

Southern African Institute of Welding

NON-DESTRUCTIVE TESTING (NDT) COURSES 2025

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PROMOTING WORLD CLASS EXCELLENCE IN WELDING, NON-DESTRUCTIVE TESTING AND ALLIED TECHNOLOGY

SAIW offers industry developed training programmes, which aim to provide the candidates with the necessary skills to meet industry needs.

Our skills programme is in the process of being registered with the relevant QCTO, and once registered, may be recognised as part qualifications and contribute credits towards NQF alligned qualifications.

FOCUSED APPROACH TO 2025 COURSE Offering

Rationalised number of courses means students should PLAN AHEAD and BOOK TODAY!

The aftershocks of the COVID-19 pandemic and resultant shifts in student numbers and their availability have seen the SAIW rationalise its current approach so that although the number of scheduled courses we offer remains exactly the same, but the number of times these particular courses are offered through the year has been reduced, to provide a more streamlined offering. In line with this more focused approach, we are therefore proud to launch our courses for 2025!

(SEE THE FULL LIST IN THE TABLE ON THE NEXT PAGE WHICH PROVIDES A CLEAR IDEA OF THE COURSES WE OFFER).

Cost benefit	The cost benefit of this streamline approach is that a third of our courses have been reduced in price and more than half our course prices have been increased at less than the inflation rate.
Plan ahead	The more streamlined and cost-effective approach means that students need to plan their training schedule for 2025 well in advance and book early to ensure they are in time for their desired course start date next year. See your options on the next page.
Non-scheduled & Regional Courses DEMAND DEPENDENT	Despite this streamlined approach, the SAIW remains committed to offering scheduled and non-scheduled regional courses in Cape Town and Durban. A minimum of five students are required per course to run. As soon as the minimum number of people have booked in your region, the course will be scheduled.



Please refer to contacts on page 5



NON-DESTRUCTIVE TESTING (NDT)

PENETRANT TESTING	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC
LEVEL 1	JHB					JHB			JHB		JHB	
LEVEL 2	_	JHB	_	_			JHB			JHB	JHB	
MAGNETIC PARTICLE TESTING	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC
Level 1		JHB	_	_		JHB			_	JHB	JHB	
Level 2			JHB				JHB			JHB		
VISUAL TESTING	JAN	FEB	MAR	APR	ΜΑΥ	JUN	JUL	AUG	SEP	ост	NOV	DEC
Level 1	JHB				JHB				JHB			
Level 2			JHB					JHB				
RADIOGRAPHIC TESTING	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC
Level 1	JHB					_	_		_			
Interpreters Level 2					JHB							
Level 2			JHB				JHB					
ULTRASONIC TESTING	JAN	FEB	MAR	APR	МАУ	JUN	JUL	AUG	SEP	ост	NOV	DEC
Wall Thickness Level 1	JHB		JHB				JHB		JHB		JHB	
Level 1		JHB						JHB				
Level 2					JHB							
EDDY CURRENT TESTING	JAN	FEB	MAR	APR	МАҮ	JUN	JUL	AUG	SEP	ост	NOV	DEC
Level 1 Surface						JHB			_			
Level 1 Tubes						JHB						
Level 2 Surface		_		JHB	_				_	_		
Level 2 Tubes								JHB				

South African Institute of Welding Course Prospectus 2025

TRAINING training@saiw.co.za

PRACTICAL WELDING welding@saiw.co.za

EXAMINATIONS exams@saiw.co.za

QUALIFICATION & CERTIFICATION qualcert@saiw.co.za

COMPANY AUDITS iso3834@saiw.co.za

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EXECUTIVE DIRECTOR vicus.burger@saiw.co.za

QUERIE õ BOOKINGS

Non-Destructive Testing (NDT)

Non-Destructive Testing (NDT) refers to the testing of material and components without inhibiting its further usefulness. Applied scientific principles such as electromagnetic induction, magnetism, capillary action, mechanical vibration, electromagnetic waves, etc. are utilised to identify and characterise discontinuities within tested samples or areas of interest.

> Training for NDT is provided by the SAIW in compliance with the ISO/TS 25108 in accordance with the syllabus provided in ISO/TS 25107 (ANSI/ASNT CP 105 as well as IAEA Tecdoc 628 are also incorporated) and recognised by an ISO/IEC 17024 accredited Personnel Certification Body (PCB) under the scope of ISO 9712, i.e. SAIW Certification PCB, which operates the SAIW Certification NDT Scheme.

The SAIW Certification NDT scheme is the very first NDT qualification and certification scheme developed 'in Africa by Africans for Africans' that is registered under the ICNDT Mutual Recognition Agreement (MRA) Schedule 2 through the SAIW Certification Personnel Certification Body (PCB).

> Scan to download the SAIW Course Prospectus App onto your cellular phone.



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авоит Non-Destructive Testing (NDT)

TRAINING IS SECTOR SPECIFIC AND CAN BE SUBDIVIDED INTO THE FOLLOWING MAIN SECTIONS:

- 1. Terminology and history
- 2. Physical principles
- 3. Product technology and method capabilities
- 4. Equipment
- 5. Testing information

- 6. Testing process
- 7. Interpretation / evaluation and reporting
- 8. Assessment
- 9. Quality Aspects
- 10. Developments

Assessment quality aspects and developments training, qualification and certification is subdivided into three levels as stipulated by ISO 9712 new issue published in 2021

Level 1	An individual certified to Level 1 has demonstrated competence to carry out NDT according to written instructions and under the supervision of Level 2 or Level 3 personnel. Level 1 personnel may be authorized to perform the following in accordance with NDT instructions: set up NDT equipment; perform the tests; record and classify the results of the tests according to written criteria; report the results.
Level 2	Level 2 personnel may be authorized by the employer to perform certain tasks which include: select the NDT technique for the testing method to be used; define the limitations of application of the testing method; translate NDT codes, standards, specifications, and procedures into NDT instructions adapted to the actual working conditions; set up and verify equipment settings; perform and supervise tests; provide guidance for personnel at or below Level 2; report the results of NDT.
	Level 3 personnel may be authorized to perform certain tasks which include: assume full responsibility for a test facility or examination centre and staff: interpret standards, codes
Level 3	specifications, and procedures; carry out and supervise all tasks at all levels; provide guidance for NDT personnel at all levels.

