BMEN90021 Medical Imaging

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 48 hours Total Time Commitment: 120 hours
Prerequisites:	Prerequisite for this subject is:

Subject	Study Period Commencement:	Credit Points:
BMEN30006 Fundamentals of Biosignals	Semester 1	12.50

OR

equivalent

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Anti-requisites for this subject are: **(../../view/2010/BMEN40006)**

Subject	Study Period Commencement:	Credit Points:
BMEN90005 Neuroimaging Methods and Applications	Not offered 2011	12.50
BMEN40006 Neuroimaging Methods	Not offered 2011	12.50

Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Coordinator:	Dr Leigh Johnston
Contact:	Dr. David Grayden Email: **grayden@unimelb.edu.au (mailto:grayden@unimelb.edu.au)**
Subject Overview:	This subject introduces students to the engineering, physics and physiology of medical imaging, including the history and progression of medical imaging modalities as well as emerging imaging technologies in clinical and research practise. Topics covered include: x-ray, computed tomography, positron emission tomography, magnetic resonance imaging and ultrasound.

Objectives:	On successful completion of this subject, students should be able to:
	  # Describe the principles of the modalities of medical imaging systems;
	  # Describe the physics and physiology fundamental to these imaging systems;
	  # Apply the mathematics of each imaging modality;

	# Compute image reconstructions using back-projection methods; # Compute image reconstructions using fourier transform methods; # Identify basic causes of image contrast and artefacts; # Describe clinical applications of each imaging modality; # Apply their knowledge to understanding emerging medical imaging technologies.
Assessment:	One mid-semester examination of one hour duration (20%); Four laboratory assignments based upon projects using MATLAB due throughout weeks 4-12 (40%); One end-of-semester examination of two hours duration (40%);
Prescribed Texts:	TBA
Recommended Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# Ability to apply knowledge of science and engineering fundamentals # Ability to undertake problem identification, formulation, and solution # Ability to utilise a systems approach to complex problems and to design and operational performance # Proficiency in engineering design # Ability to conduct an engineering project # Ability to communicate effectively, with the engineering team and with the community at large # Ability to manage information and documentation # Capacity for creativity and innovation # Capacity for lifelong learning and professional development
Related Course(s):	Bachelor of Engineering (Biomedical)Biosignals Master of Biomedical Engineering
Related Majors/Minors/ Specialisations:	Master of Engineering (Biomedical)