Changing lives through learning

Access to Higher Education Unit

This unit forms part of an Access to HE Diploma. If delivering the graded version of this unit, please refer to the Provider Handbook for details on grading descriptors and the application of these across units within your programme.

Unit Title: Non-ionising Medical Imaging

Graded Unit Reference Number: GA36PHY23

Ungraded Unit Reference Number: UA36PHY23

Module: Physics; Science for Health

Level: Three [3]

Credit Value: Six [6]

Minimum Guided Learning Hours: 60

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Understand the principles and medical applications of ultrasound	1.1 Describe how ultrasounds are used to produce an image
	1.2 Explain the principle of imaging using ultrasound in terms of: a) reflection and transmission characteristics of sound waves at tissue boundaries b) acoustic impedance c) attenuation
	1.3 Explain the application of ultrasounds in imaging and the advantages of its use
2. Understand the principles and medical applications of fibre optics	2.1 Describe the structure of an optical fibre and explain the principle allowing light to bend along a fibre optic strand
	2.2 Explain the importance of Snell's law of fibre optics
	2.3 Describe the construction of the flexible endoscope
	2.4 Explain the application of endoscopes in imaging and the advantages of its use in a range of medical uses

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
3. Understand principles and medical applications of magnetic resonance	3.1 Describe how magnetic resonance imaging produces an image
	3.2 Explain the principles of the magnetic resonance imaging in terms of: a) Method of scanning and its effect at the molecular level b) Method of detection and image processing
	3.3 Explain how the quality of the image can be improved in terms of: a) The use of contrasting agents b) The relationship between magnetic field strength and Larmor frequency
	3.4 Explain the application of magnetic resonance imaging in imaging and the advantages of its use
4. Understand the benefits and limitations of a range of non-ionising medical imaging	4.1 Compare a range of non-ionising medical imaging in relation to: a) Expense b) Availability c) Resolution d) Safety issues
	4.2 Describe and justify a suitable medical application for each of the following non-ionising medical imaging: a) Ultrasound b) Fibre optics c) Magnetic resonance imaging
	4.3 Explain the benefits and limitations of using magnetic resonance imaging compared with X-ray tomography (CT scans)