UNLOCKING YOUR PATH TO NDT SUCCESS: The Ultimate Course Order Guide

To embark on a successful career in Non-Destructive Testing (NDT), it's crucial to follow a well-structured path.

The correct order of SAIW NDT courses can make all the difference to your journey (see next page).



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UNLOCKING YOUR PATH TO NDT SUCCESS: The Ultimate Course Order Guide

Liquid Penetrant Testing (PT) Course	Start with PT, an excellent introductory course that teaches you how to detect surface defects using liquid penetrants.
Magnetic Particle Testing (MT) Course	Next, delve into MT, where you'll learn to identify surface and near-surface flaws using magnetic fields.
Visual Testing (VT) Course	VT enhances your visual inspection skills, a fundamental ability in NDT.
Radiographic Testing (RT) Course including RT Safety	Radiographic testing teaches you to use X-rays and gamma rays to inspect materials. Safety is paramount.
Ultrasonic Testing (UT) WT	UT introduces you to the versatile world of ultrasonic testing, which is invaluable in many industries.
Ultrasonic Testing (UT)	Build on your UT knowledge to become proficient in this widely-used NDT technique.
Eddy Current	Explore Eddy Current testing, which is especially beneficial in the aerospace industry.
These levels represent opportunities for advanced training and specialisation, including becoming a Welding Inspector.	Overall, NDT offers a promising career with above-average pay, global opportunities, and room for growth. Those with NDT expertise have a unique passion for precision and are committed to doing things right. As you progress through these courses and levels, you'll gain the skills and knowledge necessary to become an indispensable part of the industries that rely on NDT for quality assurance including the power generation, petrochemical and mining sectors. REMEMBER! Your NDT journey is a stepping stone to success, with each course adding to your expertise and career prospects.

WHAT YOU NEED TO BUILD YOUR CAREER IN NON-DESTRUCTIVE TESTING

You need to be ANALYTICAL INTELLIGENT HIGH LEVEL ATTENTION TO DETAIL

If you're one of the few people who're good at science & math, and have an enquiring mind, becoming an NDT professional will give you the chance of making a valuable future.

> You must be AMBITIOUS MOTIVATED KEEN

If you're ambitious & motivated, contact the SAIW or visit www.saiw.co.za OR Call 011-298 2100 to enquire about our NDT courses.



Being persistent and inquisitive, with a problem-solving attitude, studying SAIW's NDT courses will be your most flexible start to a better future.

> THEN You will be able to EARN WHILE YOU LEARN

Studying NDT through SAIW means you'll be able to move through all the NDT levels at your own pace and as you can afford to. You'll also be able to earn while you learn, continuing to study as it suits you.

SAIW provides training programmes, consultancy and industry support services to the metal industries in South Africa. The SAIW is active throughout Southern Africa, the Indian Ocean Islands and the Middle East. SAIW qualifications & certifications are regarded as the industry standard in South Africa and enjoy international recognition

Non-Destructive Testing (NDT) is the testing of material or manufactured components without destroying their usefulness. Applying scientific techniques such as electromagnetic induction, magnetism, capillary action, mechanical vibration or electromagnetic waves, and other testing techniques, to identify potential flaws or failures within supplied samples.



INTRODUCTION TO NON-DESTructive Testing (NDT)

Non-Destructive Testing (NDT) stands at the forefront of modern scientific evaluation, enabling the examination of materials and components without compromising their integrity or future usability. This field represents a marriage of applied scientific principles that encompass a diverse array of techniques, including electromagnetic induction, magnetism, capillary action, mechanical vibration, electromagnetic waves, and more. These techniques are harnessed to meticulously uncover, characterise, and comprehend discontinuities present within the tested samples or areas of interest.

NDT is more than just a method; it's a commitment to the pursuit of safety, quality, and reliability across a multitude of industries. It's the means by which hidden flaws are unveiled, structural integrity is assured, and material performance is scrutinised without the need for destructive testing methods. As we delve deeper into this prospectus, we invite you to explore the captivating world of NDT, where science, technology, and innovation converge to ensure the continued success and safety of our modern world.



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NDT BOOKING Procedure

PLEASE NOTE:

Once we have received all correct documents and payment has been confirmed, you will receive, via email, a "Booking Confirmation Notice" This booking confirmation notice will include the date of the NDT course, venue and full address.

DRESS CODE

Wear long pants, shirt and safety boots. Also consider suitable protective clothing such as overalls for the practical sessions.

- Please ensure that you comply with the course access conditions prior to enrolling for the course.
- Refer to the access conditions indicated on the NDT Access Conditions Table.
- Further information is available on the SAIW website: www.saiw.co.za
- Full payment is to be made prior to the commencement of the course and exam.
- All prices indicate the combined total for both the training and initial qualification examination costs.
- All prices quoted include VAT.

Documentation Required for Course Enrolment:

- 1. "Course Enrolment Application Form" completed in full.
- 2. Confirmation of full payment.
- 3. Legible copy of highest academic qualifications (school, college, university, etc.) and / or pass mark in Proficiency Test.
- 4. Company letter stating delegate's current employment status (if applicable).
- 5. Legible copy of ID or Passport.
- 6. When doing any Level 2 or Level 3 course, confirmation of the preceding Level qualification (training record and examination result letter) is required.

What you Need to Bring Along:

- 1. 4 Coloured ID photo's taken within the previous 6 months.
- 2. Copy of your ID or Passport.
- 3. Stationery, e.g. pen, pencil, note book, eraser and highlighter and scientific calculator.
- 5. Copy of the booking confirmation letter.
- 6. A 100% attendance of the course is a prerequisite for the qualification examination.

Cancellation of Training:

- The SAIW reserves the right to cancel the holding of a course at short notice, should student numbers not meet our minimum course requirements. Candidates shall be informed of the cancellation two weeks prior to the training start date and arrangements will be made to book the candidate on the next available course. Should the student / applicant decide the alternative arrangement is unsuitable, the full course fees will be reimbursed in these circumstances. Personal costs relating to accommodation and travelling cannot be claimed.
- 2. If the course booking is cancelled by the applicant

less than 30 (thirty) days prior to the training start date, then the cancellation charge will be equal to the full course cost and no refund is applicable.

