

## MODULE DESCRIPTOR

### Module Title

Radiation Science

Reference	HS1067	Version	7
Created	February 2020	SCQF Level	SCQF 7
Approved	July 2017	SCQF Points	15
Amended	June 2020	ECTS Points	7.5

### Aims of Module

The aim of the module is to provide the student with a basic understanding of the physical principles which underpin radiographic imaging. The module will also enable the student to understand how x-rays interact with matter and the radiation safety implications of working with medical radiations.

### Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Describe the radiographic science and technology that underpins the production of radiographic images.
- 2 Describe radiation protection, radiation safety and health and safety within radiography utilising library searching mechanisms to acquire relevant evidence.

### Indicative Module Content

The production of the X-ray beam, its interactions with matter and the factors which affect the quality and quantity of the X-ray beam. Energy and energy transfer. The electromagnetic spectrum. Structure of the atom. Basic radioactivity. Thermionic emission. X-ray production. Characteristic spectrum and line spectra. Quantity and quality of an x-ray beam. Beam collimation and geometry. The diagnostic x-ray tube. Equipment and imaging technologies. Fluoroscopic and dental equipment. X-ray interactions with matter. The ALARP principle. Radiation safety and radiation protection. CR, DR, PACS and RIS systems.

### Module Delivery

The module is delivered by blended learning and involves lectures, tutorials, student centred seminars and laboratory sessions with directed and private study.

**Indicative Student Workload**

	Full Time	Part Time
Contact Hours	N/A	40
Non-Contact Hours	N/A	110
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	N/A	150
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

**ASSESSMENT PLAN**

*If a major/minor model is used and box is ticked, % weightings below are indicative only.*

**Component 1**

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2
Description:	The module will be assessed by coursework.				

**MODULE PERFORMANCE DESCRIPTOR****Explanatory Text**

One piece of coursework will be used to assess all module learning outcomes.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	A
<b>B</b>	B
<b>C</b>	C
<b>D</b>	D
<b>E</b>	E
<b>F</b>	Fails to meet the minimum requirements for an E
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

**Module Requirements**

Prerequisites for Module	None, in addition to course entry requirements.
Corequisites for module	None.
Precluded Modules	None.

**INDICATIVE BIBLIOGRAPHY**

- 1 BALL, J. and MOORE, A. D., 2008. *Essential Physics for Radiographers*. 4th ed. Oxford: Blackwell Science.
- 2 GRAHAM, D. T. and Cloke, P., 2012. *Principles of Radiological Physics*. 6th ed. Edinburgh: Churchill Livingstone.
- 3 SHERER, M.A.S., VISCONTI, P.J., RITENOUR, E.R. & HAYNES, K., 2017. *Radiation protection in medical radiography*. 8th ed. St. Louis: Mosby.
- 4 DEPARTMENT OF HEALTH (DOH), 2017. *Ionising radiation (medical exposure) regulations*. Norwich:DOH.
- 5 / REGULATION AND QUALITY IMPROVEMENT AUTHORITY (RQIA), 2018. *Ionising radiation (medical exposure) regulations (Northern Ireland)*. Belfast: RQIA.
- HEALTH AND SAFETY EXECUTIVE (HSE), 2017. *Ionising radiation regulations*. London: HSE.
- HEALTH AND SAFETY EXECUTIVE NORTHERN IRELAND (HSENI), 2017. *Ionising radiation regulations (Northern Ireland)*. Belfast: HSENI.