



Fife College
Training & Development

Non-destructive Testing (NDT)

CONTENTS

PAGE

3 THE NDT CENTRE

	COURSE DETAILS	DURATION (DAYS)
4	Magnetic Particle Inspection - Level 2	5
4	Liquid/Dye Penetrant Inspection - Level 2	5
5	Practical Ultrasonic Inspection - Level 1	5
6	Practical Ultrasonic Inspection - Level 2	15
6	Practical Ultrasonic Inspection (Plate Lamination) – Level 2	5
7	Practical Radiographic Inspection - Level 2	15
7	Radiographic Interpretation - Level 2	6
8	NDT Appreciation	2
8	Product Technology	2
8	Radiation Safety	3 or 4
9	Supervised Practical Ultrasonic Inspection (Plate and Pipe Butt Welds)	3 each
9	Supervised Practical Ultrasonic Inspection (Tees, Nozzle or Node Welds)	3 each
9	Weld Inspection - Level 2	5
10	Visual Inspection - Level 2	5
11	INFORMATION FOR COURSE MEMBERS	

The Non-destructive Testing Centre

NDT Training Centre

The NDT Training Centre is accredited by the British Institute of Non-Destructive Testing (BINDT) as an approved training organisation.

The Centre consists of two spacious laboratories, fully equipped to the specifications of BINDT, supported by lecture rooms.

The Centre offers a wide range of NDT courses which meet the requirements of PCN at Levels 1 and 2 as specified in the document PCN/GEN Appendix Z1. This document is based on the European Standard BS EN ISO 9712:2012.

The training courses offered by the Centre meet the requirements of SNT-TC-1A for ASNT Level I and II in all techniques. The Centre offers the services of a Level 3 examiner to provide independent examinations meeting the requirements of SNT-TC-1A.

A list of all of the courses offered by the NDT Centre is shown in the Contents on page 2.

The detailed content and cost of each course is included in this booklet (see the Contents page for individual page numbers).

A schedule of course dates is available from the NDT Centre or from our website: business.fife.ac.uk

The main provision of courses is on a short full-time basis but where appropriate, the mode of attendance can be altered to suit a group of individuals or a company, eg courses on Saturday mornings or on-site training.

Special courses can be designed to suit market needs at agreed rates.

NDT Test Centre

Fife College and the IMechE Argyll Ruane at Sheffield have an agreement which will enable PCN Testing to be carried out at the College.

- The services of a highly experienced NDT tutor qualified to Level 2 and 3 in the disciplines of Ultrasonic Testing, Liquid Penetrant Testing, Magnetic Particle Testing and Radiographic Testing are available on a consultancy basis or to carry out radiography work using the College's facilities.
- The radiographic facility is available for short refresher or pre-examination training by arrangement.

PCN and ASNT Examinations

PCN and ASNT examinations at the College are available on demand, please phone us for an application form and to make a provisional booking.

For further information and quick booking, contact:

NDT Centre
Future Skills Centre
Department of Engineering Technologies
Fife College
Stenton Road, Glenrothes
Fife KY6 2RA
Tel: 0344 248 0135
Fax: 01592 223380
Email: ndt@fife.ac.uk



Fife College NDT Centre complies with the requirements of BS EN ISO 9001:2015 for the provision of training and examination of NDT Personnel.

Please note:

- As an educational establishment, our course fees are not subject to VAT
- Courses and exams may be arranged outwith scheduled dates (subject to prior agreement with the NDT Centre).
- Half day (£84) and one day (£168) training courses can also be arranged.
- Course costs include PCN 2 Exam and Levy fees.

■ Magnetic Particle Inspection - Level 2

This course provides basic theory and practical work on test pieces and industrial components, with emphasis on interpretation of defect indications, also comparing sensitivity of the visible and fluorescent methods. Using mpi bench units or portable equipment as required.

