

CHEM30012 Analytical & Environmental Chemistry

Credit Points:	12.5									
Level:	3 (Undergraduate)									
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.									
Time Commitment:	Contact Hours: 18 lectures and 32 hours of practical (project) work Total Time Commitment: Estimated total time commitment of 170 hours									
Prerequisites:	One of <table border="1" data-bbox="386 573 1485 779"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM20011 Environmental Chemistry</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>CHEM20019 Practical Chemistry 2</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	CHEM20011 Environmental Chemistry	Semester 1	12.50	CHEM20019 Practical Chemistry 2	Semester 2	12.50
Subject	Study Period Commencement:	Credit Points:								
CHEM20011 Environmental Chemistry	Semester 1	12.50								
CHEM20019 Practical Chemistry 2	Semester 2	12.50								
Corequisites:	None									
Recommended Background Knowledge:	None									
Non Allowed Subjects:	None									
Core Participation Requirements:	<p><p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.</p> <p>It is University 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 University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability</p></p>									
Coordinator:	Prof Spas Kolev									
Contact:	s.kolev@unimelb.edu.au (mailto:s.kolev@unimelb.edu.au)									
Subject Overview:	<p>The lecture component of this subject covers the main sources and types of environmental contaminants with a focus on water contaminants and their effect on water quality. Frequently used analytical techniques in environmental and industrial monitoring and analysis, not covered in the prerequisite or other second year level chemistry subjects, will be outlined in the context of achieving desirable environmental outcomes. These include: volumetric analysis; gravimetric analysis; optical techniques (inductively coupled plasma optical emission spectrometry); electroanalytical techniques such as potentiometry (ion-selective electrodes, potentiometric stripping analysis) and voltammetry (polarography, anodic stripping voltammetry); analytical separation techniques (ion chromatography, extraction); and automatic analytical techniques (flow injection analysis).</p> <p>The practical component of this subject involves the application of chromatographic (ion chromatography, gas chromatography and high performance liquid chromatography), electroanalytical (potentiometry, polarography and anodic stripping voltammetry) and optical (atomic absorption spectrometry) analytical techniques to environmental samples.</p>									

Learning Outcomes:	Upon completion of the subject, students should have acquired an in-depth understanding of the origin, distribution and role of environmental contaminants, and be able to select suitable methods for monitoring them. Students will also learn to apply analytical and problem-solving skills to the consideration of treatment options for industrial effluents. From the practical component, students should acquire enhanced laboratory skills and competence in using modern laboratory techniques.
Assessment:	Ongoing assessment of practical work in the form of short laboratory reports due during the semester (50%); a 45-minute written test held mid-semester (10%); a 2-hour written examination in the examination period (40%). Satisfactory completion of both theory and practical work is necessary to pass the subject.
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 9E, 9th Ed., Brooks/Cole, 2014 # D.A.Skoog, F.J.Holler and T.A.Nieman, Principles of Instrumental Analysis, 5th Ed., Thomson,1998. # Environmental Analytical Chemistry, Eds. D.Perez-Bendito and S.Rubio, Elsevier, 1999. # G.W. van Loon and S.J.Duffy, Environmental Chemistry. A Global Perspective, 2nd Ed, Oxford, 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/2016/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2016/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2016/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2016/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
Notes:	<p>It is recommended that students who plan to major in Chemistry to also have completed the following:</p> <ul style="list-style-type: none"> # Mathematics and Statistics - two semesters of first year mathematics, for example MAST10005 Calculus 1, MAST10006 Calculus 2 and/or MAST10007 Linear Algebra. # Physics - VCE Units 3/4 12 Physics or equivalent, for example PHYC10005 Physics 1: Fundamentals
Related Majors/Minors/Specialisations:	<p>Biotechnology (pre-2008 Bachelor of Science) Chemical Biotechnology (specialisation of Biotechnology major) Chemistry Chemistry Chemistry Chemistry Chemistry Chemistry (specialisation of Chemistry major) Environmental Science Environmental Science major Environments Discipline subjects Marine Biology Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED</p>