

BMEN40006 Neuroimaging Methods

Credit Points:	12.50
Level:	4 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: Thirty-Six hours (24 hours of lectures and 12 hours of tutorials/supervised computer-based laboratory sessions). Total Time Commitment: Estimated 120 hours
Prerequisites:	431-336 Neurons; from action potential to learning, 431-325 Stochastic Signals and Systems.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
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:	Prof Anthony Burkitt
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Subject Overview:	This subject introduces students to modelling and analysis techniques used in brain image research, based on magnetic resonance imaging (MRI) data. The course will include: introduction to Matlab programming; basic techniques for analysing structural, functional and diffusion MR images; techniques for modelling functional MR time series datasets.
Objectives:	The course objectives are to train students in the principles and practice of modelling and analysing MRI data in the context of neuroscience research. The course will provide students with a detailed understanding of MRI image processing, including structural, functional and diffusion MR data. Students will be instructed in the use of MatLab for image analysis, and will utilise this understanding to complete three computerbased projects.
Assessment:	One 2-hour examination (50%); Two computer laboratory projects (20% each); One class presentation (5%) and one written report (5%).
Prescribed 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:	<ul style="list-style-type: none"># Ability to apply knowledge of basic science and engineering fundamentals;# Ability to communicate effectively, not only with engineers but also with the community at large;# Ability to undertake problem identification, formulation and solution;# Ability to utilise a systems approach to design and operational performance.# Ability to function effectively as an individual and in multi-disciplinary teams, with the capacity to be a leader or manager as well as an effective team leader.# Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development# Understanding of professional and ethical responsibilities and commitment to them# Capacity for independent critical thought, rational inquiry and self-directed learningprofound respect for truth and intellectual integrity and for the ethics of scholarship
Related Course(s):	Bachelor of Engineering (Biomedical)Biosignals