Master of Engineering (Biomedical with Business)

Year and Campus:	2015
Coordinator:	Assoc Prof David Grayden
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Overview:	Biomedical engineers with Business bridge the gap between technology, medicine and biology. Within this specialisation, students choose to focus on areas including biomechanical engineering, bioengineering, bioinformatics, biocellular engineering, biosignals, neuroengineering or clinical engineering. Graduates are sought with strong analytical and engineering management skills who will be able to be employed in a variety of industries in roles ranging from research-and-development to project management and finance. Students also benefit from the high standing of services provided by the University and the School of Engineering for biomedical innovation.
Learning Outcomes:	To produce graduates who are skilled in biomedical engineering principles and business have the ability to apply them to complex, open-ended engineering tasks and problems.
Structure & Available Subjects:	The Master of Engineering (Biomedical with Business) consists of 300 points of study - 250 points core plus 50 points elective subjects as listed below. Advanced standing will be awarded for equivalent subjects taken in prior study to applicants on the following basis: # 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 fulfil the 200 minimum masters study requirement. Note: applicants from the University of Melbourne with: # An appropriate “Engineering System” major will receive 100 points of advanced 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:	Total 300 point - 250 points core (compulsory) plus 50 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. 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 study load. Students plan their study online; however, Melbourne School of Engineering course advisors are available to assist students with individual study plans. Suggested first 100 points: **Suggested first 100 points:** *Suggested study plan for the 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
BMEN20001 Biomechanical Physics & Computation	Semester 1	12.50
BMEN30005 Introduction to Biomechanics	Semester 1	12.50
BMEN30006 Circuits and Systems	Semester 1	12.50
BMEN30007 Biotransport Processes	Semester 2	12.50
BMEN30008 Biosystems Design	Semester 2	12.50
ENGR90021 Engineering Practice and Communication	Semester 1, Semester 2	12.50

Suggested second 100 points:

Suggested study plan for the second 100 points:

75 points Core
25 points Bioengineering Electives

Core (Total 75 points)

Subject	Study Period Commencement:	Credit Points:
ELEN30009 Electrical Network Analysis and Design	Semester 1	12.50
BMEN90026 Clinical Trials and Regulations	Semester 1	12.50
BMEN90023 Biomaterials	Semester 2	12.50
ENGM90014 The World of Engineering Management	Semester 1, Semester 2	12.50
ENGM90006 Engineering Contracts and Procurement	Semester 2	12.50
BMEN90028 Anatomy and Physiology for Engineers	Semester 2	12.50

Suggested third 100 points

Suggested study plan for the third 100 points:

62.5 points Core
25 points Biomedical Research Project Elective
12.5 points Bioengineering Electives

Core (62.5 points)

Subject	Study Period Commencement:	Credit Points:
BMEN90017 Biomedical Engineering Design Project	Semester 2	25
ENGM90013 Strategy Execution for Engineers	Semester 1, Semester 2	12.50
ENGM90012 Marketing Management for Engineers	Semester 2	12.50
ENGM90011 Economic Analysis for Engineers	Semester 1	12.50

25 points Biomedical Engineering Reseach Project
Students must complete one of the following capstone projects

Subject	Study Period Commencement:	Credit Points:
BMEN90018 Biomedical Engineering Capstone Project	Year Long, Semester 1, Semester 2	25

BMEN90025 Biomedical Eng Capstone Project A	Semester 1, Semester 2	12.50

Note: Enrolment in BMEN90025 Biomedical Eng Capstone Project A is subject to approval from the subject coordinator. BMEN90025 Biomedical Eng Capstone Project A is of year-long duration, students commence this subject in Semester 2 and continue in the consecutive semester (Semester 1 in the following year). Upon successful completion of this project, students will receive 25 points credit.

Biomedical Science Elective

Total 12.5 points

Students with a background in Chemistry must take the BIOL10004 elective. Students with a background in Biology must take the CHEM10003 elective.

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

Bioengineering Electives

Total 37.5 points
Students are encouraged to take two subjects in one area of study.
Tissue Engineering & Stem Cells and Soft Matter Engineering
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
BMEN90012 Soft Matter Engineering	Semester 1	12.50
BMEN90002 Neural Information Processing	Semester 2	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
COMP90014 Algorithms for Functional Genomics	Semester 2	12.50
COMP90016 Computational Genomics	Semester 1	12.50

Related Course(s):	Master of Engineering