3. If the course booking is cancelled by the applicant 30 (thirty) days or more prior to the training start date, a cancellation charge of 4% (plus VAT) of the course fees will be charged by the SAIW as an administration fee and the balance of the fees refunded to the applicant. In these circumstances only the balance of the course fees will be reimbursed and no personal costs relating to accommodation and travelling may be claimed by the applicant.

TRAINING: NDT ACCESS Conditions

Level 1: MT, VT, PT	Direct access to the course shall be granted if the candidate has passed both mathematics and science in Grade 10 (Proof of Grade 10 – or equivalent such as N1; certificate is required).
	Please note that RT Safety is mandatory for access to an RT 1 course and no RT 1 certificate shall be issued unless a RT Safety certificate in accordance with DOH and issued by SAINT Professional Body can be shown. Direct access to the course shall be granted if the candidate has passed both mathematics and science in Grade 12 (Proof of Grade 12 – or equivalent such as N3 certificate is required).
	Alternatively, the candidate shall be required to pass a Proficiency Exam for surface methods, prior to being eligible to sit the applicable NDT course.
UT, RT, ECT	Please note that the Proficiency test is free of charge and only assesses the basic skills relating to mathematics, science, comprehension and communication capabilities required within the applicable NDT method. The pass mark for the Proficiency test is 70%. Please contact Harold Jansen (harold.jansen@ saiw.co.za) to ascertain availability and to make a booking. Proficiency tests are performed on Thursdays between 8:00 and 11:00. In the case of candidates not being able to attend the Proficiency test due to transport problems, arrangements can be made to have the test e-mailed to a suitable invigilator and returned via email once completed.
Level 2: All Methods	Candidate shall be qualified i.e. have received training in accordance with ISO9712 requirements and have passed the Level 1 qualification examinations (certified is preferred) as a Level 1 NDT Technician in the applicable method and sector. Access to advanced / derived techniques requires a valid Level 2 certificate in the relevant method. DIRECT ACCESS TO LEVEL 2: Candidate shall have passed both mathematics and science at Grade 12 level (Equivalent to N3 - Proof of Grade 12 certificate is required) and have applicable tertiary qualification(s) and/or relevant NDT experience. Combination of Level 1 and Level 2 Training hours in accordance with an approved syllabus and training programme as per SAIW Certification NDT Scheme requirements and based on Certification body approval. The Level 1 qualification examinations shall also have been successfully passed.
	Candidate shall be qualified i.e. received training in accordance with ISO9712 requirements and have passed the Level 2 qualification examinations (certified is preferred) as a Level 2 NDT Technician in the applicable method and sector, appropriate tertiary qualifications (relevant to the NDT method - chemistry, mathematics or physics; and/or to the product or industry sector - chemistry, metallurgy, engineering etc.) are advantageous.
Level 3:	All candidates for Level 3 Certification in any NDT method shall have successfully completed the Level 2 Practical exam. (If not certified as Level 2, the practical examination shall have been passed within 1 year from date of writing the Level 3 main method examination).
All Methods	Valid Level 2 Certificate in the applicable method and sector is mandatory when equipment operation or accepting tested components are required.
	DIRECT ACCESS TO LEVEL 3: Combination of Level 1, 2 and 3 Training hours in accordance with an approved syllabus and training program as per ISO 9712 and SAIW Certification NDT Scheme requirements and based on Certification body verification. The Level 2 qualification examinations shall also have been successfully passed. No reduction in requirements for industrial experience. Suitable tertiary qualifications (relevant to the NDT method - chemistry, mathematics or physics; and / or to the product or industry sector - chemistry, metallurgy, engineering etc.) are mandatory.

Penetrant Testing

Course Information

Penetrant Testing (PT), also known as Liquid Penetrant Testing, is a highly versatile surface-based non-destructive testing (NDT) method. This technique employs a liquid containing a coloured dye, enhancing its visibility, to infiltrate and fill any open voids on the surface through capillary action. Once the excess penetrant is meticulously removed from the surface, a developer substance is applied. This developer acts as a contrasting medium, facilitating the migration of the penetrant from within the defects. Consequently, any discontinuities or flaws become prominently visible against the contrasting background, typically a white powder.

One of the remarkable attributes of PT is its applicability across a wide range of materials, provided that the discontinuity of interest is accessible from the surface. If you possess an affinity for chemistry, particularly the interplay of liquids, and find fascination in precision work that goes beyond swimming or indulging in the occasional beverage, then Penetrant Testing offers a fulfilling career path.

The effectiveness of PT is influenced by several factors, including the type of dye used (whether it's designed for normal light or backlight conditions, or both), the specific penetrant employed, the method used to remove excess penetrant, and the developer chosen for the testing process. Additionally, PT techniques must adapt to extreme temperatures, as variations in temperature can affect liquid properties such as viscosity and evaporation. Specialised techniques are employed in cases of excessively high or low temperatures to ensure accurate and reliable results.

Embarking on a career in PT allows you to explore the fascinating intersection of chemistry, materials science, and meticulous precision, making it one of the fundamental and indispensable NDT methods in various industries.

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Penetrant Testing

If you enjoyed chemistry at school and your interest in liquids exceeds that of swimming and the occasional beer, then we invite you to start your career in one of the most basic yet useful NDT methods.

Inspection techniques depend on whether the dye used is under normal light or backlight conditions (or both), the type of penetrant, excess penetrant removal process as well as developer used during testing. Furthermore, since temperature has an effect on the liquid properties, such as viscosity and evaporation, special techniques are applicable at excessively high and low temperatures.

