

Module Specification

Module Summary Information

1	Module Title	Ultrasound Physics and Technology
2	Module Credits	20
3	Module Level	4
4	Module Code	RAD4040

5	Module Overview
<p>Rationale</p> <p>This module introduces the principles of ultrasound physics and imaging technology so that you are able to operate ultrasound equipment safely and effectively. An understanding of ultrasound physics is essential so that you understand how the image is produced and how to recognise different body tissues by their ultrasound appearance. Knowledge of ultrasound equipment and machine controls is essential not only to obtain diagnostic images but to improve the quality of those images by applying this knowledge in the clinical setting. Although ultrasound imaging is a very safe technology, like any form of energy it must be applied carefully. So you must have a sound knowledge and understanding of issues and recommendations concerning the safe use of ultrasound if you are to become a competent practitioner.</p> <p>Alignment with Programme and Philosophy Aims</p> <p>This module will provide you with fundamental knowledge of physics and technology that will support your development within your clinical learning. Such knowledge allows you to work effectively and will support your duties in delivering high levels of patient care to a diverse range of service users within the wider multidisciplinary teams with whom you will be working.</p> <p>Learning and Teaching Strategy</p> <p>The syllabus includes ultrasound physics, machine controls, imaging technology and ultrasound safety. This material is covered in pre-session activity using pre-reading from the module textbook and viewing audio presentations. The university sessions consist of key lectures, workshops and demonstrations of ultrasound equipment and each of these activities is supported by post-session directed self-study such as Moodle questions and quizzes or reading.</p> <p>Assessment Strategy</p> <p>You will be assessed via two in class tests under timed conditions (2 x 45 minutes duration)</p>	

6	Indicative Content
<p>The piezo electric effect Acoustic impedance Wave theory and The ultrasound beam Transducers</p>	

Ultrasound interactions and attenuation
 Artefacts
 Instrumentation and controls
 The Physics of Flow
 The principles of Doppler ultrasound
 The principles Colour flow imaging
 Ultrasound Safety
 Quality assurance and performance testing
 Recent advances in ultrasound imaging

7	Module Learning Outcomes		
	On successful completion of the module, students will be able to:		
	1	Demonstrate a sound knowledge and understanding of ultrasound physics and imaging technology as applied to the clinical setting.	
	2	Evaluate the appropriateness of equipment and equipment control settings used in the acquisition and recording of ultrasound image.	
	3	Demonstrate a sound knowledge and understanding of issues and recommendations concerning the safe use of ultrasound in the clinical environment.	

8	Module Assessment		
Learning Outcome			
	Coursework	Exam	In-Person
1,2,3		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		30
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		140
Total Study Hours:		200