

MC-ARCHENG Master of Architectural Engineering

Year and Campus:	2016 - Parkville
CRICOS Code:	089660F
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Graduate/Postgraduate
Duration & Credit Points:	450 credit points taken over 42 months full time. This course is available as full or part time.
Coordinator:	Dr. Dominik Holzer dominik.holzer@unimelb.edu.au
Contact:	<p>Melbourne School of Design</p> <p>Currently enrolled students:</p> <ul style="list-style-type: none"> • General information: https://ask.unimelb.edu.au (https://ask.unimelb.edu.au) • Email: enquiries-STEM@unimelb.edu.au (mailto:enquiries-STEM@unimelb.edu.au) <p>Future students:</p> <ul style="list-style-type: none"> • Further information: http://msd.unimelb.edu.au/ (http://msd.unimelb.edu.au/) • Email: http://msd.unimelb.edu.au (http://msd.unimelb.edu.au)
Course Overview:	<p>The Master of Architectural Engineering will produce graduates with a capacity to operate across the complementary disciplines of Architecture and Engineering. This program is distinct in its ambition to achieve dual accreditation and provide pathways to both professions.</p> <p>Master of Architectural Engineering students will be taught by staff from the Melbourne School of Engineering and the Faculty of Architecture, Building and Planning. The two main areas of study will be investigated via discipline-based subjects, while the linkages between the two will be explored via a dedicated architectural engineering capstone/thesis subject.</p> <p>Students entering via an undergraduate major in architecture will initially complete an 8 subject sequence in engineering. Students entering from engineering major will complete an 8 subject sequence in architecture. At the completion of first year, both groups will commence a shared second year sequence.</p> <p>Note: All students will enter the course with 100 points advanced standing for either the architecture or engineering first year sequence of subjects (depending on their background). i.e. Engineering graduates will be granted advanced standing for the engineering first year subjects; Architecture graduates will be granted advanced standing for the architecture first year subjects.</p>
Learning Outcomes:	<p>On the successful completion of the Master of Architectural Engineering students should have:</p> <p>Knowledge:</p> <ul style="list-style-type: none"> # Advanced knowledge of the principles of engineering underpinning the provision of infrastructure. # Advanced knowledge of design based on architectural history, theory and contemporary practice. # Knowledge of current practice contexts, including environmental, technological, regulatory and project-delivery systems. # A knowledge of research and design-research methodologies and methods, including empirical and advanced research methods drawn from the sciences and humanities relevant to the disciplines of architecture and civil engineering. <p>Skills</p> <ul style="list-style-type: none"> # The cognitive and creative skills to develop and evaluate a design concept that demonstrates the exercise of theoretical reflection, critical choice, imagination and professional responsibility, through the exploration, testing and refinement of different technical and aesthetic alternatives. # Technical and communication skills to design, evaluate, implement, analyse, theorise about developments that contribute to professional practice or scholarship in the fields of engineering and architecture # The technical and creative skills to produce output that demonstrates an appreciation of economic factors, environmental issues, social and cultural issues, building systems and materials.

- # The technical research skills to justify and interpret theoretical propositions, methodologies, conclusions, professional and business decisions to specialist and non-specialist audiences
- # The skills to generate design and contractual documentation that clearly conveys information to both specialist and non-specialist audiences and that enables a project to be realised.
- # Development of skills in research principles and methods relevant to engineering and architecture
- # Cognitive, technical and creative skills to investigate, analyse and synthesise complex information, problems, concepts and theories and to apply established theories to different bodies of knowledge or practice related to architecture and engineering

Application of knowledge and skills:

- # Demonstrate application of knowledge and skills in the fields of engineering and architecture, and an ability to operate effectively across the disciplines.
- # Use of cross-discipline knowledge to solve problems that span interdisciplinary space in professional practice
- # The ability to think strategically at different environmental and urban scales
- # The ability to establish and evaluate requirements and priorities in new project situations and contexts
- # The ability to work individually and collaboratively to prepare and deliver a project
- # The ability to prepare, structure, schedule, evaluate and deliver a substantial research or design research project.
- # Cognitive skills to demonstrate mastery of theoretical knowledge and to reflect critically on theory and professional practice of engineering and architecture.

Course Structure & Available Subjects:

All students are granted 100 points of advanced standing (appropriate for their background), and then must complete a further 350 points:

- # 100 points core in the first year, and
- # 250 points in second and third year, including 25 points Capstone Project.

Students entering via an undergraduate major in architecture will initially complete an 8 subject sequence in Engineering (100 points core, pathway for architecture graduates). Students entering from an engineering major will complete an 8 subject sequence in architecture (100 points core pathway for engineering graduates). At the completion of first year, all students commence a shared second year sequence.

