THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

MEDICAL AND HEALTH SCIENCES

MEDIMAGE 715

MRI TECHNOLOGY

15 points

Semester 2, 2018

Course Description

Provides an in-depth understanding of MRI technology and its applications and addresses scientific principles of the modality relating to standard clinical practice including pulse sequences, image quality and quality assurance, technical parameters and trade-offs, image optimisation, artefacts, parallel imaging, scanning at 3T, diffusion and MR angiography.

Objectives of the Course

This course aims to extend students' specialised theoretical knowledge and understanding of the underlying scientific principles of MR technology. The student will develop the ability to apply this knowledge to obtain images of optimal diagnostic quality.

Learning Outcomes

1. Analyse the underlying physical principles of a range of MRI pulse sequences in order to manipulate factors appropriately and to demonstrate an understanding of their application to practice.
2. Analyse and integrate the principles and technology of MRI to enable image optimisation.
3. Critically evaluate the technical and diagnostic quality of a range of MR images.
4. Evaluate the importance of quality assurance and explain the associated impact on safety and image quality.
5. Critically discuss current developments in MR technology and assess the impact on clinical practice.

Teaching Staff

Beau Pontré
Course Coordinator
Email: b.pontre@auckland.ac.nz

Programme and Course Advice

Prerequisite: MEDIMAGE 714
Restriction: MEDIMAGE 703, MEDIMAGE 704

This course is a compulsory course within the PGDipHSc(MRI) programme.

All students enrolled in the PGDipHSc(MRI) programme are eligible for direct entry to this course on completion of the prerequisite course. For all other students, departmental approval is required and a concession request must be submitted when applying to enrol in this course.

Access to a clinical MRI department is highly recommended.

Course Delivery

The course is delivered fully online by distance via the University of Auckland's learning management system 'Canvas'. It will incorporate a range of learning approaches including videos, webpages, links to the library databases and resources, and utilising online technologies to promote shared learning opportunities.

Students are urged to discuss privately any impairment-related requirements face-to-face and/or in written form with the Course Coordinator.

Workload and contact hours

The total expected workload for this course is approximately **150 hours**. This may be broken down as follows:

- Set readings relevant to MRI theory (40 hours)
- Other resources provided on Canvas e.g. videos, websites (10 hours)
- Assignments and self-directed learning (100 hours)

Communication

All official communication to a student will be sent to the student's current University email address (username@aucklanduni.ac.nz) and the student is responsible for ensuring that any desired forwarding to other addresses is in place and operating correctly. Staff will not be responsible for any consequences if students fail to read and respond to University correspondence in a timely manner.

Students are encouraged to use the course discussion forum as much as possible for communication with staff and other students. Email may be used for more private matters. Staff will endeavour to respond to email queries as soon as possible.

Course Textbook

The **required textbook** for this course is:

MRI: From picture to proton (3rd ed.)
Donald McRobbie, Elizabeth Moore and Martin Graves
Cambridge, UK : Cambridge University Press c2017

A large selection of readings and other resources will be able to be accessed online via the course website and the Philson Library databases.

Assessment

An aggregated mark of 50% or more is required to successfully pass this course. Resubmission of failed assessments is not permitted.

Penalties for excessive word count and/or late submission (without prior written approval for an extension) will be applied in accordance with the 'Medical Imaging Assessment Requirements and Presentation Criteria' document.

The following is indicative of the type of assessments to be completed for this course:

- Quality Assurance Written Assessment 20%
- PeerWise MCQs 20%
- Applied Physics Assessment 30%
- Physics Assessment 30%

Academic Integrity

The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting his or her learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the world-wide web. All students' assessed work will be reviewed against electronic source material using computerised detection mechanisms.

Student Feedback

Assessments will be marked, moderated and returned within 3 weeks of submission, with the possible exception of the last course assessment which will be returned after the Board of Examiners meeting. Feedback will be provided on all assessments in the form of a marking rubric and/or individual or class comments. This feedback will be accessed via email or Canvas as identified by the Course Coordinator.

At the end of this course, feedback from students may be requested in the form of an online course evaluation survey.

Disclaimer

Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to alteration.

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