

610-280 Environmental Chemistry

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 2, - Taught on campus.
Time Commitment:	Contact Hours: 36 lectures and six tutorials Total Time Commitment: 120 hours
Prerequisites:	One of Chemistry 610-141, 610-121 or 610-051 plus one of 610-142, 610-122 or 610-052.
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. 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:	Associate Professor T Smith
Subject Overview:	<p>On completion of 610-280, students should comprehend the relationship between chemistry and the environment: namely the sources, reactions, transport, effects and fates of chemical species in the water, soil and atmospheric environments; the consequences of changes in the chemical composition of the environment for humankind and other species; and the consequences of energy utilisation. Students should appreciate the need for the integration of a chemically centred study of the environment with other approaches to the treatment of environmental data, and have developed an appreciation of the role of environmental chemistry in a wider social context.</p> <p>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. Students should appreciate the need for high quality environmental analysis, the links between the misuse of chemicals and pollution events, 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 will 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>The subject matter in 610-280 covers some or all of the following topics: emissions to the troposphere; behaviour of pollutants in the troposphere and stratosphere; ozone and SMOG chemistry; air pollution potential (chemistry and meteorology); airborne particulates; acid rain and the greenhouse effect; the ozone layer; the structure and chemistry of freshwater bodies; the chemistry of nutrients; dissolved oxygen, Henry's Law and oxygen demand; the environmental impact of selected examples of metals, organic priority pollutants, pesticides and herbicides; water quality and health; the chemistry of soils (formation, constituents and properties); sources and characteristics of soil contaminants; absorption and persistence of contaminants in soils; soil degradation, salinity and acid-sulphate soils; chemical assessment of contaminated soils; introduction to soil and water remediation, energy utilisation and conservation; and the most frequently used environmental monitoring instrumental analytical techniques. A key aspect will be the comprehensive investigation of a current environmental chemistry issue, which will be taught in a small-group, scenario-based learning mode.</p>
Assessment:	Written assignments not exceeding 15 pages due during the semester (20%); a 3-hour written examination in the examination period (80%).

Prescribed Texts:	None
Breadth Options:	<p>This subject is a level 2 or level 3 subject and is not available to new generation degree students as a breadth option in 2008.</p> <p>This subject or an equivalent will be available as breadth in the future.</p> <p>Breadth subjects are currently being developed and these existing subject details can be used as guide to the type of options that might be available.</p> <p>2009 subjects to be offered as breadth will be finalised before re-enrolment for 2009 starts in early October.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	Students enrolled in the BSc (pre-2008 BSc), BASc or a combined BSc course will receive science credit for the completion of this subject.
Related Course(s):	<p>Bachelor of Engineering (EngineeringManagement) Environmental</p> <p>Bachelor of Engineering (Environmental Engineering)</p> <p>Bachelor of Engineering (Environmental) and Bachelor of Arts</p> <p>Bachelor of Engineering (Environmental) and Bachelor of Commerce</p> <p>Bachelor of Engineering (Environmental) and Bachelor of Laws</p> <p>Bachelor of Engineering (Environmental) and Bachelor of Science</p>