(PCN syllabus reference no PCN/GEN appendix Z1)

Suitable for:

NDT personnel, inspectors and technicians employed in, or personnel with a responsibility for the inspection of fabrications, castings and forgings during manufacture or in service.

Course content:

Principles of magnetism, magnetic fields, permeability and reluctance, magnetisation, lines of force, methods of testing, interpretation of indications, demagnetisation, practical exercises, method of assessing sensitivity, report writing and safety procedures.

The course ends with a written and practical test.

Course objectives:

Delegates completing the course will be able to:

- 1 Understand the basic principles of magnetic particle inspection
- 2 Carry out magnetic particle inspection on welds, castings and forgings using a range of magnetising methods
- 3 Write inspection procedures and test reports
- 4 Meet the syllabus requirement for ASNT/PCN levels 1 and 2

Course cost:

£1036

Duration of course:

5 days including PCN Exam

Courses in Magnetic Particle Inspection can be taken over 2 days for level 1 or 3 days for level 2 if level 1 is already held by trainee. These courses will then be costed at £168 per day.

Straight to level 2 in these techniques will require 5 days training.

Dates of courses

Course schedule is available on request.

ASNT examinations may be arranged on the final day of the course.

BINDT approved

■ Liquid/Dye Penetrant Inspection - Level 2

This course provides basic theory and practical work on test pieces and industrial components, with emphasis on interpretation of defect indications, also comparing sensitivity of the visible and fluorescent methods. Using fixed work stations or portable equipment as required.

(PCN syllabus reference no PCN/GEN appendix Z1)

Suitable for:

NDT personnel, inspectors and technicians employed in, or personnel with a responsibility for the inspection of fabrications, castings and forgings during manufacture or components in service.

Course content:

Principles of dye penetrant testing, materials, methods of inspection, compatibility of materials, equipment types, practical exercises, method of assessing sensitivity, report writing and safety procedures.

The course ends with a written and practical test.

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the basic principles of dye penetrant inspection
- 2 Carry out penetrant inspection using water washable, solvent removable and post-emulsifiable/removable processes
- 3 Write inspection procedures and test reports
- 4 Meet syllabus requirements for ASNT/PCN 1 and 2 personnel

Course cost:

£1036

Duration of course:

5 days including PCN Exam

Courses in Liquid Penetrant Inspection can be taken over 2 days for level 1 or 3 days for level 2 if level 1 is already held by the delegate. These courses will then be costed at £168 per day.

Straight to level 2 in these techniques will require 5 days.

Dates of courses:

Course schedule is available on request.

ASNT examinations may be arranged on the final day of the course.

BINDT approved

■ Practical Ultrasonic Inspection - Level 1

This course provides the basic theory and practice of ultrasonic weld testing and gives the ideal start to a career in ultrasonics.

(PCN syllabus reference no PCN/GEN appendix Z1).

Suitable for:

NDT personnel, inspectors and engineers requiring an introduction to ultrasonic inspection.

Course content:

Basic principles of ultrasonics, nature of sound. The flaw detector and testing equipment. Calibration flaw location and sizing methods. Practical exercises.

Course objectives:

Delegates completing the course should:

- 1 Understand the basic concept of ultrasonic testing
- 2 Select and calibrate the appropriate equipment
- 3 Thickness measure
- 4 Carry out parent material inspection
- 5 Inspect butt welded joints in plate
- 6 Correctly locate, size and report parent plate and weld defects

Course cost:

£1016

Duration of course:

5 days including PCN Exam

Dates of courses:

Course schedule is available on request.

ASNT examinations may be arranged on the final day of the course.

BINDT approved

■ Practical Ultrasonic Inspection - Level 2

This course provides comprehensive knowledge of the theory and practice of ultrasonic testing of welds for technicians to reach the level ii standard.

(PCN syllabus reference no PCN/GEN appendix Z1)

Suitable for:

NDT personnel, inspectors, testers and engineers who require a thorough introduction to ultrasonic testing of welded joints.

