

MC-SCIENV Master of Science (Environmental Science)

Year and Campus:	2010 - Parkville
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Graduate/Postgraduate
Duration & Credit Points:	200 credit points taken over 24 months full time. This course is available as full or part time.
Coordinator:	Dr Michael McCarthy Email: mamcca@unimelb.edu.au
Contact:	Melbourne Graduate School of Science Faculty of Science The University of Melbourne Tel: + 61 3 8344 6404 Fax: +61 3 8344 5803 Web: http://graduate.science.unimelb.edu.au
Course Overview:	The Master of Science (Environmental Science) applies scientific principles to understanding and managing the natural and built environment. Students learn about global changes that are occurring in the environment, the science that underpins those changes, how continuing and novel changes can be detected, and how these changes can be managed. Students will also acquire the analytical techniques employed in environmental science.
Objectives:	<p>Course objectives include:</p> <ul style="list-style-type: none"> # an appreciation for the role of modelling in environmental science; # an overview of the range of environmental models in use; # the skills required to model environmental systems and processes; # an introduction to the construction and mathematical analysis of environmental models; # a high level of ability to analyse and evaluate environmental models; # describe major current global environmental challenges facing scientists and policy-makers; # discuss the relevance of a range of scientific disciplines to environmental management including meteorology, ecology, toxicology, hydrology, geology and epidemiology; # analyse the role of various evidentiary approaches to supporting science-based arguments including empirical observation and analysis, modelling and use of expert opinion; and # judge the merit of scientific arguments made in documents related to environmental policy.
Course Structure & Available Subjects:	<p>This professional entry program offers students the opportunity to undertake core science studies as well as professional tools modules, which provide high-level training in areas of business, communications and science applications.</p> <p>Topics covered in this program include:</p> <ul style="list-style-type: none"> # Restoration and remediation # Environmental modelling # Environmental assessment and management # Measuring the physical, chemical and biological properties of land, sea and sky # Environmental sampling # Global environmental change <p>Course structure (all subjects are 12.5 points each, total points: 200) Discipline Core (62.5 points)</p> <p>Students must take:</p> <ul style="list-style-type: none"> # 600-654 Global Environmental Change, # 600-604 Environmental Risk Assessment or 950-603 (offered in Intensive Mode)*, # 600-653 Environmental Monitoring and Audit, # 606-661 Environmental Modelling, and # 606-666 Graduate Seminar: Environmental Science. <p>Discipline Elective (37.5 points) Students must take 3 of the following subjects:</p>

- # 625-634 Climate Affairs
- # 615-505 e-Science **
- # 600-617 Systems Modelling and Simulation
- # 606-608 Restoration Ecology (not available in 2010)
- # 121-532 Environmental Impact Assessment
- # 451-610 Fundamentals of GIS
- # 207-412 Environments of Urban Landscapes
- # 207-501 Management of Plant and Animal Invasion
- # 250-650 Wildlife Management
- # 207-511 Soil Science and Management
- # 610-680 Environmental Chemistry***
- # 610-360 Analytical and Environmental Chemistry***
- # 606-305 Vegetation Management and Conservation***
- # 606-607 Flora of Victoria*** (summer semester)
- # 654-608 Conservation Biology*** (not available in 2010)
- # 625-608 Hydrogeology****
- # 220-415 Sustainable Forest Management (offered at Creswick campus)
- # 220-503 Bushfire and Biodiversity (offered at Creswick campus)
- # 220-509 Forests, Carbon and Climate Change (offered at Creswick campus)
- # 220-511 Ecological Restoration (offered at Creswick campus)
- # 610-681 Advanced Spectroscopy - Students enrolled in the MSc Environmental Science Program, must take the following modules: Advanced Structural Elucidation and Chemical Applications of Synchrotron Radiation
- # 610-683 Chemistry 4B - Students enrolled in the MSc Environmental Science Program, must take the following modules: Automatic Chemical Analysis and Interfacial Chemistry and Sonochemistry

* Exemption from this subject will be granted if the student has completed this as part of their undergraduate degree. Students can not take this subject if they have completed 600-303.

** These subjects can be taken either as an elective discipline subject or as an elective professional tool (but cannot be counted as both).

