351AA Ph.D.- Engineering

Year and Campus:	2012 - Parkville
CRICOS Code:	056957F
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Research Higher Degree
Duration & Credit Points:	Students are expected to complete this research in 3.00 years full time, or equivalent part time. Credit Points: 300
Coordinator:	-
Contact:	Melbourne School of Engineering Ground Floor, Old Engineering (Building 173) Current Students: Email:**13MELB@unimelb.edu.au (mailto:13MELB@unimelb.edu.au)** Phone: 13 MELB (13 6352) +61 3 9035 5511 Prospective Students: Email: **eng-info@unimelb.edu.au (mailto:eng-info@unimelb.edu.au)** Phone: + 61 3 8344 6944 **http://www.gradresearch.unimelb.edu.au/ (http://www.gradresearch.unimelb.edu.au/)**
Course Overview:	The degree of Doctor of Philosophy signifies that the holder has undertaken a substantial piece of original research, which has been conducted and reported by the holder under proper academic supervision and in a research environment for a prescribed period. The PhD thesis demonstrates authority in the candidate's field and shows evidence of command of knowledge in relevant fields. It shows that the candidate has a thorough grasp of the appropriate methodological techniques and an awareness of their limitations. The thesis also makes a distinct contribution to knowledge. Its contribution to knowledge rests on originality of approach and / or interpretation of the findings and, in some cases, the discovery of new facts. The thesis demonstrates an ability to communicate research findings effectively in the professional arena and in an international context. It is a careful, rigorous and sustained piece of work demonstrating that a research 'apprenticeship' is complete and the holder is admitted to the community of scholars in the discipline. In scope, the PhD thesis differs from a research Masters thesis chiefly by its deeper and more comprehensive treatment of the chosen subject. It is written succinctly, in English, unless approval has been given for the thesis to be written in a language other than English. The normal length of a PhD thesis is 80,000 words, exclusive of words in tables, maps, bibliographies and appendices. Footnotes are included as part of the word limit. The thesis should not exceed 100,000 words (or equivalent) without special approval from the Research Higher Degrees Committee. **Duration** The normal period of candidature is three years for full-time candidates with the possibility of two, six month extensions. All PhD candidates are required to complete a minimum of 12 months full-time research at the University in order to benefit from planning, conducting and writing up their research within a University community and environment. Normally the entire PhD is undertaken at the University. **Entry Requirements** Normally a four-year degree at H1 (80%+) level. Some departments of the Melbourne School of Engineering prefer to admit students to the research masters in the first instance with conversion to PhD after 1 year of study. All PhD students are probationary students for the first year of their studies. Applicants interested in applying for a PhD are advised to enter into communication with the Postgraduate Coordinator in the relevant department to determine the suitability of their proposed research topic and the availability of appropriate supervision.

Coursework Component

Some research degrees require a coursework component.

Intake

Students may commence a PhD at any time during the year subject to prior arrangement with their nominated supervisor.

Where a student is enrolling in a PhD with a coursework component intake may be restricted by the timetabling of subjects. Please check with the relevant department prior to making any arrangements for enrolment or travel.

Awarding of Final Mark & Grade

Where there is a coursework component the final mark and grade for the degree is the mark and grade awarded for the thesis. A pass in all coursework is required to fulfill the requirements of the degree.

Objectives:

See 'Graduate Attributes'

Course Structure & Available Subjects:

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Subject Options:

Electrical and Electronic Engineering PhD students

All students are required to complete a minimum of four subjects and a maximum of eight. A minimum of four subjects must be chosen from the core subjects detailed below.

If a student does not have sufficient background in the core subjects they may be required by the supervisory panel to take preliminary undergraduate subjects. Undergraduate preliminary subjects will not count towards the postgraduate level coursework requirement. Subjects from other departments may be selected in consultation with the supervisor and the department, and are subject to the written approval of the Head of Department.

All PhD students are required to attend departmental seminars over the period of their candidature.

During their candidature students are trained in research and communication skills with particular reference to presenting their work to both the research and broader communities.

Students will typically participate in leading conferences in their research areas. Students are able to benefit from overseas exchange/training periods through our extensive international collaboration network. he Department maintains an intensive international visitors program, allowing students and staff to collaborate with international experts in particular sub-disciplines.

Core subjects for Electrical & Electronic Engineering PhD students

Subject	Study Period Commencement:	Credit Points:
ELEN90017 Advanced Studies 1 (Electrical)	Semester 1	12.50
ELEN90018 Advanced Studies 2 (Electrical)	Semester 2	12.50
431-660 Advanced Studies 3	Not offered 2012	
431-661 Advanced Studies 4	Not offered 2012	
ELEN90022 Quantum Opto-electronics	Not offered 2012	12.50
ELEN90024 Wireless Systems	Not offered 2012	12.50
ELEN90025 Communication Network Standards/Protocol	Not offered 2012	12.50
ELEN90026 Introduction to Optimisation	Not offered 2012	12.50
ELEN90028 Nonlinear Systems Theory	Not offered 2012	12.50
ELEN90030 Information Theory	Not offered 2012	12.50
ELEN90032 Advanced Topics in Signals and Systems	Not offered 2012	12.50

ELEN90033 Advanced Topics in Photonics	Semester 1	12.50
ELEN90027 Linear Systems Theory	Semester 1	12.50
ELEN90029 Statistical Signal Processing	Not offered 2012	12.50
ELEN90031 Advanced Topics in Communications	Semester 2	12.50
BMEN90004 Advanced Neural Information Processing	Semester 1	12.50
ELEN90023 Lightwave Devices and Systems	Not offered 2012	12.50

