

## 745BM Master of Biomedical Engineering

<b>Year and Campus:</b>	2015
<b>CRICOS Code:</b>	053354B
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Level:</b>	Graduate/Postgraduate
<b>Duration &amp; Credit Points:</b>	100 credit points taken over 12 months
<b>Coordinator:</b>	Assoc Prof David Grayden
<b>Contact:</b>	Melbourne School of Engineering Ground Floor, Old Engineering (Building 173)  Current Students: Email: <a href="mailto:13MELB@unimelb.edu.au">13MELB@unimelb.edu.au</a> (mailto:13MELB@unimelb.edu.au) Phone: 13 MELB (13 6352) +61 3 9035 5511
<b>Course Overview:</b>	<p><b>THE COURSE STRUCTURE BELOW ONLY APPLIES TO RE- ENROLLING STUDENTS WHO COMMENCED THEIR STUDIES PRIOR TO 2012</b></p> <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"> <li># reinforce key understanding of physical processes in the context of biological systems,</li> <li># serve to orient the student in the biological sciences so as to undertake further self directed learning, and</li> <li># provide in-depth understanding in a selected number of subjects.</li> </ul>
<b>Learning Outcomes:</b>	<p>That a graduate of the program should:</p> <ul style="list-style-type: none"> <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>
<b>Course Structure &amp; Available Subjects:</b>	<b>THERE IS NO FURTHER ENTRY INTO THIS COURSE.</b>

	<p>The course consisted of eight subjects. Student who have not yet completed the requirements of the Master of Biomedical Engineering should see a course adviser.</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>																																																
<b>Subject Options:</b>	<p><b>Core subjects (62.5 points)</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BMEN90015 Biomedical Engineering</td> <td>Not offered 2015</td> <td>12.50</td> </tr> <tr> <td>BMEN90003 Clinical Engineering</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>BMEN90023 Biomaterials</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>BMEN90020 Biomedical Design and Regulation</td> <td>Not offered 2015</td> <td>12.50</td> </tr> <tr> <td>BMEN90019 Biomedical Engineering Management</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p><b>Elective subjects (37.50 points)</b></p> <p><b>Biomedical Engineering Electives</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BMEN90002 Neural Information Processing</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>COMP90016 Computational Genomics</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>COMP90014 Algorithms for Functional Genomics</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>BMEN90011 Tissue Engineering &amp; Stem Cells</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>BMEN90012 Soft Matter Engineering</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>BMEN90014 Biomedical Engineering Research Project</td> <td>Not offered 2015</td> <td>12.50</td> </tr> <tr> <td>BMEN90021 Medical Imaging</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>BMEN90022 Computational Biomechanics</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>BMEN90024 Human Impact &amp; Forensic Biomechanics</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>Note: BMEN90014 Biomedical Engineering Research Project can only be taken once a student has successfully completed four subjects. Approval to do the subject must be received from the Course Coordinator</p>	Subject	Study Period Commencement:	Credit Points:	BMEN90015 Biomedical Engineering	Not offered 2015	12.50	BMEN90003 Clinical Engineering	Semester 2	12.50	BMEN90023 Biomaterials	Semester 2	12.50	BMEN90020 Biomedical Design and Regulation	Not offered 2015	12.50	BMEN90019 Biomedical Engineering Management	Semester 1	12.50	Subject	Study Period Commencement:	Credit Points:	BMEN90002 Neural Information Processing	Semester 2	12.50	COMP90016 Computational Genomics	Semester 1	12.50	COMP90014 Algorithms for Functional Genomics	Semester 2	12.50	BMEN90011 Tissue Engineering & Stem Cells	Semester 2	12.50	BMEN90012 Soft Matter Engineering	Semester 1	12.50	BMEN90014 Biomedical Engineering Research Project	Not offered 2015	12.50	BMEN90021 Medical Imaging	Semester 1	12.50	BMEN90022 Computational Biomechanics	Semester 2	12.50	BMEN90024 Human Impact & Forensic Biomechanics	Semester 1	12.50
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<b>Entry Requirements:</b>	<b>There is no further entry into this course .</b>																																																
<b>Core Participation Requirements:</b>	<p>For the purposes of considering a request for Reasonable Adjustments under the Disability Standards for Education (Cwlth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this course 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: <a href="http://www.services.unimelb.edu.au/disability">http://www.services.unimelb.edu.au/disability</a></p>																																																
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<b>Graduate Attributes:</b>	The Melbourne School of Engineering has mapped the University of Melbourne graduate attributes with Engineers Australia graduate attributes and Melbourne School of Engineering graduate attributes.
<b>Generic Skills:</b>	<p>On completion of this subject, the students should have developed:</p> <ul style="list-style-type: none"> <li># Ability to apply knowledge of science and engineering fundamentals</li> <li># Ability to undertake problem identification, formulation, and solution</li> <li># Understanding of social, cultural, global, and environmental responsibilities and the need to employ principles of sustainable development</li> <li># Ability to utilise a systems approach to complex problems and design to a specified operational performance</li> <li># Proficiency in engineering design</li> <li># Ability to conduct an engineering project</li> <li># Understanding of the business environment</li> <li># Ability to communicate effectively, with the engineering team and with the community at large</li> <li># Ability to manage information and documentation</li> <li># Capacity for creativity and innovation</li> <li># Understanding of professional and ethical responsibilities, and commitment to them</li> <li># Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member</li> <li># Capacity for lifelong learning and professional development</li> </ul>