CHEM30015 Advanced Practical Chemistry

Credit Points:	12.5
Level:	3 (Undergraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: On average 7 hours a week of practical laboratory work. Total 84 hours. Total Time Commitment: Estimated total time commitment of 170 hours
Prerequisites:	Completion of **Subject** / **Study Period Commencement:** / **Credit Points:** CHEM20019 Practical Chemistry 2 / Semester 2 / 12.50 CHEM30016 Reactivity and Mechanism / Semester 1 / 12.50 CHEM30016 Reactivity and Mechanism may be taken at the same time. Exchange students are required to contact the subject coordinator prior to enrolment.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Assoc Prof Trevor Smith
Contact:	Email: **third-year-lab@chemistry.unimelb.edu.au (mailto:third-year-lab@chemistry.unimelb.edu.au)**
Subject Overview:	This subject will build on the experience gained in second year practical chemistry through the synthesis and characterisation of complex molecules, the acquisition and interpretation of advanced spectroscopic and physical data and the investigation of chemical systems through computational techniques. It consists of a series of laboratory-based experiments aimed at developing skills in the synthesis, safe handling and analysis of chemical substances of a range of different classes of compounds; an understanding of modern characterisation techniques (e.g. chromatography, atomic and molecular spectroscopy); and the operation of instrumentation for the acquisition of kinetic, structural and thermodynamic data. A component of this subject will also involve the development of skills in independent practical work through the design and implementation of experimental procedures and techniques, and data interpretation. The subject will also provide opportunities for the development of scientific writing and presentation skills, problem solving and small group collaboration, while introducing resources and software commonly used within chemical research fields (i.e. scientific databases, chemical drawing software, molecular modelling & optimisation, etc).

	In addition to increased proficiency in standard techniques, this subject provides an introduction into research-based chemistry through integrated and themed experiments. It will provide skill development in a range of techniques utilised in the modern chemistry laboratory. The subject provides experience across multiple traditional chemical disciplines whilst highlighting the importance of these disciplines in diverse 'real world' applications such as materials science and medicinal chemistry.
Learning Outcomes:	This subject aims to refine students' experimental skills in the synthesis of complex molecules; the application and interpretation of advanced spectroscopic, computational and physical techniques; and the recording, interpretation and reporting of scientific observations.
Assessment:	Assessment of students' technical competence, reporting and interpretative skills will be based on 9 to12 short reports of up to 6 pages each (meeting the required format) to be completed during the first half of the semester and two to three longer reports of up to 10 pages each (meeting the required format) based on themed experiments to be conducted in the second half of the semester (85%).The remaining 15% of the assessment will be based on students' contributions to group work (conducted in weeks 10 to 12) and will be based on a long report (up to 10 pages), peer review (up to 500 words) and a short oral presentation.
Prescribed Texts:	The laboratory manual for this subject (available as a PDF document on-line)
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Upon completion of this subject, students should have developed the following generic skills: # the ability to use conceptual models to rationalise observations; # data recording and interpretation of scientific observations; # ability to search databases and the scientific literature; # ability to use advanced computational packages; # be able to apply procedures for data and error analysis; # ability to write scientific reports; # an understanding and basic operations of modern techniques; # an awareness of safe and diligent laboratory practice, including safe chemical and glassware handling, and proper instrument operation.
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. A laboratory coat and safety glasses are required for laboratory activities (to be provided by the student).
Related Majors/Minors/ Specialisations:	Chemical Physics (specialisation of Physics major) Chemistry Chemistry Chemistry Chemistry Chemistry Chemistry (specialisation of Chemistry major) Medicinal Chemistry Medicinal Chemistry Medicinal Chemistry Medicinal Chemistry Medicinal Chemistry (specialisation of Chemistry major) Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED