

MEDIIMAGE 710

CT IMAGING TECHNOLOGY

15 points
Semester 1, 2018

Course Description

Provides students with an in-depth understanding of CT technology and its application. The course addresses the scientific principles of the modality including image formation and reconstruction, technical parameters, radiation safety and dose reduction, image quality, artefacts, quality assurance and contrast agents. Equipment developments and new and evolving techniques will be examined.

Objectives of the Course

This course aims to provide students with specialised theoretical knowledge and an understanding of the underlying scientific principles of CT technology. Students will develop the ability to apply this knowledge in the safe use of CT equipment for clinical and/or research purposes. This course will critically examine the selection of technical parameters and their relationship to image quality and to the use of sophisticated techniques in the acquisition of CT images.

Learning Outcomes

1. Demonstrate an understanding of theoretical concepts relating to CT technology.
2. Critically discuss specific issues relating to bio-effects, radiation safety and dose reduction within the CT environment.
3. Analyse and integrate the principles and technology of CT to enable image optimisation.
4. Critically evaluate the technical and diagnostic quality of a range of CT images.
5. Evaluate the importance of quality assurance and explain the associated impact on safety and image quality.
6. Critically discuss current developments in CT technology and explore recent literature in relation to emerging initiatives.

Teaching Staff



Catherine Lyman
Course Coordinator
Email: c.lyman@auckland.ac.nz

Programme and Course Advice

This course is a compulsory course within the PGCertHSc(Medical Imaging – CT pathway) programme.

Students enrolled in the PGDipHSc/PGCertHSc (Medical Imaging) programmes may choose this course to contribute 15 points towards the MEDIIMAGE/CLINIMAG point requirements.

Students from the PGDipHSc(MRI) and PGCertHSc (Mammography) programmes may choose this course as an elective. Students from the PGDipHSc (Medical Imaging – Nuclear Medicine pathway) programme are encouraged to choose this course as their elective.

All Medical Imaging Technologists and students admitted to any one of the above programmes are eligible for direct entry to this 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 CT 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 CT theory (30 hours)
- Other resources provided on Canvas e.g. videos, websites (20 hours)
- Assignments and self-directed learning (100 hours)

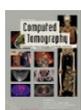
Communication

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.

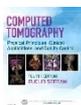
Course Textbook

The **recommended textbooks** for this course is:



Computed tomography: Fundamentals, system technology, image quality, applications (3rd ed.)

Willi Kalender, Erlangen: Publicis Corporate Pub. c2011



Computed tomography: physical principles, clinical applications, and quality control (4th ed.)

Euclid Seeram, St. Louis, Missouri: Elsevier. 2016

These books are both available in hardcopy from the Philson Library. In addition, a large selection of other readings and resources will be able to be accessed online via the course website and the Philson Library databases.

Pre-course Reading

It is highly recommended that students access the online textbook '**Medical imaging technology**' (2014) by Mikla and Mikla via the Philson Library and read 'Chapter 2: Computed Tomography' as pre-reading for this course. This will be assumed prior knowledge when you begin the course.

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:

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| • Written Assessment | 30% |
| • MCQ Test | 10% |
| • Short Answer Questions | 30% |
| • Critical Review Essay | 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.

