable to the inspection and examination the quality of concrete used in construction industries. It covers both theoretical and practical aspects and conducted entirely by Malaysian Nuclear Agency experts.

COURSE OBJECTIVES

- To generate greater awareness on the ability and availability of NDT for concrete, building and bridges inspection
- To provide knowledge on principles of NDT methods for concrete and their applications
- Understanding the selection of NDT methods according to the type of structures
- To enhance skill in using various NDT methods for concrete evaluation

CONTENTS

- Properties of Concrete
- Concrete Inspection
- Visual Inspection
- General, periodic inspection, crack mapping
- Radiography
- Basic principle, film processing, technique and their application
- Ultrasonic
- Basic principle, calibration, technique and their application; strength estimation, quality grading
- Rebound Hammer
- Basic principle, technique, calibration and their applications; strength stimation for old and new concrete
- Magnetic Method
- Basic principle, technique and their applications; bar locating and sizing
- Concrete Inspection using NDT

METHODOLOGY

- Participative lecture
- Practical/demonstration
- Discussion

WHO SHOULD ATTEND

Manager, engineer, lecturer, technician, supervisor, contractor, consultant, researcher, worker, personnel involved in assessment of concrete quality in structures and those who would like to enquire knowledge and practical experience in NDT.



YOUR INVESTMENT

PAYMENT	FEE
Single Registration per pax	RM 2,640.00
After IPTN	RM 2,500.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 2,500.00
After IPTN	RM 2,370.00

APPLICATION OF PAUT IN WELDMENT

Aplikasi PAUT dalam Kimpalan

INTRODUCTION

In recent years, various codes have been written specifically for phased arrays for weld inspections. These codes have specific requirements for coverage and for appropriate angles. Typically, the inspection is prepared using a scan plan, which shows coverage or lack it.

Phased array ultrasonic testing (PAUT) are proven to be a very appropriate inspections, especially encoded arrays with liner scanning. The flexibility of phased arrays allows them to be tailored to almost any weld profile and predicted defects. Besides showing the normal advantages of phased arrays for weld (high speed, reduced costs, full data storage and increased productivity). Phased arrays can be used in both manual and encoded fashions, which are two completely different approaches.

PAUT can be done with multiple groups performing simultaneous scanning with encoders; this helps significantly in fulfilling the various codes. For construction welds, compliance to codes are of major importance.



COURSE OBJECTIVES

- 💡 To acquire knowledge on relevant technical aspect of PAUT
- 💡 To understand the advantages and limitations of PAUT
- 💡 To obtain understanding on the practical applications of PAUT and the related codes and standards applicable
- 💡 To acquire hands on experience on PAUT inspection

CONTENTS

- 💡 History of phased array ultrasonic technology.
- 💡 Phased array digitisation principles.
- 💡 Phased array principles and probe design.
- 💡 Electronic control and wave forming.
- 💡 Prediction of beam characteristic.
- 💡 Scanning techniques.
- 💡 Code and standards related to phased array.
- 💡 Phased array equipment set up.
- 💡 Dead element check.
- 💡 Raster scan for lamination and corrosion mapping.
- 💡 Angle beam scan for weld inspection.



WHO SHOULD ATTEND

- 💡 NDT contractor, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive.
- 💡 Technical manager, engineer supervisor, lecturer, contractor, consultant and researcher

METHODOLOGY

- 💡 Lecture, tutorial, practical/ demonstration and case study.

MEDIUM OF INSTRUCTION

- 💡 English and Bahasa Melayu

YOUR INVESTMENT

PAYMENT	FEES
Single Registration per pax	RM 1,260.00
After IPTN	RM 1,197.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,195.00
After IPTN	RM 1,135.00

WORKSHOP ON APPLICATION OF NDT IN CIVIL ENGINEERING

Bengkel Aplikasi NDT dalam Kejuruteraan Awam

INTRODUCTION

This 1-day workshop is designed to equip the participants with the knowledge on the methods, principle and technique of the application of Non Destructive Testing (NDT) in structural concrete. Both theoretical and practical approach will be covered. The practical demonstration will be conducted in the laboratory of Malaysian Nuclear Agency. Various method will be demonstrate and explain by the experts and participant can get to know more details on this subject matter.

CONTENTS

- 🔑 Introduction to NDT in civil engineering
- 🔑 Concrete Technology
 - Rebound hammer
 - Ultrasonic testing
 - Rebar locator (GPR/cover meter)
 - Nuclear testing (RT/ Nuclear gauging)
- 🔑 Demonstration of NDT for concrete





WHO SHOULD ATTEND

Engineer, Lecturer, Supervisor, Contractor, Consultant, Researcher, Manager, Technician, Worker and Personnel involved in assessment of concrete quality in structures and those who would like to gain knowledge and practical experience in NDT in structural concrete.

This workshop is also open to the general public.

YOUR INVESTMENT

PAYMENT	FEES	
Single Registration per pax	RM	580.00
After IPTN	RM	550.00
Team Discount per pax (2 or more registrations from the same organisation)	RM	550.00
After IPTN	RM	520.00

MATERIAL CHARACTERISATION TECHNIQUES

Teknik - Teknik Pencirian Bahan

INTRODUCTION

This course is design to equip participants with the knowledge of the latest principles and techniques in material characterisation. Both theory and practical will be presented for a better understanding.

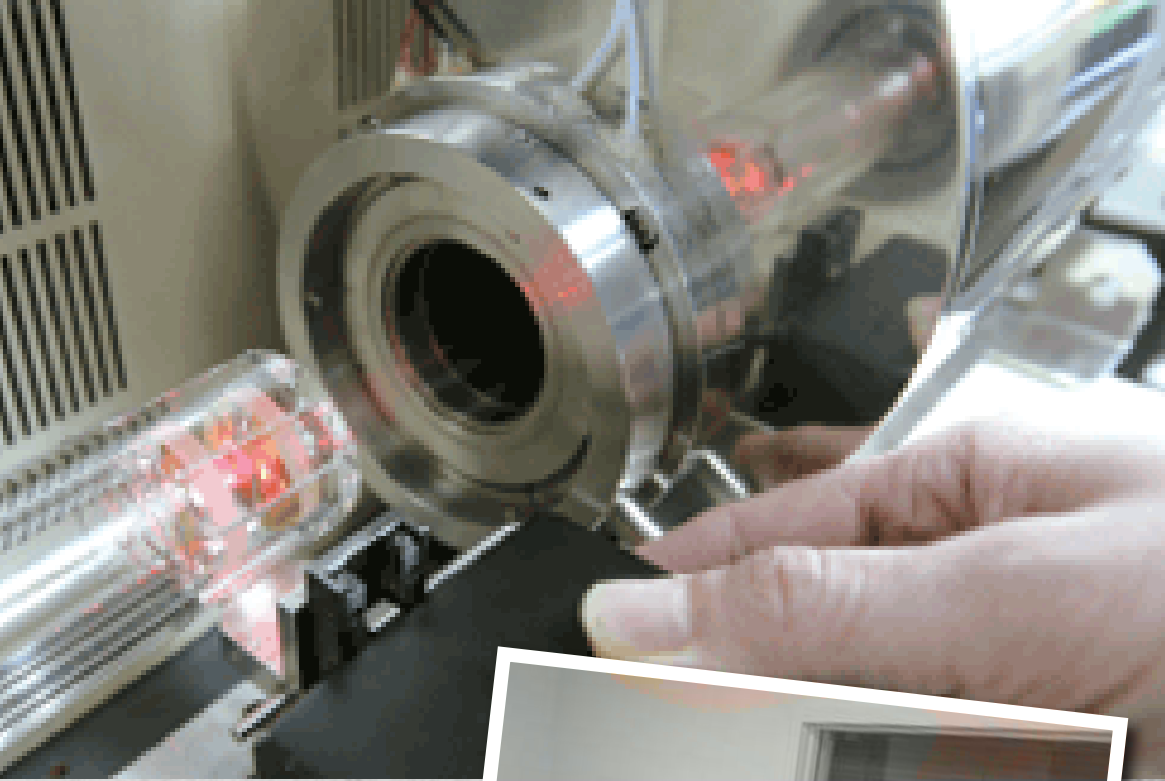
COURSE OBJECTIVES

- To introduce and promote the advanced material characterisation facilities at Nuklear Malaysia
- To disseminate information on methods, techniques and latest list of material characterisation
- To keep abreast with the advanced characterisation techniques practiced