ASME Boiler & Pressure Vessel Code - Section V - Subsection A - Article 1 & 6
 ASME Boiler & Pressure Vessel Code - Section V - Subsection B - Article 24

PT – Reference test blocks

PT – Testing of penetrant materials

PT – Testing at temperatures > 50 °C

ISO 3452 Part 1 PT – General Principals

based on general theory as well as sector specific applications relating, but not limited to, the following standards and specifications:

The training course is

- ISO 3452 Part 1
 ISO 3452 Part 2
- ISO 3452 Part 3
- ISO 3452 Part 4
 ISO 3452 Part 4
- ISO 3452 Part 4
- ISO 3452 Part 5
- ISO 3452 Part 6
- ISO 12706
- ISO 23277
- PT Testing at temperatures < 10 °C
- PT Vocabulary

PT – Equipment

PT – Acceptance Levels

PENE	PENETRANT TESTING - SAIW CERTIFICATION NDT SCHEME (ISO 9712) NON-DESTRUCTIVE TESTING - SURFACE METHODS											
				Prices	(Inclusive o	f VAT)						
NDT Method and Level	Industrial Sector	Product Sector / Category	Duration 1 day = 8 hours	Training & Initial Examina- tion Non- Corporate Members	Training & Initial Ex- amination Corporate Members	Initial Certifica- tion		Course & Initial Exam Dates				
		PT 1.1 Forging (f)	Training	R 16,100 R 15,000		Course Code	PT 1 A JHB 01	PT 1 A JHB 02	PT 1 A JHB 03	PT 1 A JHB 04		
Penetrant Testing	Pre- and in-service	PT 1.2 Castings	4 days		R 15,000	R 2,500	Training	20 - 23 Jan	09 - 12 Jun	15 - 18 Sep	24 - 27 Nov	
Level 1		(c) PT 1.3 Welds (w)	1 day				Exam	24 Jan	13 Jun	19 Sep	28 Nov	
		PT 2.1 Forging (f)	Training				Course Code	PT 2 A JHB 01	PT 2 A JHB 02	PT 2 A JHB 03	PT 2 A JHB 04	
Penetrant Testing Level 2	Pre- and in-service	PT 2.2 Castings	4 days	R 16,100	R 15,000	R 2,500	Training	24 - 27 Feb	07 - 10 Jul	06 - 09 Oct	03 - 06 Nov	
	in-service	(c) PT 2.3 Welds (w)	Exam 1 day				Exam	28 Feb	11 Jul	10 Oct	07 Nov	

Magnetic Particle Testing

Course Information

Magnetic Particle Testing (MT) is a surface and shallow subsurface nondestructive testing (NDT) method that leverages the inherent magnetic properties of materials to uncover surface flaws and significant indications just beneath the surface. The material being tested must possess magnetic qualities, allowing magnetic fields to be either generated within or passed through it. Consequently, MT is primarily applicable to ferromagnetic materials, characterized by having a magnetic permeability significantly greater than 1.

> If you have a keen interest in magnetism and are intrigued by the utilization of magnetic fields to identify discontinuities within ferromagnetic materials, Magnetic Particle Testing is the ideal starting point for your NDT career journey.

The techniques employed in MT vary depending on several factors, including the type of current utilised for magnetisation, whether the excitation current is maintained during the application of magnetic particles, and the nature of the magnetic field generated—whether it is linear or circular. Additionally, the method description should encompass details about the specific type of magnetic particles employed to render the indications visible, further enhancing the precision and effectiveness of the testing process.

Embracing MT as your chosen NDT path will immerse you in the captivating realm of magnetism, offering a unique perspective on how magnetic fields are harnessed to detect flaws and discontinuities in ferromagnetic materials—a skill set highly sought after in various industries where material integrity and safety are paramount.

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Magnetic Particle Testing

If you are interested in magnetism and would like to find out how magnetic fields are used to detect discontinuities in ferromagnetic material then Magnetic Particle Testing is the place to start your career in NDT.

Inspection techniques depend on the type of current being used to magnetise the material, whether the excitation current is maintained during the application of magnetic particles or not as well as the nature of the magnetic field generated i.e. linear or circular. In addition the technique description should also refer to the type of magnetic particles used to make indications visible.

The training course is based on general theory as well as sector specific applications relating, but not limited to, the following standards and specifications:

- ASME Boiler & Pressure Vessel Code Section V Subsection A Article 1 & 7
- ASME Boiler & Pressure Vessel Code Section V Subsection B Article 25

MT – General Principals

MT - Detection media

- ISO 9934 Part 1
- ISO 9934 Part 2
- ISO 9934 Part 3
- ISO 12707
- ISO 12707
 ISO 17638
- ISO 17038
 ISO 4986
- ISO 23278
- MT Welds

MT – Equipment

MT - Vocabulary

- MT Castings
- MT Acceptance Levels

MAGNETIC PARTICAL TESTING - SAIW CERTIFICATION NDT SCHEME (ISO 9712) NON-DESTRUCTIVE TESTING - SURFACE METHODS																		
		Prices (Inclusive of VAT)																
NDT Method and Level	Industrial Sector	Product Sector / Category	Duration 1 day = 8 hours	Training & Initial Examina- tion Non- Corporate Members	Training & Initial Ex- amination Corporate Members	Initial Certifica- tion	Course & Initial Exam Dates											
		MT 1.1 Forging (f)	Training						Course Code	MT 1 A JHB 01	MT 1 A JHB 02	MT 1 A JHB 03	MT 1 A JHB 04					
Magnetic Testing	Pre- and in-service	MT 1.2 e Castings (c)	4 days Exam	R 16,100	R 15,000	R 2,500	Training	10 - 13 Feb	23 - 26 Jun	13 - 16 Oct	17 - 20 Nov							
		MT 1.3 Welds (w)	1 day											Exam	14 Feb	27 Jun	17 Oct	21 Nov
		MT 2.1 Forging (f)	Training					Course Code	MT 2 A JHB 01	MT 2 A JHB 02	MT 2 A JHB 03							
Magnetic Testing	Pre- and in-service	MT 2.2 Castings (c)	4 days Exam	R 16,100	R 15,000	R 2,500	Training	03 - 06 Mar	14 - 17 Jul	20 - 23 Oct								
		MT 2.3 Welds (w)	1 day				Exam	07 Mar	18 Jul	24 Oct								

Visual Testing

Course Information

Visual Testing (VT) stands out as one of the simplest yet most widely employed non-destructive testing (NDT) methods in use today. VT often takes precedence as the initial inspection step for any component or environment, as it necessitates direct observation of the area under scrutiny. This method primarily focuses on surface inspection, making it an essential tool in the NDT toolkit.

VT harnesses the power of visible light, falling within the 390 to 700 nm range of the electromagnetic spectrum, and its interaction with solid surfaces. This interaction allows for the detection of surface indications that are open and unobstructed, free from any foreign materials or debris. In essence, what is visible to the eye corresponds directly to what can be detected.

If your high school experiences with lenses and mirrors piqued your interest, or if the intrigue of lasers has captivated your imagination, then an exploration of the fundamental realm of NDT through Visual Testing is an invitation to embark on a journey that may transform you into the modern-day 'Sherlock Holmes' of visual inspection specialists—the most iconic of all times.