*** This subject is only available as an elective to a student if an equivalent subject has not been completed in the student's undergraduate degree.

**** Availability of subject may depend on timetabling constraints.

Project Module (12.5 points)

- # 600-611 Industry Project in Science

Professional Tools Module (87.5 points)

Professional Tools Core (75 points)

Students must take:

2 Business Tools Units

- # 600-614 Business Tools: Money, People and Processes
- # 600-622 Business Tools: The Market Environment plus

2 Science Tools Units

- # 600-615 Thinking and Reasoning with Data
- # 600-618 Ethics and Responsibility in Science

2 Communication Tools Units

- # 600-619 Scientists, Communication and the Workplace
- # 600-616 Science in Context

Professional Tools Elective (12.5 points)

Students must take 1 of the following Science Tools subjects:

- # 615-505 e-Science
- # 600-617 Systems Modelling and Simulation

615-668 Critical Analysis in Science

Subject Options:**Discipline Core**Note: Students may take either 600-604 **OR** 950-603 (offered in intensive mode)

Subject	Study Period Commencement:	Credit Points:
EVSC90017 Global Environmental Change	Semester 1	12.50
EVSC90010 Environmental Risk Assessment	Semester 1	12.50
EVSC90014 Environmental Risk Assessment	November	12.50
EVSC90016 Environmental Monitoring and Audit	Semester 2	12.50
EVSC90020 Environmental Modelling	Semester 1	12.50
EVSC90019 Graduate Seminar: Environmental Science	Semester 2	12.50

Discipline Elective

Subject	Study Period Commencement:	Credit Points:
ATOC90002 Climate Affairs	Semester 2	12.50
SCIE90007 E-Science	Semester 2	12.50
606-608 Restoration Ecology	Not offered 2010	12.50
EVSC90015 Environmental Impact Assessment	Semester 1	12.50
GEOM90008 Foundations of Spatial Information	Semester 1	12.50
HORT90003 Plants and the Urban Environment	Semester 1	12.50
NRMT90002 Management of Plant and Animal Invasions	Semester 2	12.50
VETS90016 Wildlife Management	Semester 1	12.50
AGRI90066 Soil Science and Management	Semester 1	12.50
CHEM90007 Environmental Chemistry	Semester 2	12.50
CHEM30012 Analytical & Environmental Chemistry	Semester 1	12.50
BOTA30004 Vegetation Management and Conservation	Semester 2	12.50
BOTA90005 Flora of Victoria	February	12.50
654-608 Conservation Biology	Not offered 2010	12.50
GEOL90005 Hydrogeology	Semester 1	12.50
MAST90045 Systems Modelling and Simulation	Semester 1	12.50
FRST90021 Sustainable Forest Management	October	12.50
FRST90026 Bushfire & Biodiversity	September	12.50
FRST90032 Forests, Carbon and Climate Change	June	12.50
FRST90034 Ecological Restoration	July	12.50
CHEM90008 Advanced Spectroscopy	Semester 1	12.50
CHEM90010 Chemistry 4B	July	12.50

Project Module

	Subject	Study Period Commencement:	Credit Points:
	MULT90012 Industry Project in Science	Semester 2	12.50
	Professional Tools Core		
	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
	MAST90044 Thinking and Reasoning with Data	Semester 1	12.50
	SCIE90005 Ethics and Responsibility in Science	Semester 2	12.50
	SCIE90006 Scientists,Communication & the Workplace	April	12.50
	SCIE90004 Science in Context	Semester 2	12.50
	Professional Tools Elective		
	Subject	Study Period Commencement:	Credit Points:
	SCIE90007 E-Science	Semester 2	12.50
	MAST90045 Systems Modelling and Simulation	Semester 1	12.50
	615-668 Critical Analysis in Science	Not offered 2010	12.50
Entry Requirements:	A Bachelor degree in an appropriate discipline with at least H3 (65%) in the major or equivalent. As part of their degree studies, applicants must have completed at least one quarter of a full-time year of study in one of the following areas: Biology, Chemistry, or Earth Sciences.		
Core Participation Requirements:	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.		
Graduate Attributes:	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.		
Links to further information:	http://graduate.science.unimelb.edu.au		