CHEM20018 Reactions and Synthesis

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Lectures, tutorials and seminars
Time Commitment:	Contact Hours: 3 x one hour lectures per week; 1 x one hour tutorial per week; up to 3 x one hour seminars during the semester. Total 51 hours. Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	One of **Subject** / **Study Period Commencement:** / **Credit Points:** CHEM10004 Chemistry 2 — Summer Term, Semester 2 — 12.50 CHEM10006 Chemistry for Biomedicine — Semester 1 — 12.50 # 610-142 Chemistry B (prior to 2009) # 610-052 Chemistry Biomedical Science B (prior to 2008)
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students who have completed any one of the following subjects may not also gain credit for this subject # 610-210 Light, Matter and Chemical Change A (prior to 2009) # 610-211 Light, Matter and Chemical Change B (prior to 2009) # 610-220 Organic Chemistry (prior to 2009) # 610-221 Organic & Bio-organic Chemistry (prior to 2009) # 610-240 Inorganic and Bio-inorganic Chemistry A (prior to 2009) # 610-241 Inorganic and Bio-inorganic Chemistry B (prior to 2009)
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/
Coordinator:	Dr Stephen Best
Contact:	**Email: second-year-director@chemistry.unimelb.edu.au**
Subject Overview:	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.
Objectives:	Upon completion of this subject students should; # consolidate their understanding of molecular properties and energetics and be able to apply these concepts to the synthesis of organic and inorganic compounds; # know approaches to the synthesis and some reactions of simple polyfunctional organic compounds; # be able to distinguish between kinetically and thermodynamically controlled reactions and to apply these concepts to rationalise synthetic transformations; # understand basic thermodynamic concepts and the application of these approaches to real solutions, mixtures and phase equilibria; # have a knowledge of the main factors controlling the substitution and redox reactions of main group and transition metal elements.
Assessment:	3 - 6 short tests each of duration less than 1 hour conducted on-line using the learning management system (LMS) for a total of 20% and a three-hour end of semester exam (80%)
Prescribed Texts:	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. Shriver and Atkins' Inorganic Chemistry, Oxford University Press, 2010.
Recommended Texts:	None
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/2012/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2012/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2012/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2012/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
Generic Skills:	At the completion of this subject students should develop the following generic skills: # 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 think and reason logically; # the ability to think critically and independently.
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 Course(s):	Bachelor of Engineering
Related Majors/Minors/ Specialisations:	B-ENG Chemical Engineering stream B-ENG Chemical and Biomolecular Engineering stream Environmental Science major Environments Discipline subjects Master of Engineering (Biomolecular) Master of Engineering (Chemical) 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.