

# MC-SCIMAN Master of Operations Research and Management Science

<b>Year and Campus:</b>	2012 - Parkville
<b>CRICOS Code:</b>	073437M
<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.
<b>Coordinator:</b>	Associate Professor Sanming Zhou Email: <a href="mailto:sanming@unimelb.edu.au">sanming@unimelb.edu.au</a>
<b>Contact:</b>	<p>Melbourne Graduate School of Science  Faculty of Science  The University of Melbourne  Victoria 3010</p> <p>Tel: + 61 3 8344 6128  Fax: +61 3 8344 3351</p> <p>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>)</p>
<b>Course Overview:</b>	<p>The Master of Operations Research and Management Science teaches students how to employ mathematical models and other analytical methods to help make better business management decisions. Using optimisation stochastic models, simulation, statistics and forecasting methods, students will be able to design measures of performance and reliability, understand the key drivers of system behaviour, predict future trends, manage large-scale interacting systems, control complex planning, scheduling and operational processes and help to maximise profits and efficiency.</p> <p>The range of topics include:</p> <ul style="list-style-type: none"> <li># Mathematics of Risk</li> <li># Optimisation for Industry</li> <li># Business Forecasting</li> <li># Project Management</li> <li># Systems Modelling and Simulation</li> </ul> <p>This professional entry program offers students the opportunity to undertake professional skills modules that provide high-level training in areas of business, communications and science applications, as well as core studies in the mathematical and statistical theory.</p>
<b>Objectives:</b>	<p>After completing this course students will:</p> <ul style="list-style-type: none"> <li># have learned how basic techniques in operations research are applied in industry;</li> <li># understand how to turn an industrial problem into a mathematical formulation;</li> <li># know how to solve important mathematical optimisation problems arising in industrial framework;</li> <li># be familiar with the most commonly used mathematical models and be able to apply them in various situations; and</li> <li># be able to estimate the values of parameters that drive models from statistical data and have an appreciation of the uncertainty in those estimates.</li> </ul>
<b>Course Structure &amp; Available Subjects:</b>	<p>Students must complete 200 points including:</p> <ul style="list-style-type: none"> <li># Discipline Core subjects (62.5 points);</li> <li># Discipline Elective subjects (62.5 points);</li> <li># Professional Skills Core subjects (50 points);</li> <li># Professional Skills Elective subjects (25 points).</li> </ul>
<b>Subject Options:</b>	<p><b>Discipline Core</b></p> <p>Students must take:</p>

Subject	Study Period Commencement:	Credit Points:
MAST90014 Optimisation for Industry	Semester 1	12.50
MAST90009 Business Forecasting	Not offered 2012	12.50
BUSA90470 Cases in Business Modelling	Semester 1	12.50
MAST90050 Scheduling and Optimisation	Semester 2	12.50
MAST90051 Mathematics of Risk	Semester 2	12.50

### Discipline Electives

Students must select five of the following subjects:

Subject	Study Period Commencement:	Credit Points:
MGMT90026 Supply Chain Management	Semester 1	12.50
ISYS90036 Enterprise Systems	Semester 1	12.50
SINF90004 Data Warehousing	Semester 1	12.50
COMP90038 Algorithms and Complexity	Semester 1, Semester 2	12.50
MAST90013 Network Optimisation	Not offered 2012	12.50
MAST90027 The Practice of Statistics	Semester 2	12.50
MAST90061 Modern Statistical Methods	Not offered 2012	12.50

### Professional Skills Core

Students must take:

Subject	Study Period Commencement:	Credit Points:
MAST90045 Systems Modelling and Simulation	Semester 1	12.50
SKIL90004 Project Management in Science	Semester 1	12.50

and either two of the following three subjects:

Subject	Study Period Commencement:	Credit Points:
MKTG90004 Marketing Management	Summer Term, Semester 1, Semester 2	12.50
MGMT90140 Management Competencies	Semester 1, Semester 2	12.50
MGMT90144 Managing for Value Creation	Semester 1, Semester 2	12.50

or both of

Subject	Study Period Commencement:	Credit Points:
BUSA90403 Business Tools: Money People & Processes	Semester 2	12.50
BUSA90471 Business Tools: The Market Environment	Semester 1	12.50

### Professional Skills Electives

Students must select two of the following subjects:

	<b>Subject</b>	<b>Study Period Commencement:</b>	<b>Credit Points:</b>
	SCIE90006 Scientists,Communication & the Workplace	Semester 2	12.50
	MULT90012 Industry Project in Science	Semester 2	12.50
	ECON90015 Managerial Economics	Semester 1, Semester 2	12.50
	SCIE90012 Science Communication	Semester 2	12.50
	MGMT90111 Management and Business Communication	Semester 1	12.50
	FNCE90060 Financial Management	Semester 1, Semester 2	12.50
	*Up to two third-year level undergraduate subjects will be allowed as discipline electives to meet prerequisite/assumed knowledge requirements.		
<b>Entry Requirements:</b>	An undergraduate degree in a quantitative discipline such as mathematics, statistics and operations research, engineering, information technology, economics, commerce, with at least H3 (65%) in the major or equivalent. As part of their degree studies, applicants must have completed an appropriate sequence of at least 25 points of second-year undergraduate university-level mathematics and statistics or equivalent subjects.		
<b>Core Participation Requirements:</b>	The Master of Operations Research and Management Science 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. The Master of Operations Research and Management Science requires all students to enrol in subjects where they will require: (1) the ability to comprehend complex science and technology related information;(2) the ability to communicate knowledge and application of science clearly and independently. Students 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. There may be 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: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>		
<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, 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>Professional Accreditation:</b>	National Professional Science Master's Association (NPSMA) ( <a href="http://www.npsma.org/">http://www.npsma.org/</a> ( <a href="http://www.npsma.org/">http://www.npsma.org/</a> ) )		
<b>Links to further information:</b>	<a href="http://graduate.science.unimelb.edu.au">http://graduate.science.unimelb.edu.au</a>		