The VT Method encompasses three primary techniques, each tailored to the accessibility of the surface and the nature of the material being examined. These techniques include direct, indirect, and translucent methods, offering a versatile array of approaches to suit various testing scenarios.

Pursuing a course in VT not only introduces you to the foundational NDT method but also equips you with the skills and knowledge needed to meticulously examine and uncover hidden details, making it a vital discipline in ensuring the integrity and safety of critical components in numerous industries.

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Visual Testing

If you enjoyed working with lenses and mirrors in high school and if lasers fascinates you, then you are invited to attend a course in the most basic of all NDT methods and challenge you to become the next 'Sherlock Holmes' – certainly the most famous 'visual testing specialist' of all times.

The Visual Testing method can be divided into three main techniques depending on the access to the surface. The techniques are direct, indirect and translucent and depend on the type of material to be tested.

- The training course is based on general theory as well as sector specific applications relating, but not limited to. the following standards and specifications:
- ASME Boiler & Pressure Vessel Code Section V Subsection A Article 1 & 9

VT – Low power magnifiers

- ISO 3058 ٠
- ISO 8785
- •
- •
- ٠ ISO 11971
 - ٠ ISO 17637
- VT Welds
- VISUAL TESTING SAIW CERTIFICATION NDT SCHEME (ISO 9712) | NON-DESTRUCTIVE TESTING SURFACE METHODS Prices (Inclusive of VAT) Training & Training & NDT Product Duration Initial Industrial Initial Ex-Initial Method Sector / 1 day Course & Initial Exam Dates Examina-Sector amination Certificaand Level Category = 8 hours tion Non-Corporate tion Corporate Members Members VT 11 Course **VT1A VT1A** VT1A Forging (f) Code **JHB 01 JHB 02 JHB 03** Training Visual 4 days 13 - 16 05 - 08 29 Sept -Pre- and VT 1.2 Testing R 16.100 R 15.000 R 2.500 Training Jan May 02 Oct in-service Castings (c) l evel 1 Exam 1 day VT 1.3 17 Jan 03 Oct Exam 09 May Welds (w) VT 2.1 Course **VT 2 A VT 2 A** Forging (f) Code **JHB 01 JHB 02** Training Visual 4 days Pre- and VT 2.2 24 - 27 Mar 18 - 21 Aug Training Testing R 16.100 R 15.000 R 2,500 in-service Castings (c) Level 2 Exam 1 day VT 2.3 Fxam 28 Mar 22 Aug Welds (w)

- VT Geometrical product specifications ISO 13385 Part 1 VT – Geometrical product specifications : Callipers
- ISO 13385 Part 2 VT Geometrical product specifications : Calliper depth gauges
 - VT Castings

Radiographic Testing

Course Information

Radiographic Testing (RT) harnesses the power of electromagnetic waves, specifically X-rays within the 0.01 to 10 nanometre range or Gammarays with wavelengths below 0.01 nanometres. Within these ranges, electromagnetic waves can proficiently penetrate solid materials, enabling the creation of detailed images either on film or by using electromagnetic sensors, providing valuable insights into the material's composition and integrity.

RT excels as a volumetric testing method, capable of identifying discontinuities exceeding a 2% cross-sectional void or material change in relation to the actual beam orientation. The energy levels associated with these extremely short waves exceed 100 electron volts (eV), but they pose a potential risk due to ionising radiation. It's crucial for operators to undergo radiation safety training, as this form of radiation is imperceptible to the senses—unseen, unheard, unfelt, untasted, and unscented. The aim is to maintain ALARA (As Low As Reasonably Achievable) exposure levels to minimise potential harm.

If you have an affinity for photography and hold Superman as your favourite DC character, Radiographic Testing offers a unique opportunity to explore your interests while making a substantial contribution to industry safety. However, it's essential to note that a solid foundation in exponents and logarithms is essential for mastering the intricacies of this NDT method.

Radiographic techniques within RT are diverse, contingent upon the type of electromagnetic wave employed, the configuration of exposure, and the image formation. By delving into RT, you not only combine the art of imaging with the pursuit of safety but also play a pivotal role in ensuring the structural soundness of critical components across various industries.

Scan to download the SAIW Course Prospectus App onto your cellular phone.

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Please refer to contacts on page 5

Radiographic Testing

The training course is based on general theory as well as sector specific applications relating, but not limited to, the following standards and specifications:

- ASME Boiler & Pressure Vessel Code Section V Subsection A Article 1 & 2
- ASME Boiler & Pressure Vessel Code Section V Subsection B Article 22
- ISO 10675 Part 1 & 2
- ISO 17636-1
- ISO 19232 Parts 1 to 5
- ISO 11699 Parts 1 & 2
- ISO 5580
- ISO 5576

- RT Acceptance levels
 - RT X and gamma ray techniques
 - RT Image quality of radiographs
 - RT Industrial radiographic films
 - RT Metallic materials using X- or gamma rays Basic rules
- RT Vocabulary

Details of specific codes utilised in the limited (RT 2.Int) as well as derived or advanced techniques courses (RT 2.9) can be found in the relevant training documents.

RADIOGRAPHIC TESTING - SAIW CERTIFICATION NDT SCHEME (ISO 9712) | NON-DESTRUCTIVE TESTING - VOLUMETRIC METHODS Prices (Inclusive of VAT) **Training &** Training & NDT Duration Initial Initial Industrial Product Sector Course & Initial Exam Initial Method and 1 day Examination Examina-Sector / Category Dates Certifica-Level = 8 hours Non-Corpotion tion rate Corporate Members Members RT 1.5 Course RT1A X-Ray of Dense JHB 01 Code Training Alloy Welds Radiograph-20 days ic Testing Pre- and 27 Jan -R 46.300 R 42.800 R 2.500 Training 14 Feb Level 1 in-service RT 1.6 Exam + RT Safety Gamma-Ray 5 days of Dense Alloy 17 - 21 Feb Exam Welds Course RT 2 INT Film LIMITED Training Code **JHB 01** Interpretation 15 days Radiogra-Pre- and of Dense Alloy R 28.600 R 26.500 R 2,500 phic Training 05 - 15 May Welds Only in-service Interpreters Exam (No operational Level 2 1 day RT) Exam 16 May RT 2.5 X-Rav Course RT 2 A RT 2 A of Dense Alloy Training Code **JHB 01 JHB 02** Radiograph-Welds 10 days Pre- and ic 21 Jul -R 38.400 R 35.500 R 2,500 10 - 24 Mar Training Testing in-service 01 Aug RT 2.6 Gamma-Exam Level 2 Ray of dense 5 days 04 -Exam 25 - 27 Mar Alloy Welds 06 Aug Training 10 days Please refer to our ADVANCED Pre- and RT 2.9 Digital R 38.400 R 35,500 R 2,500 website for more see point (1) in-service Radiography Exam information 5 davs * other categories available on request and subject to demand. [1] RT 2 A CERTIFICATION IS REQUIRED AS PREREQUISITE

