

## MC-SCIPHY Master of Science (Physics)

<b>Year and Campus:</b>	2010 - Parkville
<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>	200 credit points taken over 24 months full time. This course is available as full or part time.
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<b>Contact:</b>	Melbourne Graduate School of Science Faculty of Science The University of Melbourne  Tel: + 61 3 8344 6404 Fax: +61 3 8344 5803 Web: <a href="http://graduate.science.unimelb.edu.au">http://graduate.science.unimelb.edu.au</a> ( <a href="http://graduate.science.unimelb.edu.au/">http://graduate.science.unimelb.edu.au/</a> )
<b>Course Overview:</b>	The Master of Science - Physics is one of the research training streams of the Master of Science. The research training streams give students the opportunity to undertake a substantive research project in a field of choice as well as a broad range of coursework subjects including a professional tools component, as a pathway to PhD study or to the workforce.
<b>Objectives:</b>	At the completion of this course, students should be able to: <ul style="list-style-type: none"> <li># analyse how to solve a problem by applying simple fundamental laws to more complicated situations;</li> <li># apply abstract concepts to real-world situations;</li> <li># manage time effectively in order to be prepared for group discussions and undertake the assignments and examinations.</li> </ul>
<b>Course Structure &amp; Available Subjects:</b>	<p>The Master of Science - Physics program offers students an exciting array of topics designed to prepare students for a career as a professional physicist and beyond.</p> <p>Students must complete 200 points comprising:</p> <ul style="list-style-type: none"> <li># 87.5 points of discipline subjects;</li> <li># a 12.5 point Professional Tools subject; and</li> <li># a 100 point Research Project.</li> </ul> <p>Discipline subjects (all subjects are 12.5 points, total points: 87.5)</p> <p>Students must take seven of the following subjects:</p> <ul style="list-style-type: none"> <li># 640-610 Quantum Mechanics</li> <li># 640-611 Quantum Field Theory</li> <li># 640-614 General Relativity</li> <li># 640-604 Statistical Mechanics</li> <li># 640-612 Physical Cosmology</li> <li># 640-613 Particle Physics</li> <li># 640-615 Condensed Matter Physics</li> <li># 640-603 Quantum Advanced Optics</li> <li># 600-656 Experimental Methods</li> </ul> <p>Students may substitute at most two approved subjects at 300 level or higher. It will be compulsory to take 300-level Statistical Physics or 300-level Electrodynamics if the student did not take these subjects (or their equivalent at another institution) during undergraduate studies.</p> <p>Professional tools (all subjects are 12.5 points, total points: 12.5)</p> <p>Students must take one of the following subjects:</p> <ul style="list-style-type: none"> <li># 600-619 Scientists, Communication and the Workplace</li> <li># 615-668 Critical analysis in Science</li> <li># 615-505 eScience</li> <li># 600-615 Thinking and Reasoning with Data</li> <li># 600-617 Systems Modelling and Simulation</li> <li># 600-616 Science in Context</li> </ul>

- # 600-618 Ethics and Responsibility in Science
- # 600-614 Business Tools: Money, People and Processes

**Research Project (100 points)**

Students will gain research experience in Physics by completing a 100 point Research Project comprising:

- # a preliminary literature survey and research plan at the end of year one or after the student has enrolled in 25 points of Research Project (10 page limit of mixed text, diagrams and mathematical formulas; pass/fail);
- # an oral presentation at the end of year one or after the student has enrolled in 25 points of Research Project (up to 20 min; pass/fail);
- # a major thesis at the end of year two (50 page limit of mixed text, diagrams and mathematical formulas; 90% of final grade);
- # an oral presentation at the end of year two (up to 30 min; 10% of final grade); and
- # the completion of an advanced seminar in the relevant research area (pass/fail)

Students would normally enrol in a combination of Research Project subjects as indicated below over four semesters of full-time study or over eight semesters of part-time study, to ensure they have completed a total of 100 points by the end of their course.

- # 640-609 Research Project - 12.5 points
- # 640-608 Research Project - 25.0 points
- # 640-607 Research Project - 37.5 points
- # 640-606 Research Project - 50.0 points

**Subject Options:****Discipline subjects**

Subject	Study Period Commencement:	Credit Points:
PHYC90007 Quantum Mechanics	Semester 1	12.50
PHYC90008 Quantum Field Theory	Semester 1	12.50
PHYC90012 General Relativity	Semester 1	12.50
PHYC90010 Statistical Mechanics	Semester 1	12.50
PHYC90009 Physical Cosmology	Semester 2	12.50
PHYC90011 Particle Physics	Semester 2	12.50
PHYC90013 Condensed Matter Physics	Semester 2	12.50
PHYC90006 Quantum and Advanced Optics	Semester 2	12.50
MAST90010 Experimental Methods	Semester 1	12.50

**Professional Tools**

Subject	Study Period Commencement:	Credit Points:
SCIE90006 Scientists, Communication & the Workplace	April	12.50
615-668 Critical Analysis in Science	Not offered 2010	12.50
SCIE90007 E-Science	Semester 2	12.50
MAST90044 Thinking and Reasoning with Data	Semester 1	12.50
MAST90045 Systems Modelling and Simulation	Semester 1	12.50
SCIE90004 Science in Context	Semester 2	12.50
SCIE90005 Ethics and Responsibility in Science	Semester 2	12.50
BUSA90403 Business Tools: Money People & Processes	Semester 2	12.50

**Research Project**

	<b>Subject</b>	<b>Study Period Commencement:</b>	<b>Credit Points:</b>
	PHYC90024 Research Project	Semester 1, Semester 2	12.50
	PHYC90023 Research Project	Semester 1, Semester 2	25
	PHYC90022 Research Project	Semester 1, Semester 2	37.50
	PHYC90021 Research Project	Semester 1, Semester 2	50
<b>Entry Requirements:</b>	Bachelor degree with a major in an appropriate discipline with at least an H3 (65%) average in the major or equivalent.		
<b>Core Participation Requirements:</b>	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.		
<b>Further Study:</b>	The Research Training programs offer a pathway to a PhD.		
<b>Graduate Attributes:</b>	Graduates will: have the ability to demonstrate advanced independent critical enquiry, analysis and reflection; have a strong sense of intellectual integrity and the ethics of scholarship; have in-depth knowledge of their specialist discipline(s); reach a high level of achievement in writing, research or project activities, problem-solving and communication; be critical and creative thinkers, with an aptitude for continued self-directed learning; be able to examine critically, synthesise and evaluate knowledge across a broad range of disciplines; have a set of flexible and transferable skills for different types of employment; and be able to initiate and implement constructive change in their communities, including professions and workplaces.		
<b>Links to further information:</b>	<a href="http://graduate.science.unimelb.edu.au">http://graduate.science.unimelb.edu.au</a>		