

Master of Engineering (Biomedical)

Year and Campus:	2012
Coordinator:	Assoc Prof David Graydengrayden@unimelb.edu.au
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Overview:	<p>Biomedical engineers bridge the gap between technology, medicine and biology. Within this specialisation, students choose to focus on areas including biomechanical engineering, bioengineering, bio-informatics, bio-cellular engineering, biosignals, neuro-engineering or clinical engineering.</p> <p>Students also benefit from the high standing of services provided by, the University and the School of Engineering for biomedical innovation.</p>
Objectives:	To produce graduates who are both skilled in biomedical engineering principles and have the ability to apply them to complex, open-ended engineering tasks and problems.
Structure & Available Subjects:	<p>The Master of Engineering (Biomedical) consists of 300 points of study - 200 points core plus 100 points elective subjects as listed below.</p> <p>Advanced standing will be awarded for equivalent subjects taken in prior study to applicants on the following basis:</p> <ul style="list-style-type: none"> # a maximum of 100 points for applicants with a 4 year Bachelor of Engineering or equivalent. # a maximum of 100 points for applicants with a 3 year undergraduate degree. Students entering with a three year bachelor degree must complete at least 200 points of study within the Masters of Engineering. In cases where applicants have completed the equivalent of more than 100 points of core masters subjects, discipline specific electives must be taken to fulfill the 200 minimum masters study requirement. <p>Note: applicants from the University of Melbourne with:</p> <ul style="list-style-type: none"> # An appropriate "Engineering System" major will receive 100 points of advance standing. Applicants who have completed more than 100 points of core subjects in their undergraduate degree will obtain exemption for the cores taken but will need to replace the points in excess of 100 points with elective subjects. # Engineering breadth sequences (including those in the Bachelor of Commerce) will receive advanced standing to a maximum of 100 points.
Subject Options:	<p>Total 300 point - 200 points core (compulsory) plus 100 points elective subjects from the list below. Students must complete all 300 points of subjects, including all core subjects, or have advanced standing or exemption.</p> <p>The core and elective subjects are those listed below. The order of subjects below is one way of progressing through the course - students who meet subject requisites may tailor their individual study plan to take into account advanced standing and their preferred study load. Students plan their study on-line; however, Melbourne School of Engineering course advisors are available to assist students with individual study plans.</p> <p>Suggested first 100 points:</p>

Suggested study plan for first 100 points:

- # 87.5 points Core
- # 12.5 points Biomedical Science elective from the list below

Core (87.5 points)

Subject	Study Period Commencement:	Credit Points:
MAST20029 Engineering Mathematics	Summer Term, Semester 1, Semester 2	12.50
ENGR90021 Engineering Communication	Semester 1, Semester 2	12.50
COMP20005 Engineering Computation	Semester 1, Semester 2	12.50
BMEN30005 Biomechanics and Biotransport	Semester 1	12.50
BMEN30006 Fundamentals of Biosignals	Semester 1	12.50
BMEN30007 Biocellular Systems Engineering	Semester 2	12.50
BMEN30008 Biosystems Design	Semester 2	12.50

Suggested second 100 points:**Suggested study plan for the second 100 points:**

- # 37.5 points Core,
- # 50 points Bioengineering Electives
- # 12.5 points Approved Electives from the lists below

Core (Total 37.5 points)

Subject	Study Period Commencement:	Credit Points:
ELEN90055 Control Systems	Semester 1	12.50
ELEN90054 Probability and Random Models	Semester 1	12.50
BMEN90023 Biomaterials	Semester 2	12.50

Suggested third 100 points:**Core (Total 75 points)**

Subject	Study Period Commencement:	Credit Points:
BMEN90018 Research/Industry Project	Year Long, Semester 1, Semester 2	25
BMEN90017 Biomedical Engineering Design Project	Semester 2	25
BMEN90020 Biomedical Design and Regulation	Semester 1	12.50
BMEN90019 Biomedical Engineering Management	Semester 1	12.50

Biomedical Science Elective

Total 12.5 points

Students with a background in Chemistry must take the **BIOL10004** ([../view/2011/BIOL10004](#)) elective. Students with a background in Biology must take the **CHEM10003** ([../view/2011/CHEM10003](#)) elective.

Subject	Study Period Commencement:	Credit Points:
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CHEM10003 Chemistry 1	Semester 1, Semester 2	12.50
BIOL10004 Biology of Cells and Organisms	Semester 1	12.50

Bioengineering Electives

Total 50 points

Students should take two pairs of subjects in the same study area:

- # Tissue Engineering & Stem Cells and Bionanoengineering
- # Computational Genomics and Algorithms for Functional Genomics
- # Human Impact & Forensic Biomechanics and Computational Biomechanics
- # Medical Imaging and Neural Information Processing

Subject	Study Period Commencement:	Credit Points:
BMEN90011 Tissue Engineering & Stem Cells	Semester 2	12.50
COMP90016 Computational Genomics	Semester 1	12.50
BMEN90021 Medical Imaging	Semester 1	12.50
COMP90014 Algorithms for Functional Genomics	Semester 2	12.50
BMEN90002 Neural Information Processing	Semester 2	12.50
BMEN90022 Computational Biomechanics	Semester 2	12.50
BMEN90024 Human Impact & Forensic Biomechanics	Semester 1	12.50
BMEN90012 Bionanoengineering	Semester 2	12.50

Approved Electives

Total 37.5 points

Students must take 37.5 points in total of approved electives.

An approved elective is any postgraduate level subject or third-year undergraduate subject. Note all students must meet any requisite prior to enrolling in a subject. Students may need written permission to add subjects from other faculties.

Links to further information:	http://www.eng.unimelb.edu.au/Postgrad/MEng/me_biomedical.html
Related Course(s):	Master of Engineering