

# CHEM20018 Chemistry: Reactions and Synthesis

<b>Credit Points:</b>	12.50																							
<b>Level:</b>	2 (Undergraduate)																							
<b>Dates &amp; Locations:</b>	This subject is not offered in 2013. Lectures, tutorials and seminars																							
<b>Time Commitment:</b>	Contact Hours: 3 x one hour lectures per week; 1 x one hour tutorial per week; up to 3 x one hour non-compulsory enrichment seminars within normal university hours during the semester. Total 51 hours. Total Time Commitment: Estimated total time commitment of 120 hours																							
<b>Prerequisites:</b>	One of																							
	<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>Not offered 2013</td> <td>12.50</td> </tr> <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	Not offered 2013	12.50	CHEM10006 Chemistry for Biomedicine	Semester 1	12.50												
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CHEM10004 Chemistry 2	Not offered 2013	12.50																						
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<b>Corequisites:</b>	None																							
<b>Recommended Background Knowledge:</b>	None																							
<b>Non Allowed Subjects:</b>	<p>Students who have completed any one of the following subjects may not also gain credit for this subject:</p> <ul style="list-style-type: none"> <li># 610-210 Light, Matter and Chemical Change A (prior to 2009)</li> <li># 610-211 Light, Matter and Chemical Change B (prior to 2009)</li> <li># 610-220 Organic Chemistry (prior to 2009)</li> <li># 610-221 Organic &amp; Bio-organic Chemistry (prior to 2009)</li> <li># 610-240 Inorganic and Bio-inorganic Chemistry A (prior to 2009)</li> <li># 610-241 Inorganic and Bio-inorganic Chemistry B (prior to 2009)</li> </ul> <p>Students who have completed one of the following subjects may not also gain credit for this subject:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM20014 Organic and Physical Chemistry 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>CHEM20021 Physical Chemistry 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>CHEM20022 Organic Chemistry 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>CHEM20023 Inorganic Chemistry 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>CHEM20024 Organic and Inorganic Chemistry 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>CHEM20025 Physical and Inorganic Chemistry 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	CHEM20014 Organic and Physical Chemistry 2	Not offered 2013	12.50	CHEM20021 Physical Chemistry 2	Not offered 2013	12.50	CHEM20022 Organic Chemistry 2	Not offered 2013	12.50	CHEM20023 Inorganic Chemistry 2	Not offered 2013	12.50	CHEM20024 Organic and Inorganic Chemistry 2	Not offered 2013	12.50	CHEM20025 Physical and Inorganic Chemistry 2	Not offered 2013	12.50
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<b>Core Participation Requirements:</b>	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison website:																							
<b>Contact:</b>	<b>Email: <a href="mailto:second-year-director@chemistry.unimelb.edu.au">second-year-director@chemistry.unimelb.edu.au</a></b>																							

<b>Subject Overview:</b>	This subject covers key concepts associated with the synthesis and design of organic and inorganic molecules, molecular architecture and the energy transformations associated with chemical and physical processes. Topics covered include synthesis of simple polyfunctional organic compounds, thermodynamically controlled reactions of s-, p- and d- block elements and thermodynamics. In the last three weeks of the subject students will be able to choose between lecture modules with a focus on theory of advanced materials or biological chemistry. These topics have applications in drug discovery, chemical industry, nanotechnology, and energy harnessing through conventional and alternative energy sources.
<b>Objectives:</b>	Upon completion of this subject students should: <ul style="list-style-type: none"> <li># have developed an understanding of molecular properties and energetics and be able to apply these concepts to the synthesis of organic and inorganic compounds;</li> <li># know approaches to the synthesis and some reactions of simple polyfunctional organic compounds;</li> <li># be able to distinguish between kinetically and thermodynamically controlled reactions and to apply these concepts to rationalise synthetic transformations;</li> <li># understand basic thermodynamic concepts and the application of these approaches to real solutions, mixtures and phase equilibria;</li> <li># have a knowledge of the main factors controlling the substitution and redox reactions of main group and transition metal elements.</li> </ul>
<b>Assessment:</b>	5 short tests each of duration less than 90 minutes conducted on-line using the learning management system (LMS) for a total of 20%; the tests will run at the end of weeks 3, 5, 7, 9 and 12 and the mark for this component of the assessment will be based on the average of the four highest marks with each tests contributing equally to this component of the assessment. A three hour examination at the end of the semester will contribute 80% to the final grade.
<b>Prescribed Texts:</b>	J McMurry, Organic Chemistry, 8th Ed. Thomson Brooks/Cole, 2012. P Atkins and J De Paula, Atkins' Physical Chemistry, 9th Ed. Oxford University Press, 2010. P. Atkins, T. Overton, J. Rourke, M. Weller and F. Armstrong, Shriver and Atkins' Inorganic Chemistry 5th Ed, Oxford University Press, 2010
<b>Recommended Texts:</b>	None
<b>Breadth Options:</b>	This subject potentially can be taken as a breadth subject component for the following courses: <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-ARTS">https://handbook.unimelb.edu.au/view/2013/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-COM">https://handbook.unimelb.edu.au/view/2013/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-ENVS">https://handbook.unimelb.edu.au/view/2013/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-MUS">https://handbook.unimelb.edu.au/view/2013/B-MUS</a>)</li> </ul> <p>You should visit <b>learn more about breadth subjects</b> (<a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a>) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	At the completion of this subject students should have developed the following generic skills: <ul style="list-style-type: none"> <li># the ability to comprehend complex concepts and effectively communicate this understanding to the scientific community and in a manner accessible to the wider community;</li> <li># the ability to analyse and solve abstract technical problems;</li> <li># the ability to connect and apply the learnt concepts to a broad range of scientific problems beyond the scope of this subject;</li> <li># an awareness of advanced technologies;</li> <li># the ability to think and reason logically;</li> <li># the ability to think critically and independently.</li> </ul>

<b>Notes:</b>	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.
<b>Related Majors/Minors/ Specialisations:</b>	B-ENG Chemical Engineering stream B-ENG Chemical and Biomolecular Engineering stream Chemistry Environmental Science major Environments Discipline subjects Master of Engineering (Biomolecular) Master of Engineering (Chemical) Medicinal Chemistry Science credit subjects* for pre-2008 BSc, BAsC and combined degree science courses Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.