University of the West of England
BRISTOL

ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Radiation Physics					
Module Code	UZYSXS-15-1		Level	1	Version	1
Owning Faculty	Health and Applied Sciences		Field	Allied Health Professions		
Contributes towards	BSc (Hons) Radiotherapy and Oncology BSc (Hons) Diagnostic Imaging					
UWE Credit Rating	15	ECTS Credit Rating	7.5	Module Type	Standard	
Pre-requisites	None		Co- requisites	None		
Excluded Combinations	Radiographic Science UZYRHP-30-1		Module Entry requirements	N/A		
Valid From	September 2015		Valid to	September 2021		

CAP Approval Date	30 April 2015

Part 2: Learning and Teaching	
Learning Outcomes	On successful completion of this module students will be able to: • Describe the construction and operation of the rotating anode x-ray tube (Component A) • Explain the design features of either static x-ray imaging equipment (Diagnostic Imaging) or the linear accelerator (Radiotherapy) (Component A) • Describe the interaction processes of x-ray photons with matter and their significance to image production and radiotherapy (Component A) • Explain the principles of the inverse square law and its relevance to practice. (Component A) • Demonstrate a knowledge and understanding of the principles of radiation protection and current UK regulations/recommendations with reference to patients, staff and members of the public/carers in either diagnostic imaging or radiotherapy (Component A)
Syllabus Outline	**Physical principles**: • Concept of energy and electromagnetic radiation • Ionising and non-ionising radiations in the environment • Interaction of ionising radiation with matter • Inverse square law; half value-thickness • Biological effects of ionising radiation

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Radiation protection: principles and regulations; diagnostic or radiotherapy
Detection and measurement of ionising radiation
Radioactivity; decay process; half-life

Radiographic equipment:

Imaging principles including DR/CR
Rotating anode x-ray tube
x-ray geometry
Image intensifier
Static diagnostic imaging equipment or radiotherapy megavoltage equipment (including on board imaging tools)

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<tr><td>Contact Hours</td><td>

Students will engage in 36 hours of timetabled taught sessions including key note lectures, tutorials, practical sessions and profession specific timetabled content.
Students are also given access to bespoke, interactive learning resources for the module, containing audios, games and quizzes giving opportunities to develop knowledge and understanding as they progress through the module. In addition, email contact with staff is available throughout the module and during scheduled tutorial time.

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<tr><td>Teaching and Learning Methods</td><td>

Scheduled learning includes tutorials, key note lectures, profession specific lectures
Independent learning includes hours engaged with essential reading, revision. Formative assessment in the form of MCQ’s.

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<tr><td>Key Information Sets Information</td><td>
Key Information Sets (KIS) are produced at programme level for all programmes that this module contributes to, which is a requirement set by HESA/HEFCE. KIS are comparable sets of standardised information about undergraduate courses allowing prospective students to compare and contrast between programmes they are interested in applying for.
<table>
<tr><td colspan="5"><u>Key Information Set - Module data</u></td></tr>
<tr><td colspan="4">Number of credits for this module</td><td>15</td></tr>
<tr><td>Hours to be allocated</td><td>Scheduled learning and teaching study hours</td><td>Independent study hours</td><td>Placement study hours</td><td>Allocated Hours</td></tr>
<tr><td>150</td><td>36</td><td>114</td><td>0</td><td>150</td></tr>
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The table below indicates as a percentage the total assessment of the module which constitutes a –

Written exam

Please note that this is the total of various types of assessment and will not necessarily reflect the component and module weightings in the Assessment section of this module description:
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Written exam assessment percentage	100%
Coursework assessment percentage	0%
Practical exam assessment percentage	0%
	100%

Reading Strategy	**Core readings** Any essential reading will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given a study pack or be referred to texts that are available electronically, or in the Library. Module guides will also reflect the range of reading to be carried out. **Further readings** All students are encouraged to read widely using the library catalogue and Internet resources. Many resources can be accessed remotely. Guidance to some key authors and journal titles available through the Library will be given in the Module Guide and updated annually. **Access and skills** Formal opportunities for students to develop their library and information skills are provided within the induction period. Additional support is available through the Library Services web pages, including interactive tutorials on finding books and journals, evaluating information and referencing. Sign-up workshops are also offered by the Library.
Indicative Reading List	The following list is offered to provide validation panels/accrediting bodies with an indication of the type and level of information students may be expected to consult. As such, its currency may wane during the life span of the module specification. *Current* advice on additional reading will be available via the module guide or Blackboard pages. Ball, J., Moore, A.D. and Turner, S. (2008) *Ball and Moore's essential physics for Radiographers*. 4th ed. [online] Oxford:. Blackwell Scientific. [Accessed 14 November 2014]. Easton, S. (2009) *An introduction to Radiography*. [online] Edinburgh: Churchill Livingstone. [Accessed 14 November 2014]. Holmes, K. (2013) *Clark's Essential physics in Imaging for Radiographers.* London: Taylor & Francis.. Sibtain, A., Morgan, A. and MacDougall, N. (2012) *Radiotherapy in practice: physics for clinical oncology*. [online] Oxford: Oxford University Press,. [Accessed 14 November 2014]. Symonds, P., Deehan, C., Meredith, M., and Mills, J. (2012) *Walter and Miller's Textbook of Radiotherapy* [online] London: Churchill Livingstone. [Accessed 15 September 2014]

Part 3: Assessment	
Assessment Strategy	Component A: 2 hour written examination. Rationale: To enable students to demonstrate the core knowledge required in order to meet the learning outcomes of the module. This knowledge base will be comprehensively assessed to ensure students have required level of

	radiation physics knowledge in order to practice safely. The examination process is deemed to be most appropriate in order to demonstrate the breadth of student knowledge. <u>Formative assessment:</u> Formative assessment will include a variety of tasks designed to encompass all learning styles, such as quizzes, diagram drawing and labelling and completion of mock questions.

Identify final assessment component and element	**Component A**	
% weighting between components A and B (Standard modules only)	**A:** **100%**	**B**:
First Sit		
Component A (controlled conditions) **Description of each element**	**Element weighting**	
1. 2 hr written examination	100%	

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) **Description of each element**	**Element weighting**
1. 2 hr written examination	100%
If a student is permitted an **EXCEPTIONAL RETAKE** of the module the assessment will be that indicated by the Module Description at the time that retake commences.	