CONTENT

- Material Characterisation.
- X-Ray Diffraction (XRD)
- Universal Tensile Machine (UTM)
- Small Angle X-Ray Scattering (SAXS)
- Field Emission Scanning Electron Microscopy (FESEM)
- Corrosion Measurement Analyser
- Raman Spectroscopy
- X-Ray Fluorescence (XRF)
- Charpy Impact Test
- Spark Emission Spectroscopy
- UV-Vis Spectrometer
- Demonstration and Sample Preparation for SEM and FESEM
- Demonstration and Sample Preparation for XRD





WHO SHOULD ATTEND

Lecturer, Researcher, Supplier, Technologist, Laboratory Assistant, Technician and those who are involved and interested in the application of material characterisation from public and private research institutes, universities and industries in the field of material research.

YOUR INVESTMENT

PAYMENT	FEES
Single Registration per pax	RM 1,260.00
After IPTN	RM 1,195.00
Team Discount per pax	RM 1,197.00
After IPTN	RM 1,135.00

PHASED ARRAY ULTRASONIC TESTING (INTERMEDIATE)

*Pengujian Ultrasonik Tatasusun Berfasa
(Peringkat Pertengahan)*

INTRODUCTION

Phased Array Ultrasonic Testing (PAUT) is an advanced method of ultrasonic testing (UT) that has applications in non-destructive testing. Its application in the industry is fast expanding due to its reliability of results and high productivity rate. PAUT can be used to inspect almost any material where traditional UT methods have been utilized, and is often used for weld inspections and crack detection. This course is designed for details knowledge in PAUT and as pre-certification for candidate who wish to pursue their career in this field.

COURSE OBJECTIVES

- To provide intermediate level knowledge on relevant technical aspect of PAUT
- To set up PAUT systems for intended inspection and analyse the result
- To evaluate the discontinuities against code and standard

CONTENT

- Advanced theory PAUT
- Scan and instruction preparation
- Limitation and bolt inspection with analysis
- Weld inspection and analysis

WHO SHOULD ATTEND

NDT contractor, NDT practitioners, Personnel engaged in oil and gas industry, power plant (construction and maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive.

Students, asset owners, academicians, Managers

METHODOLOGY

- Lecture, practical/ demonstration and case study

YOUR INVESTMENT

PAYMENT	FEEs
Single Registration per pax	RM 1,590.00
After IPTN	RM 1,510.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,510.00
After IPTN	RM 1,434.00

SOIL COMPACTION MEASUREMENT USING NUCLEAR TECHNIQUES

Pengukuran Mampatan Tanah Menggunakan Teknologi Nuklear

INTRODUCTION

Each year hundreds kilometres of road or highway are damaged due to poor compaction and there needs a rehabilitate the road in order to maintain pleasant journeys or trips. Many, if not most, of these damages could be prevented by the use of appropriate methods to measure soil compaction during the earthwork construction. Measurement of moisture and soil density by using nuclear technique is widely used in civil engineering, agriculture, hydrology and industry.

The advantages of this technique are it is non-destructive, non-contacting, rapid, repeated measuring can be made in-situ, the measurement integrates over a large volume of the medium or sample, high accuracy and reliability. This 2-day course is designed to provide the participant with in-depth knowledge of performing soil compaction measurement using nuclear techniques.



COURSE OBJECTIVES

- 💡 To provide the concept and application of modern soil compaction by using nuclear techniques
- 💡 To explain the procedures and field testing for soil moisture and density measurement
- 💡 To provide information on evaluation of calibration, Marshall/Proctor value, statistical result and comparison with conventional method
- 💡 To provide hands-on experience on soil compaction measurement using nuclear techniques



CONTENT

- 💡 Introduction of soil compaction in particular moisture content & soil density measurements
- 💡 The effects of water content and soil density on compaction for earthwork construction
- 💡 General principle of radiation interaction and measurement techniques
- 💡 Density & moisture measurement (nuclear techniques vs. conventional method)
- 💡 Portable moisture & density gauge by using nuclear techniques
- 💡 Radiological safety procedures
- 💡 Laboratory: Evaluation of calibration, Marshall/Proctor value and statistical result with conventional method
- 💡 Practical on soil density & moisture measurement for compaction control

METHODOLOGY

- 💡 Lecture
- 💡 Tutorial
- 💡 Practical/Demonstration

YOUR INVESTMENT

PAYMENT	FEE
Single Registration per pax	RM 1,150.00
After IPTN	RM 1,092.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 1,090.00
After IPTN	RM 1,035.00

INDUSTRIAL RADIOGRAPHY REFRESHMENT TRAINING

Latih Semula Radiografi Industri

INTRODUCTION

This 1 day course prepares participants for taking the Radiographic Testing (RT) Verification Examination conducted by Department of Skill Development (DSD). The Malaysian Skills Certification (SKM) in RT will expired within 10 years, therefore the SKM holder must sit and passed this examination for the purpose of recertification. This

recertification requirements was made by DSD to ensure the capability of SKM holder to be competent in the specific skill awarded. In addition, by taking this examination, the SKM holder will be able to review their understanding and competency to generate quality radiographic image for their job.

COURSE OBJECTIVES

- To have adequate knowledge to interpret and evaluate radiographs
- To gain reasonable amount of knowledge and experience related to the Radiography Industry of inspection in industrial plants and facilities engineering

CONTENT

THEORY

- Basic industrial radiography exams covering the following topics
 - Physical principle of radiography
 - Exposure technique and exposure determination
- Production/formation of the image which includes the following topics
 - Radiographic film, Film handling and film processing
 - Misleading image/artact
- Quality radiograph that includes the following topics
 - Image quality
 - Image quality indicator
 - Radiographic viewing

- Interpretation and evaluation of radiographs
 - Welding defect and interpretation
 - Acceptance and rejection criteria
 - Reporting
- Radiation Safety which includes the following topics
 - Boundary calculation
 - Safe handling of radiation sources
 - Safe working procedure and emergency procedure in industrial radiography

PRACTICAL

- Provide written instructions
 - X-ray machine control/gamma-ray observatory film, densitometer, film strips and control darkroom



- Testing radiographic X-ray/gamma-ray and radiographic examination of the welded material based on written instructions regarding such checks based on safe work procedures
- Radiographic examination report writing has been done



Interpret and evaluate radiographs

- Control observer film, densitometer, film strips and control room observations
- Interpreting the discontinuity found in standard reference radiographs and radiographs real
- Assessing the discontinuity found in standard reference radiographs and radiographs real basis of

acceptance and rejection criteria set by the standard as well as customers.

