UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Magnetic Resonance Imaging
Module Code	RAD7008-C
Academic Year	2020/1
Credits	30
School	School of Allied Health Professions and Midwifery
Subject Area	Radiography
FHEQ Level	FHEQ Level 7
Pre-requisites	N/A
Co-requisites	N/A

Contact Hours	
Type	Hours
Lectures	30
Online Lecture (Synchronous)	13
Online Lecture (Asynchronous)	15
Learning Objects Interaction	29
Tutorials	6
Online Tutorials (Synchronous)	2
Directed Study	100
Independent Study	104
Project Supervision	1

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1
BDA	University of Bradford / Semester 2

Module Aims

1) To enable the student to gain a comprehensive understanding of the physical principles and technology underpinning the acquisition, production and presentation of magnetic resonance (MRI) images and to develop the students ability to critically analyze and evaluate a broad range of magnetic resonance (MRI) imaging applications and protocols.

2) To develop the student's ability to comment on normal and variant anatomy seen in common MRI examinations.

Outline Syllabus

The syllabus will include: physical principles underlying MR image production; overview of contrast mechanisms and image weighting; pulse sequences routinely used in clinical practice included variant of spin and gradient echo; contrast agents used in MRI; MRI safety in practice; instrumentation; factors that influence image quality; artefacts and their compensation including motion related artefacts; principles of magnetic resonance angiography (MRA); anatomy, physiology and pathology; the role of MR in the diagnostic pathway of the patient; guidelines from professional bodies and other organisations; routine MR scanning protocols for all anatomical areas; parameters and their impact on image appearances and quality; image appearances; introduction to optimisation of protocols to produce diagnostic images; critical appraisal of published literature.

Learning Outcomes

Outcome Number	Description
01	Critically reflect on the relationship between the physical principles of magnetic resonance imaging (MRI) to the design and applications of MRI technology.
02	Critically appraise a broad range of MRI applications and technology.
03	Demonstrate independent thought in the critical analysis of MR images.
04	Critically evaluate published research and literature in MR imaging.
05	Critically evaluate MR protocols and reflect on their clinical suitability.
06	Demonstrate professional effective communications skills.
07	Evaluate complex issues in a systematic and creative manner.
08	Critically reflect on own professional practice in order to recognise their own continuing professional development needs.

Learning, Teaching and Assessment Strategy

The module will be delivered using a blended approach of online lectures and tutorials, online materials through the virtual learning environment, and on campus sessions to facilitate learning. Lectures (online and on campus) will introduce the students to the physical principles of MRI technology and the clinical applications of MRI, delivered by Faculty experts with support from the technical and clinical fields. Students will be exposed to current MRI technology and its applications in clinical practice, encouraging reflection on their existing practice. Tutorials will be used to facilitate peer learning and directed study based on critiquing up to date literature and practice will be used to further stimulate the students learning in the classroom or virtually. Technology will be used to support and facilitate sharing and collaboration in problem solving. The teaching and assessment strategy will develop the student's level 7 research skills in preparation for the final stages of the MSc programme, and provide opportunities for formative feedback (peer, tutor and self).
Achievement of the learning outcomes will be demonstrated through the completion of a written examination based on the physical principles, (learning outcomes1,6) an OSE style exam to assess knowledge of image appearances and applications (learning outcomes 2,3,5,6) and a work-based project/case study (learning outcomes 1,4,6,7,8). OSE style assessment is a University based assessment which will involve the students responding in writing to written questions based on case studies, with accompanying medical images.

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Examination - Closed Book	Technology and Principles of MRI	1 hour 45 mins	40%
Summative	Written examination with use/sight of computer	Objective structured image viewing examination (OSIVE) with the use of a computer	1 hour 45 mins	40%
Summative	Coursework	Assignment (1500 words)	N/A	20%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.
