

## GC-SCI Graduate Certificate in Science

<b>Year and Campus:</b>	2013 - 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>	50 credit points taken over 6 months full time. This course is available as full or part time.
<b>Coordinator:</b>	Professor Aleks Owczarek DirectorMelbourne Graduate School of Science
<b>Contact:</b>	<p><b>Melbourne Graduate School of Science</b>  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 Graduate Certificate allows students who have completed an undergraduate degree to re-focus or expand their body of knowledge by completing the requirement of one of the undergraduate majors (or equivalent) in the Bachelor of Science not already completed. The following areas of study are available:</p> <ul style="list-style-type: none"> <li># Botany</li> <li># Chemistry</li> <li># Medicinal Chemistry</li> <li># Computer Science</li> <li># Genetics</li> <li># Integrated Geography</li> <li># Human Geography</li> <li># Physical Geography</li> <li># Geology</li> <li># Pure Mathematics</li> <li># Applied Mathematics</li> <li># Discrete Mathematics / Operations Research</li> <li># Statistics / Stochastic Processes</li> <li># Physics</li> <li># Zoology</li> </ul> <p>Students will be required to have completed level 2 prerequisites.</p>
<b>Objectives:</b>	<p>Students who complete the Graduate Certificate should:</p> <ul style="list-style-type: none"> <li># Demonstrate an independent approach to knowledge that uses rigorous methods of inquiry and appropriate theories and methodologies that are applied with intellectual honesty and a respect for ethical values;</li> <li># Apply critical and analytical skills and methods to the identification and resolution of problems;</li> <li># Act as informed and critically discriminating participants within the community of scholars, as citizens and in the work force;</li> <li># Communicate effectively;</li> <li># Commit to continuous learning;</li> <li># Be proficient in the use of appropriate modern technologies, such as the computer and other information technology systems, for the acquisition, processing and interpretation of data.</li> </ul>

<b>Course Structure &amp; Available Subjects:</b>	Completion of 50 points of study at Level 3.																
<b>Majors/Minors/ Specialisations</b>	<table border="1"> <thead> <tr> <th data-bbox="384 232 1481 286">Major/Minor/Specialisation</th> </tr> </thead> <tbody> <tr><td data-bbox="384 286 1481 340">Botany</td></tr> <tr><td data-bbox="384 340 1481 394">Chemistry</td></tr> <tr><td data-bbox="384 394 1481 448">Medicinal Chemistry</td></tr> <tr><td data-bbox="384 448 1481 501">Computer Science</td></tr> <tr><td data-bbox="384 501 1481 555">Genetics</td></tr> <tr><td data-bbox="384 555 1481 609">Integrated Geography</td></tr> <tr><td data-bbox="384 609 1481 663">Human Geography</td></tr> <tr><td data-bbox="384 663 1481 716">Physical Geography</td></tr> <tr><td data-bbox="384 716 1481 770">Geology</td></tr> <tr><td data-bbox="384 770 1481 824">Pure Mathematics</td></tr> <tr><td data-bbox="384 824 1481 878">Applied Mathematics</td></tr> <tr><td data-bbox="384 878 1481 931">Discrete Mathematics / Operations Research</td></tr> <tr><td data-bbox="384 931 1481 985">Statistics / Stochastic Processes</td></tr> <tr><td data-bbox="384 985 1481 1039">Physics</td></tr> <tr><td data-bbox="384 1039 1481 1093">Zoology</td></tr> </tbody> </table>	Major/Minor/Specialisation	Botany	Chemistry	Medicinal Chemistry	Computer Science	Genetics	Integrated Geography	Human Geography	Physical Geography	Geology	Pure Mathematics	Applied Mathematics	Discrete Mathematics / Operations Research	Statistics / Stochastic Processes	Physics	Zoology
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<b>Entry Requirements:</b>	<p>Graduate Certificate in Science</p> <p>1. The Selection Committee will evaluate the applicant's ability to pursue successfully the course using the following criterion –</p> <ul style="list-style-type: none"> <li># an undergraduate degree;</li> <li># results in the equivalent of a minimum of 37.5 points of level 2 or above specific prerequisite subjects</li> </ul> <p>2. The following are the areas-of-study-specific subject prerequisites:</p> <p><i>Botany</i> Subject prerequisites – at least three level 2 or above Animal Science Biology, Botany, Anatomy, Physiology, Biochemistry and Molecular Biology, Ecology, Genetics subjects, or equivalent</p> <p><i>Chemistry</i> Subject prerequisites – all three of CHEM20018 Reactions and Synthesis and CHEM20019 Practical Chemistry 2 and CHEM20020 Structure and Properties, or equivalents</p> <p><i>Medicinal Chemistry</i> Subject prerequisites – CHEM20019 Practical Chemistry 2 plus BIOM20002 Human Structure and Function or PHRM20001 Pharmacology: How Drugs Work and CHEM20018 Reactions and Synthesis Genetics, or equivalents</p> <p><i>Computer Science</i> Subject prerequisites - COMP20003 Algorithms and Data Structures and two of COMP20004 Discrete Structures, COMP20005 Engineering Computation, COMP20006 Programming the Machine, COMP20007 Design of Algorithms or SWEN20003 Object Oriented Software Development, or equivalents plus 25 points of level 1 or above mathematics or statistics subjects, or equivalent</p> <p><i>Genetics</i></p>																

Subject prerequisites – both GENE20001 Principles of Genetics and GENE20003 Experiments in Genetics and one of GENE20002 Genes and Genomes or BIOM20001 Molecular and Cellular Biomedicine, or equivalents.