- Report writing and interpretation of radiographic evaluation

Candidates are encouraged to focus more on practical sessions to ensure the objectives of the course can be optimized.

WHO SHOULD ATTEND

NDT contractor, supplier, NDT practitioner, personnel engaged oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), manufacturer of pressure vessel, shipping industry, aviation industry, automotive, lecturer and researcher.

YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 580.00	RM 1,010.00
After IPTN	RM 550.00	RM 980.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 550.00	RM 980.00
After IPTN	RM 520.00	RM 950.00
Nuclear Malaysia Examination Fee		RM 430.00

SEMINAR ON NON-DESTRUCTIVE TESTING FOR CIVIL ENGINEERING STRUCTURE

Seminar Ujian Tanpa Musnah bagi Struktur Kejuteraan Awam

INTRODUCTION

Non-destructive testing (NDT) is a wide group of analysis techniques used in science and technology industry to evaluate the properties of a material, component or system without causing damage. It is also a descriptive term used for the examination of materials and components in such a way that allows materials to be examined without changing or destroying their usefulness.

NDT plays a crucial role in everyday life and is necessary to assure safety and reliability. The six common frequently used NDT methods are eddy current, magnetic-particle, liquid penetrate, radiographic testing, ultrasonic and visual testing. However, Certain standards has been also implemented to assure the reliability of the NDT tests and prevent certain errors due to either the fault in the equipment used, the miss-application of the methods or the skill and the knowledge of the inspectors.




Currently there are various new and emerging advanced NDT techniques that takes full advantage of higher processing power of computers and advancement of fabrication technology. Digital radiography and phased array ultrasonic testing are examples of advanced NDT techniques that are being used extensively in the industry. However, the integration of computer based systems into the NDT techniques also increases the complexity of inspection. Although there are competency certification schemes for advanced NDT, the operators need continous training and exposure to inspection techniques with interpretation and

evaluation of defects. This is to ensure the reliability of results and determination of component integrity.

This seminar, aims to bring together those involved and interested in NDT application in Malaysian industry, be it a user, producer, service provider or a consultant. It is for dissemination of knowledge, exchange of information on the technology and networking. In this seminar, various speakers shall put forward their knowledge and experiences in NDT technologies and applications in various industries.



COURSE OBJECTIVES

-  To gain knowledge on current and future NDT technologies.
-  To gain exposure on case studies on application of NDT.
-  To establish networking with players of NDT such as service providers, asset owners, practitioners, researchers and technology innovators.

HIGHLIGHT

- Conventional and advanced NDE technologies
- Realibility and effectiveness of NDE
- Emerging NDE technologies
- Education, standardization, training, certification and accreditation



WHO SHOULD ATTEND

NDT contractor, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive.

Technical manager, engineer supervisor, lecturer, contractor, consultant and researcher

YOUR INVESTMENT

PAYMENT	FEES	
Single Registration per pax	RM	825.00
After IPTN	RM	783.00
Team Discount per pax	RM	780.00
After IPTN	RM	741.00



BASIC OF RADIOGRAPHY TESTING - DIGITAL

Asas Untuk Ujian Radiografi - Digital

INTRODUCTION

Advancement in computer technology has revolutionized NDT technology throughout the world. Radiography in particular has experienced significant changes from conventional method that utilizes film to the application of digital technology.

The whole world is shifting gradually from normal film radiography to advance digital radiography. In order not to be left behind, industrial radiography in Malaysia must embrace this digital technology for the survival of our industry. Malaysian

Nuclear Agency being the champion of NDT technology in this country takes a lead to expose this technology to local industries by organizing their first national training course on Digital Industrial Radiography (DIR).

We invite all individual involved in radiography inspection either as service providers, end users, academicians, researchers and equipment supplier to take this rare opportunity to participate in this training course.

COURSE OBJECTIVES

- To give a brief overview of relevant technical aspects of digital imaging
- To be aware of the advantages and disadvantages of digital imaging system
- To understand the viability of DIR as an inspection tools
- To provide hands-on or experiential on DIR

CONTENTS

- Digital Industrial Radiography-emerging technology and recent development
- Basic of radiography
- Image quality (radiation contrast) and emerging requirements
- Radiation safety for radiography
- Practiced norm
- Basic of digital image processing (DIP) for DIR
- Computed radiography (CR) with phosphor imaging plate
- Flat panel (FP)
- Fluoroscopy
- Imaging system and performance test
- Film digitization and duplication
- Digital image generation and preprocessing
- Basic filtering for digital image
- DIR software
- Measurement and evaluation of digital image data
- Written procedure
- Automated defect recognition (ADR)

METHODOLOGY

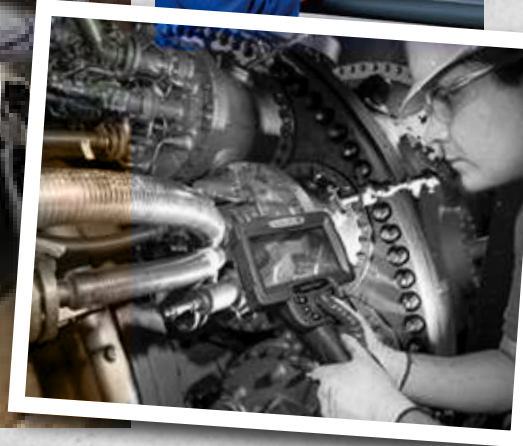
Lecture, tutorial, practical/demonstration and case study.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu.

WHO SHOULD ATTEND

NDT contractor, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive. Technical manager, engineer supervisor, lecturer, contractor, consultant and researcher.



YOUR INVESTMENT

PAYMENT	FEES	
Single Registration per pax	RM	825.00
After IPTN	RM	783.00
Team Discount per pax (2 or more registrations from the same organisation)	RM	780.00
After IPTN	RM	741.00

***Malaysian Skill Certificate
(ISO 9712) by Department
of Skills Development
(DSD)***

***Pensijilan Kemahiran
Malaysia (ISO 9712) oleh
Jabatan Pembangunan
Kemahiran (JPK)***

INDUSTRIAL RADIOGRAPHY LEVEL 1 (BASIC GRADE) *Radiografi Industri Tahap 1 (Peringkat Asas)*

INTRODUCTION

Industrial radiography is one of the most versatile and effective methods of Non Destructive Testing (NDT) of materials. The radiograph produced using x-ray and gamma ray is viable to determine any changes in thickness, defects (internal and surface) and changes in structure of specimen. This 2-week course is designed based on National Occupational Skills Standard (NOSS) requirements under

Department of Skills Development (DSD) and is being recognised by Atomic Energy Licensing Board (AELB) for the high standard in radiation safety aspects.

Participants who have met the requirement are allowed to sit for the Industrial Radiography Level 1 (Basic Grade) Examination, conducted by DSD. Successful candidates will be awarded Industrial Radiography Level 1.

COURSE OBJECTIVES

- To have adequate knowledge and experience to perform or to supervise NDT inspection.
- To detect crack, surface and near surface in welding.

