

## 610-291 Physical and Inorganic Chemistry 2

<b>Credit Points:</b>	12.50
<b>Level:</b>	2 (Undergraduate)
<b>Dates &amp; Locations:</b>	<p>2009,</p> <p>This subject commences in the following study period/s: Year Long, - Taught on campus.</p> <p>Lectures, tutorials and practical classes</p>
<b>Time Commitment:</b>	Contact Hours: Three 1-hour lectures per week for 8 weeks (semester 1, weeks 5-12); one 1-hour tutorial per week for 8 weeks (semester 1, weeks 5-12); one 3.5-hour practical class per week for five weeks (semester 2, weeks 1-5); one 3-hour practical class per week for 5 weeks (semester 2, weeks 1-5). Total 66 hours. Total Time Commitment: 120 hours total time commitment
<b>Prerequisites:</b>	<p>One of</p> <ul style="list-style-type: none"> <li># 610-220 (prior to 2009)</li> <li># 610-221 (prior to 2009)</li> </ul>
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	Students may not enrol in this subject and either <i>Reactions and Synthesis</i> or <i>Practical Chemistry</i> . Students who have completed any one of 610-210, 610-211, 610-240, 610-241 prior to 2009 may not also gain credit for this subject.
<b>Core Participation Requirements:</b>	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. 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. Students will be required to conduct themselves in a manner that is safe to themselves and those around them in a chemical laboratory environment.
<b>Coordinator:</b>	Dr Stephen Best
<b>Subject Overview:</b>	<p>The subject includes lecture and practical components. The lectures provide a formal introduction of thermodynamics and its application to phase and chemical equilibria and cover the reactions and properties of s-, p- and d- block elements. The practical component of the subject will include the synthesis of different classes of organic and inorganic compounds, characterization of chemical compounds using modern analytical techniques; analysis of samples with single and multiple components; determination of the kinetic and thermodynamic properties of molecules; measurement and interpretation of the spectroscopic and magnetic properties of inorganic and organic compounds.</p> <p>This subject, together with prior completion of a second year subject in Organic Chemistry (610-220 or 610-221), will provide the skills needed to permit enrolment in <i>Structure and Properties</i> and thereby provide a path to a Chemistry major.</p>
<b>Objectives:</b>	<p>Upon completion of this subject students should;</p> <ul style="list-style-type: none"> <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> <li># acquire skills needed to conduct chemical synthesis;</li> </ul>

	<ul style="list-style-type: none"> <li># develop the skills needed to perform a range of techniques used for chemical analysis;</li> <li># be able to interpret and report the results of spectroscopic or analytical measurements;</li> <li># apply procedures that allow the safe handling of chemicals and conduct of chemical reactions.</li> </ul>
<b>Assessment:</b>	Up to five short tests of duration less than 1 hour conducted online using the learning management system (LMS) for a total of 15%, Ongoing assessment of practical work (of technical competence, reporting and interpretative skills) in the form of approximately 10 short reports (three to four pages) due during the semester (35%) and a two-hour end of semester exam (50%)
<b>Prescribed Texts:</b>	None
<b>Recommended Texts:</b>	P Atkins and J De Paula, <i>Atkins' Physical Chemistry</i> , 8th edition, Oxford University Press, 2006. C E Housecroft and A G Sharpe, <i>Inorganic Chemistry</i> , 3rd Edition, Pearson Prentice-Hall 2008.
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<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>	<p>This subject will develop the following generic skills:</p> <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 use conceptual models to rationalise observations</li> <li># the ability to think and reason logically;</li> <li># the ability to think critically and independently;</li> <li># data recording and interpretation of scientific observations;</li> <li># ability to search databases and the literature;</li> <li># be able to apply procedures for data and error analysis.</li> </ul>
<b>Notes:</b>	<p>Students enrolled in the BSc (pre-2008 degree), BASc or a combined BSc course will receive science credit for the completion of this subject.</p> <p>A laboratory coat and safety glasses are required for laboratory activities.</p> <p>Subject materials will be disseminated via the learning management system (LMS). Students will be expected to be able to access the LMS for tests conducted through the semester.</p>