Course content:

Welding technology - processes and defects, basic principles of ultrasonics, nature of sound, flaw detector, setting the controls, behaviour of ultrasonic waves, transmission, reflection, resonance, calibration and reference blocks, plotting beam profiles, flaw location, practical exercises eg plates, butt welds, techniques and report writing.

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the basic concept of ultrasonics
- 2 Calibrate ultrasonic equipment using calibration blocks
- 3 Measure the thickness of steel plates
- 4 Determine attenuation levels
- 5 Locate and determine size of laminations in steel plates
- 6 Select correct type of probe to examine butt welded joints
- 7 Detect and report the location and size of defects in butt welds
- 8 Interpret code requirements related to ultrasonic testing
- 9 Meet the syllabus requirements for ASNT/PCN level 2

Course cost:

£2510

Duration of course:

15 days including PCN Exam

Dates of courses:

Course schedule is available on request.

ASNT examinations may be arranged on the final day of the course.

BINDT approved

■ Practical Ultrasonic Inspection (Plate Lamination) - Level 2

This course can be taken as the first week of the 3 week Practical Ultrasonics Inspection course.

This course provides comprehensive knowledge of the theory and practice of ultrasonic testing of wrought plate for technicians to reach level 2 standard.

(PCN syllabus reference no PCN ISO20807 - GEN)

Suitable for:

NDT personnel, inspectors, testers and engineers, who require a thorough introduction to ultrasonic testing of wrought plate.

Course content:

Product technology – processes and defects, basic principles of ultrasonics, nature of sound, flaw detector, setting the controls, behaviour of ultrasonic waves, transmission, reflection, resonance, calibration and reference blocks, plotting, flaw location, practical exercises, eg plates, laminations, etc.

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the basic concept of ultrasonics
- 2 Calibrate ultrasonic equipment using calibration blocks
- 3 Measure the thickness of steel plate
- 4 Determine attenuation levels
- 5 Locate, determine and report size of laminations in steel plates
- 6 Interpret code requirements related to ultrasonic testing
- 7 Meet the syllabus requirements

Course cost:

£1086

Duration of course:

5 days including PCN Exam

Dates of courses:

Course schedule is available on request
BINDT approved

■ Practical Radiographic Inspection - Level 2

This course provides comprehensive knowledge of the theory and practice of radiography testing of welds, castings and forgings for technicians to reach the level 2 standard.

(PCN syllabus reference no PCN/GEN appendix Z1)

Suitable for:

NDT personnel, inspectors and testers.

Course content:

Principles of x and gamma radiography, radiation safety, equipment, film types, film exposure and processing. Film viewing requirements, penetrameters, sensitivity and defect types, film artefacts. Practical radiography and interpretation of radiographs.

The course ends with a written and practical test.

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the basic theory of radiography
- 2 Appreciation of radiation safety principles
- 3 Understand radiographic techniques and film selection
- 4 Understand the origin of defects
- 5 Recognise the difference between defects and film faults
- 6 Carry out practical radiography using x and gamma
- 7 Interpret radiographs
- 8 Meet the syllabus requirements for PCN/ASNT level 2

Course cost:

£2680

Duration of course:

15 days including PCN Exam

Consideration of radiographic interpretation certification and any industrial experience will be taken into account to reduce the time required on the course.

Dates of courses:

Course schedule is available on request.
BINDT approved

■ Radiographic Interpretation - Level 2

This course is designed for NDT personnel, surveyors, quality and inspection engineers who may have the responsibility for the identification of defects revealed by radiography. This course provides essential knowledge on radiographic theory and practice. Evaluation of weldments and castings, using radiographic codes and procedures to enable interpreters to judge radiographic quality.

(PCN syllabus reference no PCN/GEN appendix Z1)

Suitable for:

Radiographers, inspectors, engineers and surveyors who require a methodical approach to interpretation.