- To gain reasonable amount of knowledge and experience related to the Radiography Industry of inspection in industrial plants and facilities engineering
- To have practical experience in inspection using replication methods

CONTENTS

- Introduction to Non-Destructive Testing (NDT)
- Material processes and defects
- Origin and nature of radiation
- Radiography equipment and radiation sources
- The nature and consequence of radiation exposure
- Control of external radiation exposure
- Radiological monitoring equipment and methods
- Safety and emergency procedure for radiographic work
- Introduction to radiographic
- Radiographic image quality
- Radiographic techniques and determination exposure
- Radiographic viewing
- Radiographic film and film processing
- Specification, code and standard for radiographic weld inspection
- Legislative requirements



METHODOLOGY

Lecture, tutorial, practical/demonstration, discussion and case study.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

NDT contractor, supplier, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), producer of pressure vessel, shipping industry, aviation industry, automotive, lecturer and researcher.

QUALIFICATION FOR EXAMINATION

- 🔦 18 years old and above.
- 🔦 Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge.
- 🔦 The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:
 - 🕒 Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected
 - 🕒 Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specify by the employer.

YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 3,600.00	RM 3,850.00
After IPTN	RM 3,420.00	RM 3,670.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 3,420.00	RM 3,670.00
After IPTN	RM 3,250.00	RM 3,500.00
Nuclear Malaysia Examination Fee		RM 250.00

INDUSTRIAL RADIOGRAPHY LEVEL 2 (INTERMEDIATE GRADE) - NORMAL ACCESS

*Radiografi Industri Tahap 2 (Peringkat Pertengahan) -
Kemasukan Normal*

INTRODUCTION

Industrial radiography is the most effective NDT method and is widely used in various industries to detect the defect in materials. This course is designed based on standard syllabus set up by Department of Skills Development (DSD) and meet the National Occupational Skills Standard (NOSS) requirements, to provide the participants with the necessary knowledge in both theory and practices of industrial radiography. It is being recognised by Atomic

Energy Licensing Board (AELB) for the high standard in radiation safety aspects.

Participants who have passed the Level 1 (Basic Grade) Radiography Examination are allowed to sit for the Level 2 (Intermediate Grade) Radiography Examination, conducted by DSD. Successful candidates will be awarded the Level 2 (Intermediate Grade) Radiography Industrial Certificate which is recognised by the Malaysian Government.

COURSE OBJECTIVES

- To have adequate knowledge and experience to perform or to supervise NDT inspection.
- To detect crack, surface and near surface in welding.
- To gain reasonable amount of knowledge and experience related to the Radiography Industry of inspection in industrial plants and facilities engineering
- To have practical experience in inspection using replication methods.

CONTENTS

- Introduction to NDT methods and radiographic testing
- Material process and defects
- Basic principles or radiography testing
- Principle of welding and casting
- Radiographic film, film handling, loading and processing
- Radiographic image quality
- Interpretation and evaluation of test results
- Specification, code, standard and procedure for radiographic weld inspection
- Quality assurance
- Exposure determination, radiographic exposure technique, application technique and miscellaneous techniques

METHODOLOGY

Lecture, tutorial, practical/demonstration and case study.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu.

WHO SHOULD ATTEND

NDT contractor, supplier, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), producer of pressure vessel, shipping industry, aviation industry, automotive, lecturer and researcher.



QUALIFICATION FOR EXAMINATION

- 💡 18 years old and above.
- 💡 Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge
- 💡 The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:
 - 👁️ Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less

than 30cm with one or both eyes, either corrected or uncorrected

- 👁️ Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specified by the employer.

- 💡 Able to provide a valid passed examination slip of Industrial Radiography Level 1

YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 4,750.00	RM 5,215.80
After IPTN	RM 4,500.00	RM 4,965.80
Team Discount per pax (2 or more registrations from the same organisation)	RM 4,500.00	RM 4,965.80
After IPTN	RM 4,270.00	RM 4,735.80
Reference Book: Radiografi Industri (Prinsip dan Praktik) - Included Radiation Safety DVD		RM 115.80
Nuclear Malaysia Examination Fee		RM 350.00

INDUSTRIAL RADIOGRAPHY LEVEL 2 (INTERMEDIATE GRADE) COVER LEVEL 1 & 2 - DIRECT ACCESS

*Radiografi Industri Tahap 2 (Peringkat Pertengahan)
Merangkumi Tahap 1 & 2 - Kemasukkan Terus*

INTRODUCTION

Currently there are thousands of radiographers in Malaysia certified to a Level 1 in accordance with the National Standard (issued by the Department of Skills Development, Ministry of Human Resources) that was derived from the ISO 9712. However, as mentioned in this standard as well as ISO 9712, Level 1 personnel shall not be allowed to involve in the interpretation of results as well as preparation of inspection report.

Thus, there is a need for radiographers to seek for higher qualification and certification to allow them to provide more

comprehensive and independent radiography testing services. This training course is designed to prepare the participants with necessary knowledge and practical experience required for them for Level 2 examination in accordance to the National Standard.

Participants who pass the examination will be awarded with the Industrial Radiography Level 2 certificate that is recognised by Malaysian Government as well as wide range of Malaysian industries. The new standard allows personnel to participate directly to Level 2 training and examination.

COURSE OBJECTIVES

- To have adequate knowledge and experience to perform or to supervise NDT inspection.
- To detect crack, surface and near surface in welding.
- To gain reasonable amount of knowledge and experience related to the Radiography Industry of inspection in industrial plants and facilities engineering
- To have practical experience in inspection using replication methods

CONTENTS

- Origin and nature of radiation
- The nature and consequence of radiation exposure
- Radiological monitoring equipment and methods
- Safe-handling of radioactive materials
- Control of external radiation exposure
- Safety and emergency procedure for radiographic work
- Legislative requirements
- Introduction to NDT methods and radiographic testing
- Material processes and defects

- Basic principles of radiography testing
- Principle of welding and casting
- Radiographic equipment
- Radiographic film, film handling, loading and processing
- Radiographic image quality & Image quality indicator
- Interpretation and evaluation of test results
- Specification, code, standard and procedure for radiographic weld inspection
- Quality assurance
- Exposure determination, radiographic exposure technique, application technique and miscellaneous techniques

QUALIFICATION FOR EXAMINATION

- 18 years old and above.
- Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge.
- The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:
 - Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected
 - Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specify by the employer.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

NDT contractor, supplier, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), manufacturer of pressure vessel, shipping industry, aviation industry, automotive, lecturers and researcher.



YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 7,400.00	RM 7,865.80
After IPTN	RM 7,030.00	RM 7,495.80
Team Discount per pax		
(2 or more registrations from the same organisation)	RM 7,030.00	RM 7,495.80
After IPTN	RM 6,680.00	RM 7,145.80
Reference Book: Radiografi Industri (Prinsip dan Praktik) - Included Radiation Safety DVD		RM 115.80
Nuclear Malaysia Examination Fee		RM 350.00

INDUSTRIAL RADIOGRAPHY LEVEL 3 (ADVANCED)

Radiografi Industri Tahap 3 (Peringkat Tinggi)

INTRODUCTION

There are very few individual in Malaysia currently qualified and certified to Industrial Radiography Level 3 in accordance to the National Standard (that is derived from the ISO 9712 standard). However, as a nation, Malaysia need a sufficient number of Level 3 personnel to ensure that services provided to industries are of the highest quality and at par with those provided by international companies.