Ultrasonic Testing

Course Information

Ultrasonic Testing (UT) is a powerful non-destructive testing (NDT) method that relies on the mechanical vibration of sound waves in the ultrasonic range (frequencies greater than 20 kHz) to uncover volumetric discontinuities within solid materials. In UT, both compression and shear waves play a pivotal role in investigating the internal nature of components. The interaction of these waves with linear, planar, or volumetric anomalies, often referred to as 'vacancies,' enables the characterization of any detected discontinuities.

The primary inspection medium in UT is the sound beam, and a profound understanding of its qualification (properties) and quantification (calibration) is crucial for accurately interpreting signal responses. If you're someone who enjoys playing pool, possesses a penchant for geometry and trigonometry, and relishes the challenge of deciphering complex structures, then embarking on an Ultrasonic Testing course is a transformative experience. It will revolutionise the way you perceive engineering materials and weldments, offering you a unique perspective into their internal composition.

Within UT, compression and shear waves applications having various angles and frequencies serve as the foundation for determining the techniques used. Additionally, the send-or-receive/send-and-receive capabilities of the sensors, along with scanning methodologies such as the tandem technique, are vital technique parameters. Mastering these parameters empowers you to not only detect defects but also to assess their size, orientation, and position accurately.

Delving into UT opens doors to a fascinating world where science, mathematics, and technology converge to ensure the safety and reliability of critical components in various industries. It's a discipline that empowers you to become a vital guardian of structural integrity, making it a rewarding and intellectually stimulating choice for those passionate about NDT.

Scan to download the SAIW Course Prospectus App onto your cellular phone.

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Please refer to contacts on page 5

Ultrasonic Testing

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- ASME Boiler & Pressure Vessel Code Section V Subsection A Article 1, 4 & 5
- ASME Boiler & Pressure Vessel Code Section V Subsection B Article 23
- ISO 16810
 UT General Principles
 - ISO 11666 UT Acceptance Levels
 - UT Techniques, Testing levels and assessment
 - UT Characterisation of discontinuities in welds
 - ISO 5577
 - ISO 18175
- ISO 16827
- ISO 16826
- UT Discontinuities perpendicular to the surface UT – Sensitivity and range

UT – Vocabulary

ISO 16811ISO 12710ISO 10375

ISO 17640

ISO 23279

UT – Evaluating electronic characteristics of UT instruments

UT - Characterisation and sizing of discontinuities

UT - Performance characteristics (no electronic instruments)

- UT Characterisation of search unit and sound field
- ISO 7963
- UT Calibration block No 2
- ISO 4992 Parts 1 & 2 UT Steel castings
- ISO 2400
- UT Calibration block No 1
- ISO 22232 Parts 1/3 UT Equipment characterisation

Details of specific codes utilised in the limited (UT 1.WT) as well as derived or advanced techniques courses (UT 2.7; 2.8; 2.9; 2.10 and 2.11) can be found in the relevant training documents.



The training course is based on general theory as well as sector specific applications relating, but not limited to, the following standards and specifications:

Ultrasonic Testing

ULTRASC	ULTRASONIC TESTING - SAIW CERTIFICATION NDT SCHEME (ISO 9712) NON-DESTRUCTIVE TESTING - VOLUMETRIC METHODS																		
Prices (Inclusive of VAT)																			
NDT Method and Level	Industrial Sector	Product Sector / Category	Dura- tion 1 day = 8 hours	Training & Initial Examina- tion Non- Corporate Members	Training & Initial Ex- amination Corporate Members	Initial Certifica- tion	Course & Initial Exam Dates												
LIMITED Ultrason-		Limited to wall	Training				Course Code	UT 1 WT JHB 01	UT 1 WT JHB 02	UT 1 WT JHB 03	UT 1 WT JHB 04	UT 1 WT JHB 05							
ic Testing Level 1	Pre- and in-service	measurement using	4 days	R 16,100	R 15,000	R 2,500	Training	27 - 30 Jan	31 Mar - 03 Apr	21 - 24 Jul	08 - 11 Sep	03 - 06 Nov							
– Wall Thickness		compression probe only	1 day				Exam	31 Jan	04 Apr	25 Jul	12 Sep	07 Nov							
		UT 1.1 Wrought Product/	Training				Course Code	UT 1 A JHB 01	UT 1 A JHB 02										
Ultrason- ic Testing	Pre- and in-service	Forgings UT 1.2 Castings UT 1.3 Butt	12 days	R 38,400	R 35,500	R 35,500	R 35,500	R 35,500	R 35,500	R 35,500	R 35,500	R 35,500	R 2,500	Training	24 Feb - 11 Mar	25 Aug - 09 Sep			
		Welds in Plate UT 1.4 Butt Welds in Pipe	3 days				Exam	12 - 14 Mar	10 - 12 Sep										
		UT 2.1 Wrought Product/ Forgings					Course Code	UT 2 A JHB 01											
Ultrason- ic Testing Level 2	Pre- and in-service	UT 2.2 Castings UT 2.3 Butt Welds in Plate	Training 12 days Exam	R 38,400	R 35,500	R 2,500	Training	12 - 27 May											
		Welds in Pipe UT 2.5 T-joints & other configurations UT 2.6 Nozzles	3 days				Exam	28 - 30 May											
AD- VANCED	Pre- and in-service	UT 2.10 Ultrasonic Phased Array	Training 12 days Exam 5 days	R 41,700	R 38,600	R 2,500	Please refer to our website for updates relating to advanced / derived techniques.												
PLEA OF FI	PLEASE NOTE: ADVANCED OPTIONS UT 2.8 - CRITICAL FLAW SIZING: UT 2.9 - AUSTENITIC STAINLESS STEEL AND UT 2.11 - TIME OF FLIGHT DIFFRACTION ARE AVAILABLE ON REQUEST AND SUBJECT TO DEMAND. [1] UT 2 A CERTIFICATION IS REQUIRED AS PREREQUISITE																		

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Eddy Gurrent Testing

Course Information

Eddy Current Testing (ECT) is a highly effective electromagnetic testing method that leverages electromagnetic induction to detect and assess discontinuities in materials. A fundamental prerequisite for eddy current testing is that the material being examined, or in the case of paint thickness measurement, the substrate, must be electrically conductive.