Course content:

Principles of x and gamma radiography, equipment, safety, film and screen types, film exposure and processing. Film illuminator requirements and background lighting, penetrameters, sensitivity, defect types, film artefacts, practical work on interpretation of radiographs.

The course ends with a written and practical test.

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the basic theory of radiography
- 2 Appreciation of radiation safety principles
- 3 Understand radiographic techniques and film selection
- 4 Understand the origin of defects
- 5 Recognise the difference between defects and film faults
- 6 Interpret radiographs
- 7 Meet the syllabus requirements for ASNT/PCN level 2

Course cost:

£1204

Duration of course:

6 days including PCN Exam

Dates of courses:

Course schedule is available on request.

ASNT examinations may be arranged on the final day of the course.

BINDT approved

■ NDT Appreciation

This course is designed to give an introduction to the four main methods of NDT. Theory of all methods as well as hands-on practical work will be covered, using a variety of test equipment. A comprehensive range of fully authenticated test specimens is available.

Suitable for:

Engineering and inspection personnel who require a general knowledge of NDT techniques with some hands-on experience.

Course content:

NDT methods which include:

- 1 Surface methods - magnetic particle and penetrant inspection
- 2 Sub-surface methods
 - ultrasonic thickness measurement
 - Ultrasonic flaw detection
 - X and gamma radiography

Demonstration of examination techniques.

Selection of method of NDT in relation to material, defect type and defect orientation.

Course objectives:

On completion of the course, delegates should:

- 1 Be aware of the NDT methods available
- 2 Appreciate the basic principles of each method
- 3 Know the advantages and limitations of the NDT methods in the application and defect detection capability

Course cost:

£336

Course duration:

2 days

Dates of courses:

Course schedule is available on request.

■ Product Technology

This course provides a basic knowledge of product technology, which is now becoming essential for the inspection engineer.

Suitable for:

NDT personnel, inspectors and technicians employed in, or personnel with a responsibility for the inspection of fabrications, castings and forgings during manufacture or components in service.

Course content:

- Basic casting production (crude and finished)
- Forming processes (rolling, forging, extrusion, annealing and stress relieving)
- Basic welding (mma, tags, mags, sub arc and electroslag)
- Types of welds (fillets, butts)
- Welding defects (cracks, porosity, slag, etc)
- Inservice defects (fatigue, cracks, etc)
- Welding terms
- Heat treatment

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the basics of production processes
- 2 Know the terms used in the production processes
- 3 Know the origin and nature of flaws in the production processes

Which will significantly help personnel undertaking various PCN/ASNT certificates where product technology is now a fundamental consideration.

Course cost:

£336

Duration of course:

2 days

Date of course:

Course schedule is available on request.

BINDT approved

■ Radiation Safety (Basic Radiation Safety or Radiation Protection Supervisor)

This course provides the theory to meet the requirements of PCN for the level 2 radiation safety endorsement. The course also complies with the recommendations of Public Health England formerly the National Radiological Protection Board.

Suitable for:

Any person involved in the use of ionising radiations, practical radiographers, supervisors etc.

Course content:

Basic physics of ionising radiations, effects of radiation. Doses. Personal monitoring. The requirements of the ionising radiations regulations 1999. Setting up of barriers, shielding, local rules, arrangements for emergency situations.

Course objectives:

On completion of the course, delegates should be able to:

- 1 Understand the nature of ionising radiation and its harmful effect
- 2 Calculate safe working distances with or without shielding
- 3 Understand the requirements of the ionising radiations regulations 1999 with regard to personnel, barriers, contingency arrangements, etc

Course cost:

£520 (Basic)

£838 (Supervisor)

Duration of course:

3 days (Basic) including PCN Exam

4 days (Supervisor) including PCN Exam

Dates of courses:

Course schedule is available on request.