Recent development indicates that many end-users especially those from petroleum industries will begin to impose the requirement for higher level industrial

radiography personnel to be made available by the Non-Destructive Testing companies. Based on this fact, Malaysian Nuclear Agency is offering an Industrial Radiography Level 3 (Advanced) Training Course that is based on the National Standard that qualified participants to sit in the national examination for Industrial Radiography Level 3 hosted by the Department of Skills Development (DSD).

Those who pass the examination will be awarded with Level 3 certificate that is recognised by the Government of Malaysia and wide range of Malaysian industries.

COURSE OBJECTIVES

- To have adequate knowledge and experience to perform or to supervise NDT inspection.
- To detect crack, surface and near surface in welding.
- To gain reasonable amount of knowledge and experience related to the Radiography Industry of inspection in industrial plants and facilities engineering
- To have practical experience in inspection using replication methods

CONTENTS

The course is designed to fulfill the National Standard's requirement the covers the following area:

- Physical aspects of radiography
- Radiographic equipment and accessories
- Radiographic quality and techniques
- Viewing and interpretation of radiographic
- Codes, standards and specification related to radiography
- Materials, processes and defects
- Mechanical and destructive testing
- Organisation and administration of NDT
- Quality assurance applied to NDT
- Laboratories
- Code of ethics

METHODOLOGY

Lecture, tutorial, practical/demonstration and case study.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

Level 2 personnel who wish to be Level 3, NDT managers, fabrication and maintenance manager/supervisor, quality assurance/ control manager/supervisor, researchers, lecturers and others.

QUALIFICATION FOR EXAMINATION

- 18 years old and above.
- Currently holding Level 2 Certificate
- Passed the Industrial Radiography (RT) Level 2 examination conducted by DSD and able to provide the evidence



YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 3,630.00	RM 4,080.00
After IPTN	RM 3,448.00	RM 3,898.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 3,445.00	RM 3,795.00
After IPTN	RM 3,272.00	RM 3,722.00
Nuclear Malaysia Examination Fee		RM 450.00

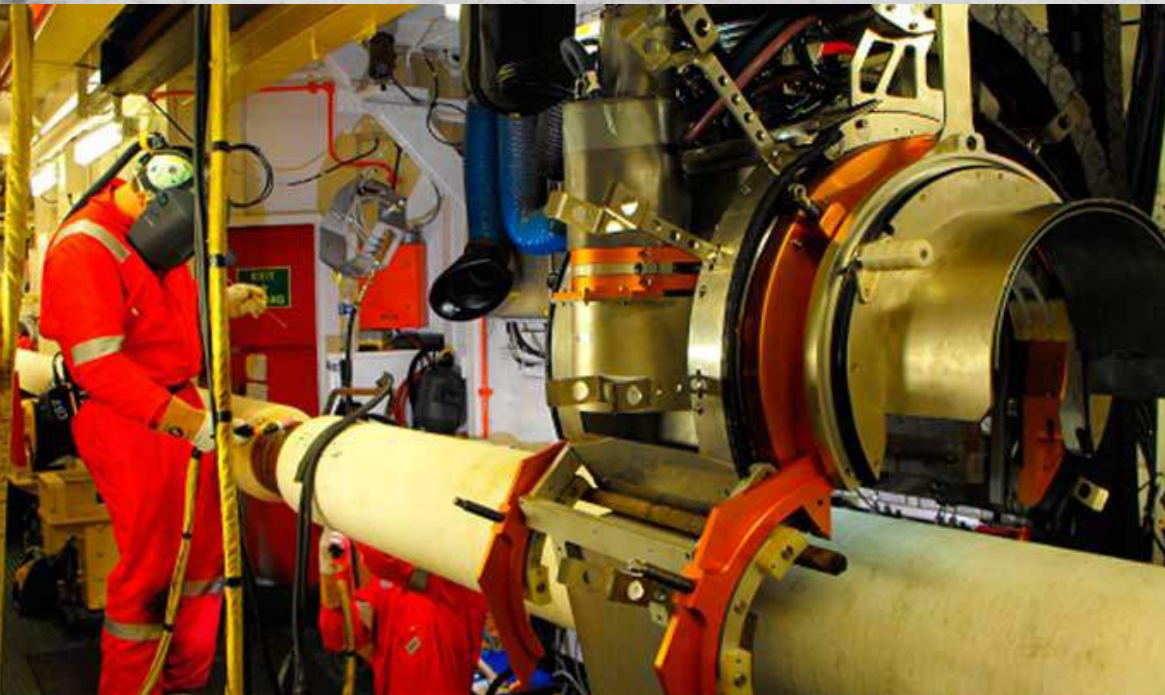
RADIOGRAPHIC TESTING – DIGITAL (RT-D): LEVEL 2

Pengujian Radiograf - Digital (RT-D): Tahap 2

INTRODUCTION

Radiographic Testing - Digital (RT-D) is widely accepted and used in the industry especially oil and gas, aerospace, casted product, remaining wall thickness measurement and duplication of conventional radiographic (RT-F) films. The positive progress is mainly driven by the ability of RT-D to produce digital radiographs without the need for chemical processing and its ability to perform with shorter exposure time. The acquired digital image can be digitally processed using fast and effective computer

algorithm. In addition, the digital images can be safely stored compared to the film and measurement of discontinuity can be interactively performed. The acquired digital image can also be digitally shared and stored on a hard drive. This course will expose candidates with correct steps to perform and execute RT-D using 3 systems (Computed Radiography (CR), Digital Detector Array (DDA) and Film Digitizer) based on existing International standards for 3 sectors (welds, castings, and tubes and pipes).



COURSE OBJECTIVES

- To introduce and promote the RT-D technique
- To perform and execute RT-D using CR and DDA systems according to the available standard
- To select and execute Film Digitization process in accordance to the available international standard

CONTENTS

- Principles of radiographic testing
- Computed Radiography (CR) and Imaging Plates (IP)
- Data acquisition and detector calibration
- Standards and procedures guide and user qualification of detectors
- Applications, standard practices and evaluation
- Defectology, digital catalogues and acceptance criteria
- Automated image interpretation
- Computed tomography

YOUR INVESTMENT

PAYMENT	FEES	
Single Registration per pax	RM	3,150.00
After IPTN	RM	3,000.00
Team Discount per pax (2 or more registrations from the same organisation)	RM	2,995.00
After IPTN	RM	2,825.00

WHO SHOULD ATTEND

NDT contractor, NDT practitioners, Personnel engaged in oil and gas industry, power plant (construction and maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive.

Students, asset owners, academicians, Managers

Public with minimum age of 18 years old who is interested in gaining general knowledge on RT-D.

Level 2 SKM holder in Radiographic Testing (RT) - Welded Construction for Oil and Gas which aims to upgrade the level of skills from conventional radiography to RT-D Level 2.

QUALIFICATION FOR EXAMINATION

- 18 years old and above.
- Currently holding Level 2 Certificate in Radiographic Testing - Welded Construction for Oil and Gas

METHODOLOGY

Lecture, practical/ demonstration and case study

INTERPRETATION AND EVALUATION OF RADIOGRAPH LEVEL 2

Interpretasi dan Penilaian Radiograf Tahap 2

INTRODUCTION

This course is designed as a continuation to the specific topic covered in the Industrial Radiography Level 1 (Basic Grade) and Level 2 (Intermediate Grade) which emphasize on interpretation and evaluation of radiography test results based on codes and standards. It covers the subject in more details in order to equip the participants with necessary knowledge in evaluating the quality of welding and particular samples.