> ECT serves as a versatile testing method, offering both surface and subsurface inspection capabilities. The depth to which inspections can be carried out effectively hinges on several factors, including the frequency of the excitation current, the electrical conductivity, and the magnetic properties of the material under scrutiny. While this may seem complex, it all boils down to principles you may recall from your high school lessons on electrical transformers.

If the world of electromagnetic induction intrigues you, dust off your high school knowledge and embark on an ECT course. It's a journey that promises to deepen your understanding and expertise in this captivating field.

Eddy current testing techniques are adaptable, depending on the nature of the sample being tested, be it a flat surface, tube, bar, or more intricate shapes. The choice of probe is influenced by this, and it plays a pivotal role in the testing process. Additionally, the utilisation of multiple frequencies and inspection modes, such as absolute or differential, determines the specific multi-frequency and/or mode techniques used.

The presence of factors like magnetic saturation, weak magnetic alloys, shielding, or the focusing nature of the probe, as well as the capabilities of the display system, contribute to the comprehensive description of eddy current testing techniques. By delving into ECT, you're not only exploring the intriguing world of electromagnetic induction but also contributing to the safety and quality assurance of materials in various industries.

Scan to download the SAIW Course Prospectus App onto your cellular phone.

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Eddy Current Testing

If this sounds like a mouthful, then we invite you to dust off your high school knowledge regarding electrical transformers and attend an ECT course.

The techniques utilised in eddy current testing depends on the sample being tested, i.e. whether it is a surface, tube, bar or other more complex shapes since it dictates the type of probe to be used. Furthermore, the number of frequencies and the inspection mode(s), such as absolute or differential, determines the multi- frequency and / or mode technique description. The presence of magnetic saturation, weak magnetic alloys, shielding or focussing nature of the probe as well as the display capabilities extends the technique description.

The training course is based on general theory as well as sector specific applications relating, but not limited to, the following standards and specifications:

- ASME Boiler & Pressure Vessel Code Section V Subsection A Article 1 & 8
 - ASME Boiler & Pressure Vessel Code Section V Subsection B Article 26
 - ISO 15549 ECT General principles
 - ISO 15548 Part 1 ECT Instrument Characteristics and verification
 - ISO 15548 Part 2 ECT Probe Characteristics and verification
 - ISO 15548 Part 3 ECT System Characteristics and verification
 - ISO 17643 ECT Welds
 - ISO 2360 ECT Non-Conductive coatings Amplitude sensitive equipment
 - ISO 21968 ECT Non-Conductive coatings Phase sensitive equipment
 - ISO 12718 ECT Vocabulary

EDDY CURRENT TESTING - SAIW Certification ndt scheme (iso 9712) non-destructive testing - surface method

				Prices	s (Inclusive of	FVAT)				
NDT Method and Level	Industrial Sector	Product Sector / Category	Duration 1 day = 8 hours	Training & Initial Examina- tion Non-Corpo- rate Members	Training & Initial Examina- tion Corporate Members	Initial Certifica- tion	Course	Course & Initial Exam Da		
Eddy		ECT 1.1: Surface (s)	Training 4 days	ECT 1.1 R 16,100	ECT 1.1 R 15,000	ECT 1.1 R 2,500	Course Code	ECT 1.1 JHB 01	ECT 1.2 JHB 01	
Current Testing	Pre- and in-service	ECT 1.2: Tubes (t)	Exam 1 day	ECT 1.2 R 16,100	ECT 1.2 R 15,000	ECT 1.1 R 2,500	Training	02 - 05 Jun	30 Jun - 03 Jul	
201011							Exam	06 Jun	04 Jul	
Eddy		ECT 2.1: Surface (s)	Training 4 days	ECT 2.1 R 16,100	ECT 2.1 R 15,000	ECT 2.1 R 2,500	Course Code	ECT 2.1 JHB 01	ECT 2.2 JHB 01	
Testing	Pre- and in-service	ECT 2.2:	Exam	ECT 122	ECT 2.2	ECT 2.1	Training	07 - 10 Apr	11 - 14 Aug	
Level 2		Tubes (t)	Iday	к 16,100	R 15,000	R 2,500	Exam	11 Apr	15 Aug	

Replica Metallography

Course Information

Metallographic inspections play a key role in determining the remaining life assessment, creep life of pressure vessels, pipelines, power plants and in verifying the material and heat treatment of fabricated equipment.

In those instances, destructive metallographic tests are unsuitable as further usability of the component is required. Replica metallographic technique is an in-situ, non-destructive technique to reveal the microstructure of components.

The usual method of metallographic investigation involves cutting pieces from the component so that laboratory preparation and examination can be performed. However, in replica metallography, after proper surface preparation through the use of cellulose acetate sheets, the technician makes a copy (for this reason it is called "replica") of the microstructure of the metal surface, which will be examined using an optical microscope. The four day course on replica metallography will give an insight into the different types of materials, importance of metallography, and how to do lab metallography and replica metallography. On successful completion of the course, the candidate will be a competent replica technician. Evaluation of the metallographs is undertaken by a qualified metallurgist.



