1.0 INTRODUCTION – RADIOGRAPHY LEVEL II COURSE (40 HOURS)

1.1 Electromagnetic Energy
1.2 Wavelength
1.3 Photon Energy (Electron volt)
1.4 Sources of radiation
1.5 Isotope types
1.6 Ionization
1.7 Responsibilities for the inspection process
1.8 Radiation safety regulations

2.0 BASIC ATOMIC PHYSICS

2.1 Parts of an atom
2.2 Energy within the atom
2.3 Atomic number (Z number)
2.4 Mass number (A number)
2.5 Isotopes

3.0 RADIOACTIVITY

3.1 Types of radiation from Isotopes
3.1.1 Alpha Radiation (*α)*
3.1.2 Beta Radiation (β)
3.1.3 Neutron Radiation (η)
3.1.4 Gamma Radiation (*γ*)
3.2 Making Isotopes
3.3 Properties of commonly used Isotopes

4.0 INDUSTRIAL GAMMA RAY EQUIPMENT

4.1 The Isotope capsule
4.2 The Isotope camera

5.0 RADIATION UNITS FOR MEASUREMENT OF RADIOISOTOPES

5.1 Radiation Activity
5.2 Half-Life definition
5.3 Half life values
5.4 Half-Life Formula
5.5 Radiation Intensity
5.6 Specific Emission Constants
5.7 Specific Activity

6.0 X-RAY EQUIPMENT AND PRODUCTION

6.1 Heat dissipation
6.2 Kilo-voltage
6.3 Production of X-RAYS
6.4 Characteristic Radiation
6.5 Line-Focus Principle
6.6 Warm-Up Cycle
6.7 Duty Cycle
6.8 Time / Intensity relationship

6.9 Penetrating power
6.10 Minimum wavelength
6.11 X-ray Transformers and Electrical Circuits
6.11.1 Step up transformers.
6.11.2 Step down transformers.
6.11.3 Auto transformers.
6.12 Self rectified tube heads
6.13 Constant potential tube heads
6.14 High Energy X-RAY Sources
6.14.1 Betatron (20-50 MeV).
6.14.2 Van de Graaf Generator (1-8 MeV).
6.14.3 Linear Accelerator, commonly referred to as a LINAC (1-30 MeV).

7.0 REAL TIME RADIOGRAPHY

7.1 Fluoroscopy
7.2 Image Intensifiers
7.3 Modern Digital Radiographic Techniques
7.4 Linear diode arrays
7.5 Computed Radiography
7.6 Flat Panel Detectors
7.7 Amorphous Silicon
7.8 Amorphous Selenium
7.9 Summary of digital radiography

8.0 PRACTICAL EXPOSURE CALCULATIONS

8.1 Use of a Gamma ray exposure calculator
8.1.1 To perform Gamma ray exposure calculations using the AGFA Gamma ray calculator
8.2 Use of an X-Ray Exposure Chart
8.3 Radiographic Equivalency Factors
8.4 Characteristic Curves

9.0 MATHEMATICAL CALCULATIONS INVOLVING DISTANCE

9.1 Inverse square law
9.2 Time-Distance Relationship

10.0 FILM PROCESSING AND THE DARKROOM

10.1 Entrances
10.2 Dry Side
10.3 Wet Side
10.4 Safelights
10.5 Chemical Processing
10.6 Developer
10.7 Stop Bath
10.8 Fixer
10.9 Washing
10.10 Wetting Agent
10.11 Automatic Film Processing
10.12 Handling of Unexposed film

TEST NDT does not have any pre-requisites for attending any of our courses, it is entirely up to the attendee to determine whether the course is suitable for their needs and whether they are capable of achieving the standards. Please study the applicable course outline and decide if the course is suitable for your needs before enrolling, if in doubt, please contact us to discuss. For employer funded attendees, please discuss the suitability of any of the courses with your employers responsible NDT level 3 before enrolling.