BINDT approved

■ Supervised Practical Ultrasonic Inspection (Plate or Pipe Butt Welds)

This course provides the opportunity for experienced technicians to test welded specimens under the supervision of a tutor. The course will provide good preparation for the ultrasonic practitioner attempting level 1 or 2 examinations of either ASNT or PCN.

Suitable for:

Ultrasonic technicians having received the basic experience and training, but requiring additional preparation prior to PCN or ASNT exams.

Course content:

This course will enable the delegate to concentrate on the practical testing of double vee plate butt welds and single vee plate and pipe butt welds, whichever is of most interest. Teaching staff will be available at all times to assist with the practical as well as any theoretical problems.

A wide range of fully authenticated specimens is available.

Course objectives:

Delegates completing this course should be able to:

- 1 Understand the ultrasonic techniques used to locate, size and assess defects in plates and pipes
- 2 Apply the correct technique to the standard required by PCN or ASNT for butt welds in plate and pipe

Course cost:

£710 each (plate or pipe)

Duration of course:

3 days each (plate or pipe) including PCN Exam

Dates of courses:

Course schedule is available on request.

Duration of course may be flexible.

Extra days will be charged at a rate of £168 per day.

BINDT approved

■ Supervised Practical Ultrasonic Inspection (Tees, Nozzle or Node Welds)

This course provides the opportunity for experienced technicians to test welded specimens under the supervision of a tutor.

The course will provide good preparation for the ultrasonic practitioner attempting tees, nozzle and node welds for PCN certification.

Suitable for:

Ultrasonic technicians who have received basic training and on the job experience and who may also be certificated for other weld groups (ie plate and pipe), but who may require practical preparation for additional weld configurations.

Course content:

This course will enable the delegate to concentrate on the practical testing of various configurations of tees, nozzle welds and nodes. Teaching staff will be available at all times to assist with practical inspection as well as any theoretical problems.

A wide range of fully authenticated specimens is available.

Course objectives:

On completion of this course, delegates should be able to:

- 1 Understand the requirements for the ultrasonic inspection of tees, nozzle and node welds
- 2 Apply the correct technique to the standard required by PCN for tees, nozzle and node welds

Course cost:

£710 each (tees, nozzle or nodes)

Duration of course:

3 days each (tees, nozzle or nodes) including PCN Exam

Dates of courses:

Course schedule is available on request.

Duration of course may be flexible.

Extra days will be charged at a rate of £168 per day.

BINDT approved

■ Weld Inspection - Level 2

This course provides comprehensive knowledge of the theory and practice of weld inspection for technicians to reach level 2 standard.

(PCN syllabus reference no PCN/WI Annex A).

Suitable for:

NDT personnel, inspectors and engineers.

Course content:

Welding technology – processes and defects, welding terminology, engineering materials, heat treatment processes, quality assurance/quality control, application of appropriate standards, practical inspection of plate and pipe welds, macros and bend specimens, report writing.

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the principles of welding processes
- 2 Understand the principles of weld metallurgy
- 3 Know the nature and origin of welding defects
- 4 Understand the importance of welding, process quality control and associated documentation and how relevant standards are applied and interpreted
- 5 Be able to carry out practical inspections of weldments
- 6 Report accordingly

Course cost:

£1204

Duration of course:

5 days including PCN Exam

Dates of courses:

Course schedule is available on request.

BINDT approved

■ Visual Inspection - Level 2

This course provides comprehensive knowledge of the theory and practice of visual inspection for technicians level 2 standard.

(PCN syllabus reference no PCN/GEN appendix Z1).

Suitable for:

NDT personnel, inspectors, testers and engineers with a responsibility for the inspection of fabrications, castings and forgings during manufacture or components in service.

Course content:

Principles of visual inspection, physics of light, the human eye and vision, environmental conditions, light sources, optical aids, surface conditions, welding, castings, and forging technology.