*Integrated Geography*

Subject prerequisites – three of GEOG20001 Society and Environments, GEOG20003 Environmental Politics and Management, GEOG20010 China in Transition, GEOG20008 Inside the City of Diversity, GEOG20002 Global Landforms, GEOG20009 Geography and Biodiversity of Landscapes, ENST20002 Environmental Change Field Class, EARTH20001 Dangerous Earth, EVSC20003 Forests in a Global Context, or UNIB20001 Climate Change II, or equivalents

*Human Geography*

Subject prerequisites – three of GEOG20001 Society and Environments, GEOG20003 Environmental Politics and Management, GEOG20010 China in Transition, or GEOG20008 Inside the City of Diversity, or equivalents

*Physical Geography*

Subject prerequisites – three of GEOG20002 Global Landforms, GEOG20009 Geography and Biodiversity of Landscapes, ENST20002 Environmental Change Field Class, EARTH20001 Dangerous Earth, EVSC20003 Forests in a Global Context, or UNIB20001 Climate Change II, or equivalents

*Geology*

Subject prerequisites – all three of GEOL20001 Geology of Southeast Australia, GEOL20002 Structural and Metamorphic Geology and GEOL20004 Field Mapping and Sedimentary Geology, or equivalents

*Pure Mathematics*

Subject prerequisites – all three of MAST20009 Vector Calculus and MAST200022 Group Theory and Linear Algebra and MAST200026 Real Analysis, or equivalents

*Applied Mathematics*

Subject prerequisites – all three of MAST20009 Vector Calculus and MAST20019 Dynamical Systems and Chaos and MAST200026 Real Analysis plus one of MAST20004 Probability or MAST20006 Probability for Statistics, or equivalents.

*Discrete Mathematics / Operations Research*

Subject prerequisites – both of MAST20018 Discrete Mathematics and Operations Research and MAST200026 Real Analysis plus one of MAST20004 Probability or MAST20006 Probability for Statistics, or equivalents

*Statistics / Stochastic Processes*

Subject prerequisites – both of MAST20005 Statistics and MAST200026 Real Analysis plus one of MAST20004 Probability or MAST20006 Probability for Statistics, or equivalents

*Physics*

Subject prerequisites – all six of PHYC20005 Quantum Mechanics & Thermal Physics, PHYC20009 Thermal and Classical Physics, PHYC20010 Quantum Mechanics and Special Relativity, PHYC20011 Electromagnetism and Optics, MAST20009 Vector Calculus and MAST200026 Real Analysis with Applications, or equivalents

*Zoology*

Subject prerequisites – one of ZOOL20005 Animal Structure and Function or ZOOL20006 Comparative Animal Physiology or ECOL20003 Ecology, or equivalents plus at least two further level 2 life sciences subjects, or equivalents

**Core Participation Requirements:**

The Graduate Certificate in 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 Graduate Certificate in Science requires all students to enrol in subjects where they will require: 1. the ability to comprehend complex science, technology and/or engineering systems related information; 2. the ability to clearly and independently communicate a knowledge and application of science, technology and engineering systems principles and practices during assessment tasks; and in some areas of study; 3. the ability to actively and safely contribute in clinical, laboratory, and fieldwork/excursion activities. 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 are additional inherent academic requirements for some disciplines and subjects, and these requirements are listed within the description of the requirements for

	<p>each of these disciplines and 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> - Discipline# specific Core Participation Requirements</p> <p><b>Chemistry</b> Core participation requirements: Laboratory experiments This discipline requires students to actively, independently and safely participate in all practical classes, utilising a range of observational, communication, motor, intellectual, and behavioural and social skills. Visual acuity, muscle coordination and balance are essential for participation. Assessment is reliant on careful observation and visual interpretation of results.</p> <p><b>Botany</b> Core participation requirements: Fieldwork, practicals and laboratory experiments This discipline requires all students to actively, independently and safely participate in all practical classes, utilising a range of observational, communication, motor, intellectual, and behavioural and social skills. Visual acuity, muscle coordination and balance are essential for participation. Details of the participation requirements can be found at <a href="http://www.vet.unimelb.edu.au/docs/CoreParticipationReqsBSc.pdf">http://www.vet.unimelb.edu.au/docs/CoreParticipationReqsBSc.pdf</a></p> <p>The sites essential to this fieldwork are not wheel chair accessible and may require students to traverse broken ground. Students are also required to undertake experiments including specimen and microscope work with assessment reliant on careful observation and visual interpretation of results. Practical may also involve handling and working with animals.</p> <p><b>Geology</b> Core participation requirements: Fieldwork The sites essential to this fieldwork are not wheelchair accessible and require students to traverse broken ground. Visual observation and interpretation of the sites is also an essential component, as is specimen and microscope work.</p> <p><b>Zoology</b> Core participation requirements: Fieldwork, practicals and laboratory experiments This discipline requires all students to actively, independently and safely participate in all practical classes, utilising a range of observational, communication, motor, intellectual, and behavioural and social skills. Visual acuity, muscle coordination and balance are essential for participation. Details of the participation requirements can be found at <a href="http://www.vet.unimelb.edu.au/docs/CoreParticipationReqsBSc.pdf">http://www.vet.unimelb.edu.au/docs/CoreParticipationReqsBSc.pdf</a></p> <p>The sites essential to this fieldwork are not wheel chair accessible and may require students to traverse broken ground. Students are also required to undertake experiments including specimen and microscope work with assessment reliant on careful observation and visual interpretation of results. Practical may also involve handling and working with animals.</p>
<b>Further Study:</b>	The Graduate Certificate provides a pathway to the Master of Science Streams.
<b>Links to further information:</b>	<a href="http://graduate.science.unimelb.edu.au/certificates-diplomas">http://graduate.science.unimelb.edu.au/certificates-diplomas</a>