

CHEM20011 Environmental Chemistry

| Credit Points: | 12.50 | | | | | | | | | | | | |
|--|---|----------------|----------------------------|----------------|-----------------------|-------------------------|-------|---------|----------------------------|----------------|-------------------------------------|------------|-------|
| Level: | 2 (Undergraduate) | | | | | | | | | | | | |
| Dates & Locations: | This subject is not offered in 2014. Lectures, tutorials, laboratory classes | | | | | | | | | | | | |
| Time Commitment: | Contact Hours: 3 x one hour lectures per week for 8 weeks (weeks 1-8); 1 x one hour tutorial per week for 6 weeks (weeks 4-10); 1 x 3.5 hour practical class per week for 6 weeks. Total 51 hours. Total Time Commitment: Estimated total time commitment of 120 hours | | | | | | | | | | | | |
| Prerequisites: | <p>EITHER</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>Summer Term, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <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: | CHEM10004 Chemistry 2 | Summer Term, Semester 2 | 12.50 | Subject | Study Period Commencement: | Credit Points: | CHEM10006 Chemistry for Biomedicine | Semester 1 | 12.50 |
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| CHEM10004 Chemistry 2 | Summer Term, Semester 2 | 12.50 | | | | | | | | | | | |
| Subject | Study Period Commencement: | Credit Points: | | | | | | | | | | | |
| CHEM10006 Chemistry for Biomedicine | Semester 1 | 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: | 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). The subject also examines sources, chemistry and impact of environmental pollution.</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 covered in a small-group, scenario-based learning mode.</p> <p>The practical component of this subject will involve the application of titrimetric, optical (spectrophotometry, atomic absorption spectrometry) and chromatographic (gas chromatography, high performance liquid chromatography) analytical techniques to the determination of compounds of environmental interest.</p> | | | | | | | | | | | | |
| Learning Outcomes: | <p>On completion of this subject students should have developed:</p> <ul style="list-style-type: none"> # skills in analysing chemically based environmental problems; # an awareness of the possible effects of chemicals on the environment; | | | | | | | | | | | | |

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| | <ul style="list-style-type: none"> # a capacity to interpret environmental data and to apply diverse chemical principles in the explanation of environmental phenomena; # an appreciation of the need for high quality environmental chemical analysis and the importance of selecting and utilising appropriate analytical methods and techniques for their monitoring; # an understanding of the principles of the key analytical methods used in environmental chemistry; # skills in investigating contemporary environmental chemistry issues; # an ability to operate in small teams; # an awareness of professional scientific practice. <p>Through the practical component of this subject students should have acquired laboratory skills in classical analytical methods and modern spectrometric and chromatographic techniques, which are widely employed in environmental monitoring and analysis.</p> |
| Assessment: | A written assignment as part of the scenario based learning component of the subject not exceeding 10 pages due during the semester (20%); a 2-hour written examination in the examination period (40%); and an ongoing assessment of practical work in the form of short laboratory reports due during the semester (40%). Satisfactory completion of both the practical work and the 2-hour written examination 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, 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/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) <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; # 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; |

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| | <ul style="list-style-type: none"> # 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. The sequence CHEM10003 - CHEM10004 - CHEM20011 and CHEM30012 forms the "Environmental Chemistry" 50 point breadth pathway. |
| Related Majors/Minors/ Specialisations: | Chemistry Environmental Engineering Systems major Environmental Science major Environments Discipline subjects 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 |