

CHEM20011 Environmental Chemistry

Credit Points:	12.50																		
Level:	2 (Undergraduate)																		
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. Lectures, tutorials, laboratory classes																		
Time Commitment:	Contact Hours: 3 x one hour lectures per week for 9 weeks (weeks 1-9); 1 x one hour tutorial per week for 9 weeks (weeks 2-10); 1 x three and a half hour practical class per week for four weeks. Total 50 hours. Total Time Commitment: Estimated total time commitment of 120 hours																		
Prerequisites:	<p>One of</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM10003 Chemistry 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p># 610-121 Chemistry A Advanced Studies Program (prior to 2008) # 610-141 Chemistry A (prior to 2008) # 610-051 Chemistry Biomedical Science A (prior to 2008)</p> <p>Plus one of</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM10004 Chemistry 2</td> <td>January, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p># 610-122 Chemistry B Advanced Studies Program (prior to 2008) # 610-142 Chemistry B (prior to 2009) # 610-052 Chemistry Biomedical Science B (prior to 2008)</p> <p>Or</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM10006 Chemistry for Biomedicine</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	CHEM10003 Chemistry 1	Semester 1, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	CHEM10004 Chemistry 2	January, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	CHEM10006 Chemistry for Biomedicine	Semester 1	12.50
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CHEM10006 Chemistry for Biomedicine	Semester 1	12.50																	
Corequisites:	None																		
Recommended Background Knowledge:	None																		
Non Allowed Subjects:	None																		
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. This subject requires all students to actively and safely participate in laboratory activities. Students who feel their disability may impact upon their participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit.																		
Coordinator:	Assoc Prof Spas Kolev																		
Contact:	second-year-director@chemistry.unimelb.edu.au																		
Subject Overview:	<p>The subject covers important aspects of the structure and chemistry of the hydrosphere, atmosphere and lithosphere (soil); sources, chemistry and impact of environmental pollution; and energy resources (fossil fuels, nuclear and solar) and the impact of energy utilisation.</p> <p>Subject topics also include the principles and application of quantitative chemical analysis and environmental monitoring (calibration methods; experimental errors; volumetric analysis, spectrophotometry, gas and liquid chromatography, and atomic absorption spectrometry).</p>																		

	<p>A key aspect of this subject will be the comprehensive investigation of a current environmental chemistry issue, which will be taught in a small-group, scenario-based learning mode.</p> <p>The practical component of this subject will involve the application of optical (spectrophotometry, atomic absorption spectrometry) and chromatographic (gas chromatography, high performance liquid chromatography) analytical techniques to the determination of compounds of environmental interest.</p>
Objectives:	<p>On completion of this subject students should have developed skills in recognising chemically based environmental problems, an awareness of the possible effects of chemicals on the environment and a capacity to interpret environmental data and to apply diverse chemical principles in the explanation of environmental phenomena.</p> <p>Students should appreciate the need for high quality environmental chemical analysis and the importance of selecting and utilising appropriate analytical methods and techniques for their monitoring. Students should understand the principles of the key analytical methods used in environmental chemistry.</p> <p>Students should also develop skills in investigating contemporary environmental chemistry issues, a consideration of the wider context of these issues, generic skills in operating in small teams and an awareness of professional practice as a scientist.</p> <p>Through the practical component of this subject students should acquire enhanced laboratory skills in using modern spectrometric and chromatographic techniques, which are widely employed in environmental monitoring and analysis.</p>
Assessment:	<p>A written assignment as part of the scenario based learning component of the subject not exceeding 10 pages due during the semester (10%); a 2-hour written examination in the examination period (70%); and an ongoing assessment of practical work in the form of short laboratory reports due during the semester (20%). Satisfactory completion of the practical work is necessary to pass the subject.</p>
Prescribed Texts:	None
Recommended Texts:	<ul style="list-style-type: none"> # D. A. Skoog, D. M. West, F. J. Holler and S. R. Crouch, Fundamentals of Analytical Chemistry, 8th Ed., Thomson, 2004. # G. W. van Loon and S. J. Duffy, Environmental Chemistry. A Global Perspective, 2nd Ed, Oxford, 2005. # Environmental Analytical Chemistry, Eds. D. Perez-Bendito and S. Rubio, Elsevier, 1999. # C. Baird and M. Cann, Environmental Chemistry, 3rd Ed., Freeman, 2005.
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2010/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2010/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2010/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS) <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>This subject will provide students with opportunities to develop the following generic skills:</p> <ul style="list-style-type: none"> # the ability to comprehend complex concepts and effectively communicate this understanding to the scientific community and in a manner accessible to the wider community; # the ability to analyse and solve abstract technical problems; # the ability to connect and apply the learnt concepts to a broad range of scientific problems beyond the scope of this subject; # an awareness of advanced technologies; # the ability to use conceptual models to rationalise observations;

	<ul style="list-style-type: none"> # the ability to think and reason logically; <p>Upon completion of this subject students should gain skills in</p> <ul style="list-style-type: none"> # planning; # time-management; # critical thinking; # data evaluation and interpretation; # conducting literature searches using scientific databases; # report-writing; # oral presentation; (must show in assessment) # problem-solving # working collaboratively with other students.
Notes:	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BAsC or a combined BSc course.
Related Course(s):	Bachelor of Science
Related Majors/Minors/ Specialisations:	Environmental Science Physical (Environmental Engineering) Systems