## 745-BM Master of Biomedical Engineering

Year and Campus:	2009
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Graduate/Postgraduate
Duration & Credit Points:	
Contact:	Course Advisor Lisa Hayes E: I.hayes@unimelb.edu.au Faculty of Engineering Rebecca Randall E: r.randall@unimelb.edu.au
Course Overview:	The Master of Biomedical Engineering is designed to provide students from engineering and the quantitative science disciplines with a transition pathway to the exciting and growing field of biomedical engineering. Rapid advances in our understanding of the building blocks of life, of basic cellular processes, of new biomaterials and the widespread availability of high speed computers, has led to the current revolution in the biomedical sciences and medicine. There is a growing demand for people with strong mathematical and problem-solving skills to be part of multidisciplinary teams. This has traditionally been the role of the engineer or the physical scientist. However, those with strong mathematical ability and physical insight have often had limited exposure to the biological and health sciences. This course will facilitate a transition to the biological and health sciences through a series of subjects that: # reinforce key understanding of physical processes in the context of biological systems, # serve to orient the student in the biological sciences so as to undertake further self directed learning, and # provide in-depth understanding in a selected number of subjects.
Objectives:	<ul> <li>That a graduate of the program should:</li> <li># have a sound fundamental understanding of the scientific principles underlying technology and the ability to apply these to problems in medicine and biology;</li> <li># possess a broad knowledge base of their chosen discipline and of other disciplines so as to facilitate effective communication with other professionals with whom engineers routinely communicate;</li> <li># have acquired the mathematical and computational skills necessary for the solution of theoretical and practical problems and the ability to interpret the results in the appropriate biomedical context;</li> <li># possess analytical, problem-solving and, where relevant, design skills, appropriate for living systems;</li> <li># have verbal and written communication skills that enable them to contribute substantially to society;</li> <li># have acquired a sense of professional ethics and responsibility towards the profession and the community;</li> <li># understand the social, cultural, global responsibilities of the professional engineer</li> </ul>
Course Structure & Available Subjects:	-
Subject Options:	The course consists of eight subjects. You may, with written permission from your academic co-ordinator, substitute one or more of the non-core subjects with appropriate masters subjects from other faculties in the University. If you are particularly interested in an elective subject please contact the Faculty of Engineering before coming to do the course to ensure that this subject will be offered during the time of your program. <b>Core subjects</b> (25 points)

	Subject	Study Period Commencement:	Credit Points:	
	421-698 Biomedical Engineering	Semester 1	12.500	
	421-693 Anatomy & Physiology for Engineers	Semester 2	12.500	
	Elective subjects (75 points)	·		
	Subject	Study Period Commencement:	Credit Points:	
	421-631 Neuroimaging Methods and Applications	Semester 1	12.500	
	421-692 Biological Systems Engineering	Not offered 2009	12.500	
	421-699 Forces, Fields and Flows in Bio Systems	Semester 1	12.500	
	433-650 Computational Gene Expression	Not offered 2009	12.500	
	431-671 Auditory Processing and Hearing Bionics	Semester 2	12.500	
	431-672 Neural Information Processing	Semester 1	12.500	
	431-673 Clinical Engineering	Semester 2	12.500	
	421-615 Neuroimaging Modelling and Analysis	Not offered 2009	12.500	
	436-570 Musculoskeletal Biomechanics	Not offered 2009	12.500	
	433-651 Computational Genomics	Semester 1	12.500	
	411-651 Tissue Engineering	Semester 2	12.500	
	411-652 Bionano Engineering	Semester 2	12.500	
Entry Requirements:	Academic Requirements			
	A four-year degree in Engineering or a Science honours degree including mathematics and chemistry or equivalent, normally with an average grade of at least H2B (70%) (University of Melbourne equivalent) <b>or</b> A three-year degree in an Engineering or Science related discipline, or equivalent, and a Postgraduate/Graduate Diploma in Engineering normally with an average grade of at least 70% (University of Melbourne equivalent) or with two years documented relevant work experience or other postgraduate experience to be assessed on a case-by-case basis			
	Language Requirements			
	International students and students whose prior qualifications are from a university overseas where English is not the official language of instruction and examination need to supply proof of academic English language competency.			
	Proof acceptable to the University includes:			
	Original evidence of an English Language test score at a sitt either -	ing within the last 24 mc	onths of	
	<b>TOEFL</b> - at least 577 and a TWE of at least 4.5 (paper base an Essay Rating of at least 4.5 (computer based) or <b>IELTS</b> - at least 6.5. (A minimum band score of 6 is required	d) or a TOEFL of at leas	t 233 with 1 module).	
	Entry under a slightly lower Engineering alternative * English available as follows:	a Language entry require	ement is	
	<b>TOEFL</b> - at least 550, with a TWE of 4 or the computer base Essay Rating Score of at least 4 and agreeing in writing to u in the first semester of study at The University of Melbourne	ed TOEFL of at least 213 ndertake and pass an E	with an SL subject	

or

	<ul> <li><b>IELTS</b> - at least 6 and agreeing in writing to undertake and pass an ESL subject in the first semester of study at the University of Melbourne.</li> <li>* The Faculty of Engineering's English Language alternative may affect the duration and cost of your program.</li> </ul>
Core Participation Requirements:	-
Further Study:	-
Graduate Attributes:	-
Generic Skills:	-
Notes:	<ul> <li># Students with appropriate results will be permitted to convert their Master of Biomedical Engineering studies to a Master of Engineering Science or a Master of Applied Science by adding a semester of research.</li> <li># Students with insufficient academic background in Chemistry and Mathematics who wish to move into this area may be given this opportunity by taking some additional fundamental subjects through a Masters Preliminary program before commencing the masters.</li> </ul>