Subject Options:

First year pathway for architecture graduates (core)

Students in this pathway must complete the following subjects (100 points):

Subject	Study Period Commencement:	Credit Points:
ENGR20004 Engineering Mechanics	0	12.5
ENGR20003 Engineering Materials	0	12.5
MAST20029 Engineering Mathematics	0	12.5
ENGR90021 Engineering Practice and Communication	0	12.5
ENEN20002 Earth Processes for Engineering	0	12.5
CVEN30009 Structural Theory and Design	0	12.5
CVEN30010 Systems Modelling and Design	0	12.5
ENGR30002 Fluid Mechanics	0	12.5

First year pathway for Engineering graduates (core)

Students in this pathway must complete the following subjects (100 points):

Subject	Study Period Commencement:	Credit Points:
ABPL90284 Master of Architecture Studio A	0	25

ABPL90285 Master of Architecture Studio B	0	25
ABPL90286 Construction Methods A	0	12.5
ABPL90287 Construction Methods B	0	12.5
ABPL90288 Architectural Cultures 1: Modernism	0	12.5
ABPL90289 Architectural Cultures 2:After Modernism	0	12.5

Common second and third year (core)

All students must complete the following subjects (250 points):

Subject	Study Period Commencement:	Credit Points:
CVEN90043 Sustainable Infrastructure Engineering	0	12.5
CVEN90044 Engineering Site Characterisation	0	12.5
CVEN90050 Geotechnical Engineering	0	12.5
CVEN90045 Engineering Project Implementation	0	12.5
CVEN90051 Civil Hydraulics	0	12.5
CVEN90049 Structural Theory and Design 2	0	12.5
CVEN90058 Construction Engineering	0	12.5
ABPL90120 Building Sustainability	0	12.5
CVEN90059 Integrated Design - Infrastructure	0	12.5
ABPL90142 Master of Architecture Studio C	0	25
ABPL90143 Master of Architecture Studio D	0	25
ABPL90115 Master of Architecture Studio E	0	25
ABPL90117 Twenty-first Century Architecture	0	12.5
ABPL90118 Applied Construction	0	12.5
ABPL90140 Architectural Practice	0	12.5
ABPL90390 Architectural Engineering Capstone	0	25

Entry Requirements:

The entry requirements for the Master of Architectural Engineering are:

For students coming from an Engineering undergraduate degree:

- # Completion of an undergraduate degree in Engineering with a minimum GPA of 65%
- # Meet the University of Melbourne's English language requirements (<http://futurestudents.unimelb.edu.au/admissions/entry-requirements/language-requirements> (<http://futurestudents.unimelb.edu.au/admissions/entry-requirements/language-requirements>))
- # Design Folio (it is recommended that in order to produce a folio, students undertake a second year Architecture design studio subject)
- # One Architectural History subject

For students coming from an Architecture undergraduate degree:

- # Completion of an undergraduate degree in Architecture with a minimum GPA of 65%
- # Maths attainment equivalent to Calculus 2 + Linear Algebra + two Science subjects
- # Design folio

Rationale: Maths requirements are necessary to ensure that students have the minimum requisites required to undertake engineering subjects. These requisites are also reflected in the single Master of Engineering degree.

As students will enter the degree with an Engineering or Architecture undergraduate major, students will be granted 100 points of advanced standing upon entry, meaning that the Master of Architectural Engineering will require the completion of only a further 350 points.

Master of Architectural Engineering

1. In order to be considered for entry applicants must have completed:

- # an undergraduate degree in an architecture or engineering discipline with a weighted average mark of at least H3 (65%), or equivalent; and
- # a design portfolio in a format as specified by the Selection Committee; and
- # a personal statement outlining relevant prior study and work experience, and motivation to undertake the course; and
- # at least 25 points of appropriate tertiary level Mathematics and at least 25 points of appropriate tertiary level Science.

Applicants who are completing pre-requisite subjects as single subject study in order to meet the Mathematics and/or Science entry requirements will be required to achieve a grade of at least H3 (65%) or equivalent in each individual prerequisite subject to satisfy this entry requirement.

Meeting these requirements does not guarantee selection.

2. In ranking applications, the Selection Committee will consider:

- # prior academic performance; and
- # the personal statement; and
- # the design portfolio.

3. The Selection Committee may seek further information to clarify any aspect of an application in accordance with the Academic Board rules on the use of selection instruments.

4. Applicants are required to satisfy the university's English language requirements for postgraduate courses. For those applicants seeking to meet these requirements by one of the standard tests approved by the Academic Board, performance band 6.5 is required.