Entry Requirements:

The criteria for assessing applicants' eligibility for PhD candidature are:

1. **Minimum qualifications**
   Applicants are normally required to have completed at least a four-year honours degree at H2A standard from an Australian university, or a qualification or combination of qualifications considered by the RHD Committee to be equivalent. For particular disciplines applicants are also required to complete, at an appropriate level, a Graduate Management Admissions Test (GMAT) or a Graduate Record Entry (GRE) test.
2. **Minimum level of academic achievement**
   Applicants should have achieved an overall H1 (80-100%) or H2A (75-79%) grade in the relevant honours or Masters degree.
3. **Relevance of the degree**
   The completed degree must be in an area that is relevant to the intended PhD, including sufficient specialisation such that the applicant will have already developed an understanding and appreciation of a body of knowledge relevant to the intended PhD.
4. **Evidence of research ability**
   Applicants are normally required to have completed a research project/component that accounts for at least 25% of their year's work at 4th year or at Masters level. Graduates of certain professional degrees at the University of Melbourne, including MBBS, BVSc, LLB, BPhysio and BEng are deemed to have met this requirement.
5. **Currency of applicant's knowledge of the discipline**
   The applicant's degree/s and/or professional experience must demonstrate that their knowledge of the discipline in which they plan to undertake their research higher degree is current.
6. **Assessment of level of suitability**
   Based on interview or other verbal communication, an assessment should be made of the level of understanding, motivation and time commitment of the student for the proposed program of study. For example, a full-time student would be expected to devote at least 40 hours a week and a part-time student about half of this.

Applicants must also meet the University's **English Language requirements (http://www.futurestudents.unimelb.edu.au/admissions/entry-requirements/research)** .

Additional criterion: see **http://www.eng.unimelb.edu.au/admissions/grad-research.html (http://www.eng.unimelb.edu.au/admissions/grad-research.html)** .

Core Participation Requirements:

All PhD candidates are required to complete the equivalent of at least 12 months full-time (24 months part-time) advanced study and research in the University unless studying at an outside institution approved by the Research Higher Degrees Committee (RHDC). The RHDC will not approve entirely distance supervision or entirely on-line supervision for research higher degree students.Throughout their candidature candidates are expected to attend the University in order to benefit from planning, conducting and writing up their research within a University community and environment.The residency requirement is deemed especially important during the period of probationary candidature. During probationary candidature the student is expected to interact on a regular basis with the supervisor, the department (including staff and other research students) and the University, so as: to build the skills and knowledge necessary to carry out the proposed research program to acquire an understanding of the standards and requirements for a PhD awarded by the University to make use of support programs and facilities provided by the Melbourne School of Graduate Research throughout candidature. It is University 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 University's programs. Students who feel their disability will impact on meeting the requirements of this course are encouraged to discuss this matter with a Faculty Student Adviser and the Disability Liaison Unit.
Graduate Attributes:	Doctoral degrees at the University of Melbourne seek to develop graduates who demonstrate academic leadership, increasing independence, creativity and innovation in their research work. The University expects its doctoral graduates to have the following qualities and skills: an advanced ability to initiate research and to formulate viable research questions; a demonstrated capacity to design, conduct and report sustained and original research; the capacity to contextualise research within an international corpus of specialist knowledge; an advanced ability to evaluate and synthesize research-based and scholarly literature; an advanced understanding of key disciplinary and multi-disciplinary norms and perspectives relevant to the field; highly developed problem-solving abilities and flexibility of approach; the ability to analyse critically within and across a changing disciplinary environment; the capacity to disseminate the results of research and scholarship by oral and written communication to a variety of audiences; a capacity to cooperate with and respect the contributions of fellow researchers and scholars; a profound respect for truth and intellectual integrity, and for the ethics of research and scholarship; an advanced facility in the management of information, including the application of computer systems and software where appropriate to the student's field of study; an understanding of the relevance and value of their research to national and international communities of scholars and collaborators; an awareness where appropriate of issues related to intellectual property management and the commercialisation of innovation; and an ability to formulate applications to relevant agencies, such as funding bodies and ethics committees. The University provides a variety of opportunities in addition to the supervised research program, to facilitate a students' acquisition of these attributes.
Links to further information:	www.gradresearch.unimelb.edu.au
Notes:	Application Procedure Detailed information for prospective PhD students regarding the application process, including the application form is available at **http://www.futurestudents.unimelb.edu.au/grad/research (http://www.futurestudents.unimelb.edu.au/grad/research)** . It is important to note that there is a separate application form for local and international students. PhD applicants should discuss their research interests with a potential supervisor at the department in which they would like to enrol prior to submitting an application. The **Find an Expert (http://www.findanexpert.unimelb.edu.au/)** website may assist you to find an appropriate supervisor. Prospective PhD candidates should also investigate department websites for information on current research and contact details. Department websites are easily accessed from **faculty homepages (http://www.unimelb.edu.au/az/faculties.html)** . Applications are accepted year-round. Which scholarship can I apply for? Students can find information about graduate research scholarships offered by the University of Melbourne at the **Melbourne Scholarships Office (http://cms.services.unimelb.edu.au/scholarships/pgrad/)** . Facilities and Supports: The Melbourne School of Graduate Research makes available a broad range of **Programs & Services (http://www.gradresearch.unimelb.edu.au/programs/)** available to graduate research students.