

745-BM Master of Biomedical Engineering

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| Year and Campus: | 2008 |
| Fees Information: | Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees |
| Level: | Graduate/Postgraduate |
| Duration & Credit Points: | |
| Contact: | <p>Course Advisor</p> <p>Lisa Hayes E: l.hayes@unimelb.edu.au</p> <p>Faculty of Engineering Rebecca Randall E: r.randall@unimelb.edu.au</p> |
| Course Overview: | <p>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.</p> <p>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.</p> <p>This course will facilitate a transition to the biological and health sciences through a series of subjects that:</p> <ul style="list-style-type: none"> # 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: | <p>That a graduate of the program should:</p> <ul style="list-style-type: none"> # have a sound fundamental understanding of the scientific principles underlying technology and the ability to apply these to problems in medicine and biology; # 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; # 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; # possess analytical, problem-solving and, where relevant, design skills, appropriate for living systems; # have verbal and written communication skills that enable them to contribute substantially to society; # have acquired a sense of professional ethics and responsibility towards the profession and the community; # understand the social, cultural, global responsibilities of the professional engineer |
| Course Structure & Available Subjects: | - |
| Subject Options: | <p>The course consists of eight subjects.</p> <p>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.</p> <p>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.</p> <p>Core subjects (25 points)</p> |

| Subject | Study Period Commencement: | Credit Points: |
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| 421-698 Biomedical Engineering | Semester 1 | 12.50 |
| 421-693 Anatomy & Physiology for Engineers | Semester 2 | 12.50 |

Elective subjects (75 points)

| Subject | Study Period Commencement: | Credit Points: |
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| 421-631 Neuroimaging Methods and Applications | Semester 1 | 12.50 |
| 421-692 Biological Systems Engineering | Semester 2 | 12.50 |
| 421-699 Forces, Fields and Flows in Bio Systems | Semester 1 | 12.50 |
| 433-650 Computational Gene Expression | Semester 2 | 12.50 |
| 431-671 Auditory Processing and Hearing Bionics | Semester 2 | 12.50 |
| 431-672 Neural Information Processing | Semester 1 | 12.50 |
| 431-673 Clinical Engineering | Semester 2 | 12.50 |
| 421-615 Neuroimaging Modelling and Analysis | Semester 2 | 12.50 |
| 436-570 Musculoskeletal Biomechanics | Not offered 2008 | 12.500 |
| 433-651 Computational Genomics | Semester 1 | 12.50 |
| 411-651 Tissue Engineering | Semester 2 | 12.50 |
| 411-652 Bionano Engineering | Semester 2 | 12.50 |

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)

or

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 sitting within the last 24 months of either -

TOEFL - at least 577 and a TWE of at least 4.5 (paper based) or a TOEFL of at least 233 with an Essay Rating of at least 4.5 (computer based)

or

IELTS - at least 6.5. (A minimum band score of 6 is required in the Academic Writing module).

Entry under a slightly lower Engineering alternative * English Language entry requirement is available as follows:

TOEFL - at least 550, with a TWE of 4 or the computer based TOEFL of at least 213 with an Essay Rating Score of at least 4 and agreeing in writing to undertake and pass an ESL subject in the first semester of study at The University of Melbourne

or

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| | <p>IELTS - 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.</p> <p>* The Faculty of Engineering's English Language alternative may affect the duration and cost of your program.</p> |
| Core Participation Requirements: | - |
| Further Study: | - |
| Graduate Attributes: | - |
| Generic Skills: | - |
| Notes: | <ul style="list-style-type: none"> # 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. # 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. |