COURSE OBJECTIVES

- To enhance the skill and knowledge in systematic evaluation of quality of radiograph
- To give in depth understanding on the interpretation and evaluation aspects of radiograph test results based on codes and standards.

CONTENTS

- Principles of X-ray and gamma radiography
- Film and screen
- Film processing
- Characteristics of the image
- Choice of technique
- Relevant standards and acceptance criteria
- Weld defects and their origins
- Image quality indicators
- Viewing conditions
- Identification on radiograph





METHODOLOGY

Lecturer, practical/ demonstration and discussion.

WHO SHOULD ATTEND

Technical manager, supervisor, engineer, lecturer, contractor, consultant and researcher who involved in radiography tests. Radiography Level 1 (Basic Grade) or Radiography Level 2 (Intermediate Grade) of Department of Skills Development (DSD).

YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 2,840.00	RM 3,190.00
After IPTN	RM 2,700.00	RM 3,050.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 2,700.00	RM 3,050.00
After IPTN	RM 2,560.00	RM 2,970.00
Nuclear Malaysia Examination Fee		RM 350.00

EDDY CURRENT LEVEL 1 (BASIC GRADE)

Arus Pular Tahap 1 (Peringkat Asas)

INTRODUCTION

Eddy Current is one of the most common NDT method used in material evaluation. This inspection methods is now very well known and has become a routine in the world of industry such as, power plant and other related industries. For this reason, a National Qualification and Certification Scheme for Eddy Current Method was established and approved by the Department of Skills Development (DSD), 1995 under National Occupational Skills Standard (NOSS).

This course is designed to meet the requirements of the standard syllabus of Eddy Current according to DSD Level 1, National Qualification and Certification Scheme (NOSS). Participants who have successfully met the course requirements are allowed to sit for the Level 1 Eddy Current examination conducted by DSD. Successful candidate will be awarded the Level 1 certificate which is recognised by the Malaysian Government.



COURSE OBJECTIVES

- To provide guidance and sorting of materials on the basis of conductivity and permeability
- To estimate coating thickness and thinning of non ferromagnetic material
- To detect crack, surface and near surface in components, structure and welds.

QUALIFICATION FOR EXAMINATION

- 18 years old and above.
- Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge.
- The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:
 - Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected
 - Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specify by the employer.

YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 2,180.00	RM 2,430.00
After IPTN	RM 2,070.00	RM 2,320.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 2,070.00	RM 2,320.00
After IPTN	RM 1,970.00	RM 2,220.00
Nuclear Malaysia Examination Fee		RM 250.00

CONTENTS

- Introduction to non-destructive testing (NDT)
- Introduction to materials process and defects
- Basic electrical theory
- Basic magnetism and electromagnetism theory
- Principle of Eddy Current
- Eddy Current probes and equipment
- Testing technique for felt surface
- Application of Eddy Current in engineering works

METHODOLOGY

Lecture, tutorial, practical/demonstration.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

This course is opened to all participants, in particular NDT personnels, supervisors, NDT trainers, contractors and researchers and those who are interested in eddy current technique.

EDDY CURRENT LEVEL 2 (INTERMEDIATE GRADE)

Arus Pular Tahap 2 (Peringkat Pertengahan)

INTRODUCTION

Eddy Current is one of the most common NDT methods used in material evaluation. This inspection method is well known and has become a routine in the world of industry such as, power plant and other related industries. For this reason, a National Qualification and Certification Scheme for Eddy Current Method was established by the Department of Skills Development (DSD) 1995 under National Occupational Skills Standard (NOSS).

This course is designed to meet the requirements of the standard syllabus of Eddy Current according to DSD Level 2, National Qualification and Certification Scheme (NOSS). Participants who have successfully met the course requirements are allowed to sit for the Level 2 Eddy Current examination conducted by DSD. Successful candidates will be awarded the Level 2 certificate which is recognised by the Malaysian Government.

COURSE OBJECTIVES

- To provide guidance and sorting materials on the basis of conductivity and permeability
- To estimate coating thickness of nonferromagnetic material
- To detect crack, surface and near surface in components, structure and welds.

CONTENTS

- Introduction to non-destructive testing (NDT)
- Materials process and defects
- Basic mathematics and unit introduction to Eddy Current testing
- Electricity, magnetism, electromagnetism and electromagnetic induction
- Eddy Current equipment and accessories (probes)
- Eddy Current distribution in plane conductor
- Testing procedures for flat surfaces and application
- Introduction to bolt hole inspection
- Introduction to tube inspection
- Safety as applicable to Eddy Current testing and electrical safety
- Code, standard and specifications

METHODOLOGY

Lecture, tutorial, practical/demonstration.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

NDT personnel, supervisors, NDT trainers, contractors and researchers and those who are interested in Eddy Current technique.

QUALIFICATION FOR EXAMINATION

In addition to attending this training course, participants fulfilling the following requirement are eligible for the examination:

- 18 years old and above.
- Passed the Eddy Current Level 1 Examination conducted by DSD and able to provide evidence
- Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge.
- The candidate shall provide documentary evidence of satisfactory vision in

accordance with the following requirements:

- Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected
- Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned,



YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 2,500.00	RM 2,850.00
After IPTN	RM 2,380.00	RM 2,730.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 2,380.00	RM 2,730.00
After IPTN	RM 2,260.00	RM 2,810.00
Nuclear Malaysia Examination Fee		RM 350.00

EDDY CURRENT LEVEL 3 (ADVANCED GRADE)

Arus Pular Tahap 3 (Peringkat Tinggi)

INTRODUCTION

Eddy Current is one of the most common NDT methods used in material evaluation. This inspection method is well known and has become a routine in the world of industry such as, power plant and other related industries. For this reason, a National Qualification and Certification Scheme for Eddy Current Method was established by the Department of Skills Development (DSD) 1995 under National Occupational Skills Standard (NOSS).

This course is designed to meet the requirements of the standard syllabus of eddy current according to DSD Level 3, National Qualification and Certification Scheme (NOSS). Participants who have successfully met the course requirements are allowed to sit for the Level 3 Eddy Current examination conducted by DSD. Successful candidates will be awarded the Level 3 certificate which is recognised by the Malaysian Government.

COURSE OBJECTIVES

- To provide guidance and sorting materials on the basis of conductivity and permeability
- To estimate coating thickness of non-ferromagnetic material
- To detect crack, surface and near surface in components, structure and welds.

CONTENTS

- General knowledge: Technology of NDT, Technology of materials, Metrology
- Physical principles of the test
- Instrumentation
- Testing Procedures
- Applications
- Codes, standards, specification and procedures
- Presentation of reports and documentation
- Interpretation of results, limitations of the method
- Quality assurance and standardisation
- Organisation and administration of NDT
- Qualification and certification of NDT personnel

METHODOLOGY

Lecture, tutorial, practical/demonstration.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

NDT personnel, supervisors, NDT trainers, contractors and researchers and those who are interested in eddy current technique.

QUALIFICATION FOR EXAMINATION

In addition to attending this training course, participants fulfilling the following requirement are eligible for the examination:

- 18 years old and above.
- Passed the Eddy Current Level 2 Examination conducted by DSD and able to provide evidence.
- Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge.
- The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:

- Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected.

- Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specify by the employer.



YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 3,550.00	RM 4,000.00
After IPTN	RM 3,312.00	RM 3,762.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 3,370.00	RM 3,820.00
After IPTN	RM 3,201.00	RM 3,651.00
Nuclear Malaysia Examination Fee		RM 450.00

SURFACE METHOD LEVEL 1 (BASIC GRADE)

Kaedah Permukaan Tahap 1 (Peringkat Asas)

INTRODUCTION

Surface method is one of the techniques used in non destructive testing (NDT) and is very effective and widely used in examining surface defect. The testing techniques encompasses two different methods liquid penetrant and magnetic particle is regularly used in engineering works and has proven to be very effective and reliable.

This 2 week course is designed based on standard syllabus set up by Department of Skills Development (DSD) and meet the

National Occupational Skill Standard (NOSS) requirements. Participants who have attend for Level 1 (Basics Grade) liquid penetrant and magnetic particle examination are allowed to sit for Level 1 (Basics Grade) liquid penetrant and magnetic particle examination conducted by DSD.

Successful candidate will be awarded the liquid penetrant and magnetic particle Level 1 certificate which is recognised by the Malaysian Government.

COURSE OBJECTIVES

- To understand the principles of Liquid Penetrant and Magnetic Particle testing & technique to carry out the inspection.
- To familiar with the interpretation and evaluation of results with respect to applicable codes, standards and specifications.
- To appreciate the safety precautions inherent to the method.
- To enhance the skill and knowledge of the principles, procedures, applications and capabilities of Liquid Penetrant and Magnetic Particle method.
- To enhance knowledge of the acceptance and rejection requirements which are typically expressed in industry.

CONTENTS

LIQUID PENETRANT METHOD

- Introduction to non-destructive testing technique.
- Introduction to liquid penetrant testing.
- Physical principles of the test.
- Liquid penetrant processing.
- Test equipment and materials.
- Materials processes and defects.
- Introduction, codes, standards, procedures and instructions.

MAGNETIC PARTICLES METHOD

- Introduction to non-destructive testing technique.
- Introduction to magnetic particles testing.

- 💡 Physical principle and fundamentals of magnetic particles.
- 💡 Method and techniques.
- 💡 Equipment and accessories.
- 💡 Instruction to codes, standards, specification, procedures and instruction
- 💡 Presentation and recording of results.
- 💡 Organisation and administration of NDT

METHODOLOGY

Lecture, tutorial, practical/demonstration and case study.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

Technical manager, engineer, supervisor, lecturer, contractor, consultant and researcher.

QUALIFICATION FOR EXAMINATION

- 💡 18 years old and above.
- 💡 Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge.
- 💡 The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:
 - 👁️ Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected
 - 👁️ Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specify by the employer.



YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 2,300.00	RM 2,800.00
After IPTN	RM 2,185.00	RM 2,685.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 2,185.00	RM 2,685.00
After IPTN	RM 2,075.00	RM 2,575.00
Nuclear Malaysia Examination Fee		RM 500.00

SURFACE METHOD LEVEL 2 (INTERMEDIATE GRADE)

Kaedah Permukaan Tahap 2 (Peringkat Pertengahan)

INTRODUCTION

Surface method is one of the techniques used in non-destructive testing (NDT) and is very effective and widely used in examining surface defect. The testing technique encompasses two different methods liquid penetrant and magnetic particle is regularly used in engineering works and has proven to be very effective and reliable. This 2 weeks course is designed based on standard syllabus set up by Department of Skills Development (DSD) and meet the National Occupational Skill Standard (NOSS) requirements.

Participants who have attend for Level 1 (Basic Grade) liquid penetrant and magnetic particle are allowed to sit for the Level 2 (Intermediate Grade) liquid penetrant and magnetic particle conducted by DSD. Successful candidate will be awarded the liquid penetrant and magnetic particle Level 2 (intermediate grade) certificate which is recognised by Malaysian Government.

COURSE OBJECTIVES

- To understand the principles of Liquid Penetrant and Magnetic Particle testing & technique to carry out the inspection.
- To familiar with the interpretation and evaluation of results with respect to applicable codes, standards and specifications.

CONTENTS

LIQUID PENETRANT METHOD

- Introduction to non-destructive testing technique.
- Introduction to liquid penetrant testing.
- Physical principles of the test.
- Liquid penetrant processing.
- Test equipment and materials.
- Materials processes and defects.
- Introduction, codes, standards, procedures and instructions.

MAGNETIC PARTICLES METHOD

- Introduction to non-destructive testing technique.
- Introduction to magnetic particles testing.
- Physical principle and fundamentals of magnetic particles.
- Method and techniques.
- Equipment and accessories.
- Instruction to codes, standards, specification, procedures and instruction
- Presentation and recording of results

METHODOLOGY

Lecture, tutorial, practical/demonstration and case study.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

- NDT contractor, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive.
- Technical manager, engineer supervisor, lecturer, contractor, consultant and researcher.

QUALIFICATION FOR EXAMINATION

- 18 years old and above.
- Passed the Magnetic Particle and Liquid Penetrant Level 1 Examination conducted by DSD and able to provide the evidence.
- Able to read, write in Bahasa Malaysia and English and has basic mathematical knowledge.
- The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:
 - Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected.
 - Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specify by the employer.



YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 2,640.00	RM 2,240.00
After IPTN	RM 2,508.00	RM 3,108.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 2,500.00	RM 3,100.00
After IPTN	RM 2,375.00	RM 2,975.00
Nuclear Malaysia Examination Fee		RM 600.00

SURFACE METHOD LEVEL 3 (ADVANCE GRADE)

Kaedah Permukaan Tahap 3 (Peringkat Tinggi)

INTRODUCTION

Surface method is one of the techniques used in non-destructive testing (NDT) and is very effective and widely used in examining surface defect. The testing technique encompasses two different methods liquid penetrant and magnetic particle is regularly used in engineering works and has proven to be very effective and reliable. This 2 week course is designed based on standard syllabus set up by Department of Skills Development (DSD) and meet the National Occupational Skill Standard (NOSS) requirements. Participants who successfully attend and passed Level 2 (Intermediate Grade) liquid penetrant and magnetic particle examination are allowed to sit for the Level 3 (Advance Grade) liquid penetrant and magnetic particle examination conducted by DSD. Successful candidate will be awarded the liquid penetrant and magnetic particle Level 3 (Advance) certificate which is recognised by Malaysian Government.

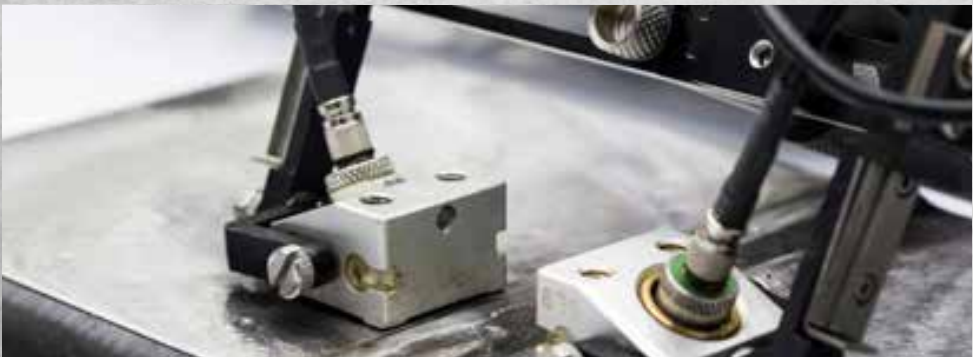
COURSE OBJECTIVES

- To understand the principles of Liquid Penetrant and Magnetic Particle testing & technique to carry out the inspection.
- To familiar with the interpretation and evaluation of results with respect to applicable codes, standards and specifications.