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a Please refer to contacts on page 5

Replica Metallography

Course duration: 3 days + 1 day exam

PRICING (Including VAT) Corporate Member R 12,200

Non-Corporate Member **R 13,400**

JOHANNESBURG		
	HRS	JHB 1
 Principles of metallography Similarities and differences between on-site and laboratory surface preparation Etching of samples/surfaces and importance of time and temperature Placement of acetate film and final transfer to optical slide Importance of proper identification of replicated area 	24	18 - 20 Aug
Examination	Theory - 2 hrs + Prac - 4 hrs	21 Aug



LEVEL 3 ELIGIBILITY PRACTICAL EXAMINATIONS				
MT Level 2	On request			
PT Level 2	On request			
RT Level 2	On request			
UT Level2	On request			

NON-DESTRUCTIVE TESTING – LEVEL 3 – BASIC & MAIN METHODS	
SAIW CERTIFICATION NDT Level 3 – ISO 9712	

				Price	s (Inclusive of	Course & Initial Exam Dates						
NDT Method and Level	Industrial Sector	Product Sector / Category	Category Duration Training & Trai		Training & Initial Exam- ination Corporate Members			Initial Certifica- tion				
NDT Level 3: Basic	Pre- and in-service	Part A: Materials & Processes Part B: Qual & Cert Schemes Part C: NDT Level 2	Training 10 days		R 28,400	R 2,500	Course Code	NDT 3 A JHB 01				
			R 29,000	R 29,000			Training	TBA				
			1 day				Exam	ТВА				
Magnetic Testing:	Pre- and	Part D: (Gen) + Parts E1 & E2 (Specific + codes) + Part F	Training 5 days								Course Code	MT 3 A HB 01
Level 3	evel 3 in-service (Procedure) Forgings (f), Method) Castings (c) & Welds (w) 2 days	(Procedure) Forgings (f),	Exam	R 21,500	R 19,900	R 2,500	Training	TBA				
(Main Method)					Exam	ТВА						
Penetrant Testing: Level 3	Pre- and in-service	Part D: (Gen) + Parts E1 & E2 (Specific + codes) + Part F (Procedure) Forgings (f),	Training 5 days					Course Code	PT 3 A JHB 01			
			Exam	R 21,500	R 19,900	R 2,500	Training	TBA				
(Main Method)		Castings (c) & Welds (w)	2 days					Exam	TBA			
Radiographic	Dro. and	Part D: (Gen) + Parts E1 & E2	Training 5 days	R 21,500 R 19,900					Course Code	RT 3 A JHB 01		
Level 3 (Main Method)	in-service	(Specific + codes) + Part F (Procedure) Welds in Dense Alloys: X and Gamma	Exam 2 days		R 2,500	Training	ТВА					
							Exam	ТВА				
Ultrasonic Testing: Level 3 (Main Method)	Pre- and in-service	Part D: (Gen) + Parts E1 & E2 (Specific + codes) + Part F (Procedure) Forgings (f), Castings (c) & Welds (w) - all categories	Training 5 days			R 2,500	Course Code	UT 3 A JHB 01				
			Exam 2 days	R 21,500	R 19,900		Training	ТВА				
							Exam	ТВА				

PLEASE NOTE: EdDy Current TESTING & VISUAL TESTING LEVEL 3 ARE AVAILABLE ON REQUEST AND SUBJECT TO DEMAND.

RE-WRITES				
Basic/MT/PT	On request			
Basic/MT/PT/RT/UT	On request			

NON-DESTRUCTIVE TESTING CPD COURSES							
	Details	Duration 1 day - 8 hours	Prices (Inclu	usive of VAT)			
Course Name			Training & Initial Examina- tion Non- Corporate Members	Training & Initial Exam- ination Corporate Members	Course & Initial Exam Dates		
ASME - Eddy Current	Refer to website for list	Training 2 days			Course Code	ASME - ECT - JHB 01	
Testing Code	of applicable sections	Exam	R 7,290	R 6,800	Training	On request	
Application	covered	N/A - Assignments			Exam	N/A	
ASME - Liquid	Refer to website for list	Training 2 days			Course Code	ASME - PT - JHB 01	
Penetrant Testing Code	of applicable sections	Exam	R 7,290	R 6,800	Training	24 - 25 Mar	
Application	covered	N/A - Assignments			Exam	N/A	
ASME - Magnetic	Refer to website for list	Training 2 days			Course Code	ASME - MT - JHB 01	
Particle Testing Code	of applicable sections	Exam	R 7,290	R 6,800	Training	26 - 27 Mar	
Application	covered	N/A - Assignments			Exam	N/A	
ASME Vieual Testing	Refer to website for list	Training 2 days			Course Code	ASME - VT - JHB 01	
ASME - VISUAL LESTING	of applicable sections	Exam N/A - Assignments	R 7,290	R 6,800	Training	On request	
	covered				Exam	N/A	
ASME - Radiographic	Refer to website for list	Training 2 days			Course Code	ASME - RT - JHB 01	
Testing Code	of applicable sections	Exam	R 7,290	R 6,800	Training	16 - 17 Apr	
Application	covered	N/A - Assignments			Exam	N/A	
ASME - Ultrasonic	Refer to website for list	Training 2 days			Course Code	ASME - UT - JHB 01	
Testing Code	of applicable sections	Exam	R 7,290	R 6,800	Training	On request	
Application	covered	N/A - Assignments			Exam	N/A	
ISO - Eddy Current	Refer to website for list	Training 2 days		R 6,800	Course Code	ISO - ECT - JHB 01	
Testing Code	of applicable sections	Exam	R 7,290		Training	On request	
Application	covered	N/A - Assignments			Exam	N/A	
ISO - Liquid Penetrant	Refer to website for list	Training 2 days			Course Code	ISO - PT - JHB 01	
Testing Code	of applicable sections	Exam	R 7,290	R 6,800	Training	09 - 10 Jan	
Application	covered	N/A - Assignments			Exam	N/A	
ISO - Magnetic	Refer to website for list	Training 2 days			Course Code	ISO - MT - JHB 01	
Particle Testing Code	of applicable sections	Exam	R 7,290	R 6,800	Training	29 - 30 Apr	
Application	covered	N/A - Assignments			Exam	N/A	
	Refer to website for list	for list Training 2 days ctions Exam N/A - Assignments R 7,2			Course Code	ISO - VT - JHB 01	
Code Application	of applicable sections covered		R 7,290	R 6,800	Training	On request	
					Exam	N/A	
ISO - Radiographic	Refer to website for list of applicable sections covered	Training 2 days Exam N/A - Assignments	R 7,290	R 6,800	Course Code	ISO - RT - JHB 01	
Testing Code Application					Training	On request	
					Exam	N/A	
	Refer to website for list	Training 2 days Exam N/A - Assignments	R 7,290	R 6,800	Course Code	ISO - UT - JHB 01	
Code Application	of applicable sections covered				Training	23 - 24 Apr	
					Exam	N/A	

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JOHANNESBURG CAMPUS

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