Core Participation Requirements:

The Master of Architectural Engineering welcomes applications from students with disabilities. It is University and degree policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the degree. A candidate for the Master of Architectural Engineering must have abilities and skills which include the following : observation; communication; .motor ; conceptual, integrative, and quantitative; and behavioural and social. Adjustments can be provided to minimise the impact of a disability, however, particularly at Masters level, students need to be able to participate in programs in an independent manner and with regard to their safety and the safety of others.(i) Observation: Candidates must be able to read text, diagrams, maps, drawings and numerical data. Candidates should be able to observe details at a number of scales and to record useful observations of environmental contexts :(ii) Communication: Candidates should be able to communicate with fellow students, professional and academic staff, members of relevant professions and the public. Candidates must be able to communicate effectively and sensitively . Candidates should be able to clearly and independently communicate a knowledge and application of science, technology and engineering principles and practices during assessment tasks. Communication includes not only speech but also reading and writing, presenting one's own work in front of a large group, receiving and responding to feedback about one's own work in a public setting. Assessment in architecture design studio subjects will involve 'crits' where students present their own work in front of a large group, where they will receive and respond to feedback about their work in a public setting. Crits are an integral part of working in the industry and are an inherent requirement of the course.(iii) Motor: Candidates should have sufficient motor function to elicit information from environmental contexts. Off campus investigations may include visits to construction sites, urban, rural and/or remote environments. Candidates should have sufficient motor ability to prepare documentation of analytic texts, drawings and models of findings and for the preparation of proposals for environmental interventions via digital or other means. Candidates should have the ability to actively participate in appropriate site and/or design studio-based activities .(iv) Intellectual-Conceptual: Integrative and Quantitative Abilities: These abilities include measurement, calculation, reasoning, analysis, synthesis and, importantly, the ability to interpret results of such work . Problem resolution, the critical skill demanded of graduates, requires all of these intellectual abilities. In addition, given the disciplines pursued

	<p>in the SD, candidates should be able to comprehend three dimensional relationships and to understand the spatial relationships in environmental structures of a wide range of scales - from smaller than the individual through individual buildings and urban spaces to large geographic areas. The ability to comprehend complex science, technology and engineering related information Further, graduate study entails learning to master one's own abilities and skills and to deploy them strategically. This requires further developing skills in both reflective and reflexive thinking and being able to practice these skills.(v) Behavioural and Social Attributes: A candidate must possess behavioural and social attributes that enable them to participate in a complex learning environment. Students are required to take responsibility for their own participation and learning. They also contribute to the learning of other students in collaborative learning environments, demonstrating interpersonal skills and an understanding of the needs of other students . Assessment may include the outcomes of tasks completed in collaboration with other students. Assessment in architectural design studio subjects will involve 'crits' where students present their own work in front of a large group, where they will receive and respond to feedback about their work in a public setting. Grits are an integral part of working in the industry and are an inherent requirement of the course. In some areas of study, the ability to actively and safely contribute in clinical, laboratory, and fieldwork/excursion activities is required. There are additional inherent academic requirements for some subjects, and these requirements are listed within the description of the requirements for each of these subjects. Students who feel their disability will impact on meeting this requirement are encouraged to discuss this matter with the relevant Subject Coordinator and the Disability Liaison Unit:http://www.services.unimelb.edu.au/disability/</p>
Further Study:	<p>Graduates may progress to a wide range of other graduate coursework degrees as well as research higher degree programs, including the Doctor of Philosophy.</p>
Graduate Attributes:	<p>Students who complete the Master of Architectural Engineering will: Be able to address current and future issues that occupy the interdisciplinary space between the two professions. Use a grounding in history, theory and technology to create innovative designs that are relevant to time, place, people and culture Ability to manage professional practice and work within teams Ability to use resources materials and technology in a way that is responsible and sustainable Ability to draw on multi-disciplinary knowledge to show creativity and initiative to new situations in professional practice. High level personal autonomy and accountability Ability to plan and execute a substantial piece of scholarship. University of Melbourne Graduate Attributes Academically excellent Knowledgeable across disciplines Attuned to cultural diversity Active global citizens Leaders in communities</p>
Generic Skills:	<ul style="list-style-type: none"> # An ability to evaluate and synthesise research and professional literature # Advanced skills and techniques applicable to the areas of engineering and architecture # Well-developed problem-solving abilities, characterised by flexibility of approach # Advanced competencies in professional expertise and scholarship # A capacity to articulate their knowledge and understanding in oral and written presentations # An advanced understanding of the international context and sensitivities of professional practice in architecture and engineering # An appreciation of the design, conduct and reporting of original research # A capacity to manage competing demands on time, including self-directed project work # A profound respect for truth and intellectual integrity, and for the ethics of scholarship # An appreciation of the ways in which advanced knowledge equips the student to offer leadership # The capacity to value and participate in projects which require team-work and problem-based collaborative learning # An understanding of the significance and value of their knowledge to the wider community # A capacity to engage where appropriate with issues in contemporary society, and # Advanced working skills in the application of computer systems and software and a receptiveness to the opportunities offered by new technologies