CONTENTS

LIQUID PENETRANT METHOD

- General knowledge: Technology of NDT, Technology of materials, Metrology
- Physical principles of the test
- Liquid penetrant processing
- Test equipment and materials
- Codes, standards, procedures and safety
- Quality assurance and standardisation
- Presentation of reports and documentation



- Interpretation of results, limitations of the method
- Organisation and administration of NDT
- Qualification and certification of NDT personnel

MAGNETIC PARTICLES METHOD

- General knowledge: Technology of NDT, Technology of materials, Metrology
- Physical principle and fundamentals of magnetic particles
- Method and techniques
- Equipment and accessories
- Codes, standards, specification and procedures
- Presentation of reports and documentation
- Interpretation of results, limitations of the method
- Quality assurance and standardisation
- Organisation and administration of NDT
- Qualification and certification of NDT personnel

METHODOLOGY

Lecture, tutorial, practical/demonstration and case study.

MEDIUM OF INSTRUCTION

English and Bahasa Melayu

WHO SHOULD ATTEND

- NDT contractor, NDT practitioner, personnel engaged in oil and gas industry, power plant (construction and maintenance), chemical plant (maintenance), producer of pressure vessel, shipping industry, aviation industry and automotive
- Technical manager, engineer supervisor, lecturer, contractor, consultant and researcher.

QUALIFICATION FOR EXAMINATION

- 18 years old and above.
- Passed the Magnetic Particle and Liquid Penetrant Level 2 Examination conducted by DSD and able to provide evidence
- The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:
 - Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1.6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected
 - Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT methods concerned, as specify by the employer.

YOUR INVESTMENT

PAYMENT	FEES	FEES (including NM Examination)
Single Registration per pax	RM 3,550.00	RM 4,250.00
After IPTN	RM 3,372.00	RM 4,072.00
Team Discount per pax (2 or more registrations from the same organisation)	RM 3,370.00	RM 4,070.00
After IPTN	RM 3,201.00	RM 3,901.00
Nuclear Malaysia Examination Fee		RM 700.00



Training Activities / Aktiviti Latihan



OTHER TRAINING | LAIN-LAIN LATIHAN

AGENCY-BASED PROGRAMME LATIHAN ASAS AGENSI

All course can be conducted as in-company basis tailored to meet specific needs.

Semua kursus boleh dijalankan sebagai kursus asas agensi direka bentuk mengikut keperluan organisasi.

Incompany Fees

Programme (No. of days)	Fees / Rates*	Certificate
1 day	RM 3,600.00	Statement of Attendance
2 days	RM 6,800.00 @ RM 3,400.00 per day	Statement of Attendance
3 days	RM 9,600.00 @ RM 3,200.00 per day	Certificate of Attendance
Above 3 days	RM 3,200.00 per day	Certificate of Attendance

- Bench fees of **RM750.00** per day are charges for course conducted in Nuklear Malaysia
- Programme conducted outside Nuklear Malaysia, additional cost for accomodation, food and travelling should be added.
- Fees must be paid in advance through bank draft/ money order/ company cheque/ local order (L.O) payable to: **DIRECTOR GENERAL MALAYSIAN NUCLEAR AGENCY.**



CONSORTIA KONSORTIA

A devide version of in-company programme, designed for a small group of companies that provide the benefits of customised programme and based on cost-sharing principle

Merupakan versi terbitan program asas agensi direka bentuk untuk sekumpulan syarikat dengan mendapatkan manfaat program reka khas berdasarkan prinsip perkongsian kos.



E-TUITION TUISYEN ATAS TALIAN

An online system that enable clients to reach our training programmes 'anywhere, anytime'. User can learn at own pace, sit for an examination and get certified on site.

Merupakan sistem atas talian yang membolehkan peserta mendapat latihan 'setiap ketika, di mana jua'. Pelanggan boleh belajar mengikut kesesuaian masing-masing, menduduki peperiksaan serta mendapat sijil serentak.

EASY WAYS TO REGISTER

Please send us the complete registration form or participant's details (**Name, I.C / Passport No., Company Name, Preferred Course and Date, Contact info**) via:

ONLINE REGISTRATION



<http://eclient.nuclearmalaysia.gov.my>



www.facebook.com/pusatlatihan

POST-MAIL



**Director General
Malaysian Nuclear Agency
(Nuclear Malaysia)
Bangi 43000 Kajang**

(ATTN: Centre of Nuclear Excellence)

FAX



03-8911 2180

EMAIL



noraniza@cc.nm.gov.my
nursyazwani@cc.nm.gov.my
hadza@nm.gov.my

SMS / WHATSAPP



019-343 4122

WALK-IN

Walk-in participants with payment will also be admitted on a space available basis.

FURTHER INFORMATION

Please visit our website: <http://trainingcentre.nuclearmalaysia.gov.my>

PLEASE CALL

Syazwani/ Noraniza / Hadza

Tel : 03-8911 2000 ext 2601/2608/2600

Mobile : 019-343 4122

Full registration fee is required with the registration form. Fees include the cost of training material, luncheons, coffee breaks and refreshments. Payment through **cheque/ bank draft/ local order (L.O)** should be crossed and made payable to **Director General Malaysian Nuclear Agency**.

REGISTRATION FORM

Registration Form

Preferred Course:

<input type="checkbox"/>	NDT 100	<input type="checkbox"/>	NDT 101	<input type="checkbox"/>	NDT 104	<input type="checkbox"/>	NDT 105	<input type="checkbox"/>	NDT 106	<input type="checkbox"/>	NDT 107
<input type="checkbox"/>	NDT 108	<input type="checkbox"/>	NDT 109	<input type="checkbox"/>	NDT 110	<input type="checkbox"/>	NRT 111	<input type="checkbox"/>	NRT 211	<input type="checkbox"/>	NRT 212
<input type="checkbox"/>	NRT 311	<input type="checkbox"/>	NRT 411	<input type="checkbox"/>	NRT 210	<input type="checkbox"/>	NET 210	<input type="checkbox"/>	NET 310	<input type="checkbox"/>	NSM 110
<input type="checkbox"/>	NSM 210	<input type="checkbox"/>	NSM 310	<input type="checkbox"/>	NRT 112	<input type="checkbox"/>	NRT 213	<input type="checkbox"/>	NDT 400	<input type="checkbox"/>	NDT 102
<input type="checkbox"/>	NDT 201	<input type="checkbox"/>	NDT 202	<input type="checkbox"/>	NRT 213						

Preferred Date: / / (dd / mm / yyyy)

(Please photocopy for additional participants)

Name:

(as in I.C)

I.C No. (New) / Passport:

Designation: _____

Meal Restriction
(Special Diet): _____
(if yes, please state)

The registration fee of RM..... money order / cheque / bank draf / local order payable to Director General Malaysian Nuclear Agency is enclosed herewith.

Name of Approving Manager:

Position:

Company Name & Address :

Signature :

Telephone :

Mobile :

Fax :

E-mail :



Organised by



KEMENTERIAN SAINS,
TEKNOLOGI DAN INOVASI
MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION



<http://trainingcentre.nuclearmalaysia.gov.my>

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