

CHEM20020 Structure and Properties

Credit Points:	12.50									
Level:	2 (Undergraduate)									
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 2, 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; 3 x one hour seminars during the semester. Total 51 hours Total Time Commitment: Estimated total time commitment of 120 hours									
Prerequisites:	One of <table border="1" data-bbox="386 607 1485 808"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM10004 Chemistry 2</td> <td>January, Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEM10006 Chemistry for Biomedicine</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <ul style="list-style-type: none"> # 610-142 Chemistry B (prior to 2009) # 610-052 Chemistry Biomedical Science B (prior to 2008) 	Subject	Study Period Commencement:	Credit Points:	CHEM10004 Chemistry 2	January, Semester 2	12.50	CHEM10006 Chemistry for Biomedicine	Semester 1	12.50
Subject	Study Period Commencement:	Credit Points:								
CHEM10004 Chemistry 2	January, Semester 2	12.50								
CHEM10006 Chemistry for Biomedicine	Semester 1	12.50								
Corequisites:	None									
Recommended Background Knowledge:	None									
Non Allowed Subjects:	Students who have completed all of the following subjects may not also gain credit for this subject <ul style="list-style-type: none"> # 610-210 Light, Matter and Chemical Change A (or 610-211 Light, Matter and Chemical Change B) prior to 2009 # 610-220 Organic Chemistry (or 610-221 Organic & Bio-organic Chemistry) prior to 2009 # 610-240 Inorganic and Bio-inorganic Chemistry A (or 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:	second-year-director@chemistry.unimelb.edu.au (mailto:second-year-director@chemistry.unimelb.edu.au)									
Subject Overview:	This subject covers key concepts related to the stereochemical and electronic properties of molecules and the methods central to their study. Important elements of the subject include the spectroscopic characterisation and quantification of materials by a range of spectroscopic techniques, molecular orbital techniques and the application of approaches based on molecular symmetry and group theory to the understanding of molecular properties, stereo-selective reactions, bonding and spectroscopy. These topics have applications to advanced materials, light emitting polymers, chemical analysis and catalysis in biological and industrial systems.									
Objectives:	Upon completion of this subject students should; <ul style="list-style-type: none"> # be able to classify molecules according to their symmetry and to relate their physical properties (e.g. dipole moment, isomerism) to the molecular symmetry; 									

	<ul style="list-style-type: none"> # have a basic knowledge of the basis and application of spectroscopic techniques that are conducted in the presence (NMR, EPR) or absence (IR, Raman, UV-Vis.) of an applied magnetic field; # be able to apply molecular orbital theory to simple homo- and heteronuclear diatomic molecules and polyatomic molecules; # be able to apply simple Hückel approaches to arrays of atoms having orbitals of p symmetry; # be able to identify systems that are aromatic or antiaromatic in character and to have a knowledge of their basic reactions; # be able to describe the changes in bonding that occur to small molecules (e.g. CO) on binding to a transition metal and to be able to apply these concepts to the catalysis of reactions of those species.
Assessment:	Three to six short tests each of approximately 1 hour duration 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:	None
Recommended Texts:	<ul style="list-style-type: none"> # J McMurry, <i>Organic Chemistry</i>, Thomson Brooks/Cole, 7th Ed, 2008. # P Atkins and J De Paula, <i>Atkins' Physical Chemistry</i>, Oxford University Press, 9th Ed, 2010. # C E Housecroft and A G Sharpe, <i>Inorganic Chemistry</i>, Pearson Prentice-Hall, 3rd Ed, 2008.
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/2011/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2011/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2011/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2011/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 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 Science
Related Majors/Minors/Specialisations:	Environmental Science Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses