CHEM30012 Analytical & Environmental Chemistry

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	This subject is not offered in 2014. Lectures and practical work
Time Commitment:	Contact Hours: 18 lectures and 32 hours of practical (project) work Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	One of **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:	For the purposes of considering applications for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005) and Students Experiencing Academic Disadvantage Policy, 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. Hhttp://www.services.unimelb.edu.au/disability/
Contact:	Email: **third-year-director@chemistry.unimelb.edu.au (mailto:third-year-director@chemistry.unimelb.edu.au)**
Subject Overview:	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). 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 volatmmetry) and optical (atomic absorption spectrometry) analytical techniques to environmental samples.
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:	# D.A.Skoog, D.M.West, F.J.Holler and S.R.Crouch, Fundamentals of Analytical Chemistry, 8th Ed., Thomson, 2004. # 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:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2014/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2014/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2014/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2014/B-MUS)** 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.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
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 Majors/Minors/ Specialisations:	Biotechnology (pre-2008 Bachelor of Science) Chemical Biotechnology (specialisation of Biotechnology major) Chemistry Chemistry Chemistry Chemistry (specialisation of Chemistry major) Environmental Science Environmental Science major Environments Discipline subjects Marine Biology Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED
Related Breadth Track(s):	Environmental Chemistry