Module Specification

Module Summary Information

1	**Module Title**	Physics for Radiotherapy
2	**Module Credits**	20
3	**Module Level**	4
4	**Module Code**	RAD4047

5	**Module Overview**

Rationale

This module is essential to enable your understanding of the theory and practical applications of physics in the context of radiography or radiotherapy. Radiation physics and the safe and legal use of ionising radiation is an essential aspect of the radiation disciplines. It involves the underlying principles of the nature of matter and associated principles and how that relates to radiation production and attenuation its application to imaging and therapeutic modalities. You will develop your understanding of the underpinning aspects of physics related to radiography and radiotherapy. That will form the basis for developing your understanding of the production and attenuation of ionising radiation and its effects. You will also gain a comprehensive body of knowledge of radiation protection as specified in current legislation which will help develop your understanding of the necessity for the safe use of ionising radiation technologies in health care practice.

It is essential that this module content is covered at the beginning of the degree programme to ensure that the use of radiation, the regulation and safety aspects are covered before students undertake any substantive clinical practice.

Alignment with Philosophy and Aims

This module will provide you with a 'core of knowledge' of physics and radiation protection and therefore prepares you for practice as a student and as an employable health care worker in a radiation environment. You will have the necessary knowledge to be able to work within your scope of practice in an interdisciplinary environment to ensure safe imaging and/or treatment management of the patient. You will acquire and develop knowledge to correctly apply the current legislation relating to the use of ionising radiation. On successful completion, this module will have developed your understanding of the applications to safe clinical practice and will underpin studies at academic levels 5 and 6 and beyond into employment as a radiographer. The content has applications to safe practice in radiography / radiotherapy department not only in the UK but also globally.

Learning and Teaching Strategy

You will be taught through a variety of learning methods in this module. This includes lectures, tutorials and the provision of a range of resources via the module Moodle site. This will include, documents, resource links, articles, quizzes and exercises, audio files of the session content and example assessment questions. It is important that you attend each session as the complexity will build throughout the module, building upon the previous sessions.

Assessment Strategy

The assessment for this module will be via examination.

This method of assessment is essential to assess your breadth of understanding and knowledge in addition to your recall of the principles of physics associated with radiography which is essential for safe clinical practice. The Statutory Instrument, IRMER 2000, Schedule 2, requires a breadth of material is covered and assessed; an examination is the most appropriate for this content.

6	Indicative Content

This section covers indicative subject matter only.
Atomic Structure
Electricity and Magnetism
Electromagnetic Radiation
X-Ray Production
X-Ray Spectrum
X-Ray Attenuation
X-Ray Interactions
Inverse Square Law
Radiation Units
Radiobiological effects
Radioactivity
Radioactive Emissions
Radiation Protection
Radiation Regulations IRR 17 & IRMER 2018
Measurement of Radiation; chambers, diodes and TLDs

7	Module Learning Outcomes On successful completion of the module, students will be able to:	
	1	Explain your understanding of the underpinning physics concepts associated with radiography / radiotherapy.
	2	Demonstrate knowledge and understanding of the applications of the effects of ionising radiation, methods of measurement and the current ionising radiation regulations essential to your safe practice and radiation protection.

8	Module Assessment		
Learning Outcome			
	Coursework	Exam	In-Person
1,2		X	

9	Breakdown Learning and Teaching Activities
Learning Activities	**Hours**
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	32
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	30
Private Study (PS) includes preparation for exams	116 + 22 for assessment preparation
Total Study Hours:	200