Course objectives:

Delegates completing the course should be able to:

- 1 Understand the principles of visual inspection
- 2 Carry out visual inspection of welds, castings and forgings, using a range of inspection aids
- 3 Write clear and concise inspection techniques and reports
- 4 Meet the syllabus requirements for PCN level 2

Course cost:

£1036

Duration of course:

5 days including PCN Exam

Dates of courses:

Course schedule is available on request.

BINDT approved

Information for Course Members

Procedure on arrival

At 0900 hrs on the first day of the course, delegates should report to reception at our Stenton Campus, Glenrothes, where they will be directed to the NDT Centre.

Equipment required

Delegates will require protective footwear and overalls, also pens, pencils, rulers and scientific calculators. All other equipment will be supplied.

For delegates who are attending a radiography course, if they already have a tld/film badge, they must bring it with them. If they do not have one, a course tld/film badge will be issued, but must be returned on completion of the course.

Course materials

Course materials are included in the course fees and are provided to delegates on the first day of the course.

Personal belongings

No responsibility can be accepted for the safety of delegates' property. Lost property should be handed to, and obtained from, the reception. No money or valuables should be left in the cloakrooms.

The responsibility for the insurance of delegate's property rests firmly with the individual or, where relevant, with the employer.

The College cannot accept liability for delegates' possessions or equipment housed in College premises.

Smoking

Smoking is prohibited in College buildings.

Catering

Free tea/coffee is readily available in the NDT centre. A cafe is also available onsite, serving full meals, quick bites and snacks.

How to get to Fife College, Stenton Road, Glenrothes, Fife, KY6 2RA

By bus

There is a regular bus service to our Stenton Campus from Glenrothes town centre.

By train

The nearest train stations are Markinch and Thornton. A bus or taxi journey will also be required.

By air

The nearest airport is Edinburgh. Car hire, or a bus or taxi journey will also be required.

You can plan your journey by visiting our directions page:

www.fife.ac.uk/collegeinfo/location/Pages/directions.aspx

Car parking

Car parking space is available.

Accommodation

A list of hotels near to the College is as follows:

Holiday Inn Express
Leslie Road, Glenrothes, Fife
KY6 3EP
Tel 0871 423 4828
www.holidayinn.com

Premier Inn
Beaufort Drive, Glenrothes, Fife
KY7 4UJ
Tel 0871 527 8454
www.premierinn.com

Travelodge
Bankhead Park, Glenrothes, Fife
KY7 6GH
Tel 0871 984 6278
www.travelodge.co.uk

The Golden Acorn
1 North Street, Glenrothes, Fife
KY7 5NA
Tel: 01592 755252

First aid emergency procedure

In the event of serious accidents or sudden illness, please contact reception, who will alert the duty first aider.

Health and safety

Delegates have a duty to:

- Work safely and efficiently
- Use protective equipment provided
- Report incidents that have or may lead to injury or damage
- Conform with safety procedures

Fire procedure

If you discover a fire:

1. Raise the alarm immediately by operating the nearest fire alarm call point.
2. Report the location of the fire to a member of staff outside the main entrance.

On hearing the fire alarm:

1. Leave the building immediately by the nearest exit.
2. Close all doors behind you.
3. Report to the assembly point in the car park where a roll call will be taken.

Do not

- Run or shout
- Re-enter the building unless authorised by a fire brigade officer



Contact Us

NDT Centre
Future Skills Centre
Department of Engineering Technologies
Fife College
Stenton Road, Glenrothes
Fife KY6 2RA
Tel: 0344 248 0135
Fax: 01592 223380
Email: ndt@fife.ac.uk

Fife College Training and Development

Pittsburgh Road
Dunfermline KY11 8DY
Tel: 0344 248 0115
Email: info@fife.ac.uk
Web: business.fife.ac.uk



We aim to ensure accuracy in all our published information. However circumstances out with our control can lead to future change. If this has been your experience, you have our sincere apologies. Fife College cannot accept liability for any loss or damage arising in respect of any statement contained in this information. This information does not form part of a formal contract and we reserve the right to refuse admission.