CHEM30001 Physical Chemistry III

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	This subject is not offered in 2014. Lectures and practical work
Time Commitment:	Contact Hours: 24 one hour lectures throughout the semester; 28 hours of practical class on average 7 hours per week for 4 weeks. Total 52 hours. Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	**This subject is available for exchange students only**, who are required to have successfully completed an approved physical chemistry subject at 2nd year university level, which includes laboratory work. Students are required to contact the subject coordinator prior to enrolment.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Credit cannot be gained for this subject and any of:

Subject	Study Period Commencement:	Credit Points:
CHEM30016 Reactivity and Mechanism	Semester 1	12.50
CHEM30015 Advanced Practical Chemistry	Semester 1	12.50

An additional non-allowed subject combination normally exists between this subject and CHEM30017 Specialised Topics in Chemistry A. However enrolment in both CHEM30017 Specialised Topics in Chemistry A (with a restricted choice of topics) and this subject, may be approved by the subject coordinator.

Core Participation Requirements:	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 http://www.services.unimelb.edu.au/disability/
Contact:	Director of Third Year Studies **Email: third-year-director@chemistry.unimelb.edu.au (mailto:third-year-director@chemistry.unimelb.edu.au)**
Subject Overview:	The subject includes lecture and practical components. This lecture component is based on the Physical Chemistry lectures from CHEM30016 (12 lectures) and those from an approved module relating to Physical Chemistry chosen from the topics offered in CHEM30017 (12 lectures). A limited selection of the following topics will be offered, from which students choose one module: # Surface Chemistry of Soft Matter; # Interfacial Reaction Kinetics; # Physical Organic Chemistry; # Photomolecular Science; # Computational Chemistry; # Condensed Matter Theory
Learning Outcomes:	Upon completion of this subject, students should have an understanding of a number of aspects of Physical Chemistry that may include quantum theory (wave equations, tunnelling

	processes, vibrational and rotational motions, and quantum effects in extended systems), statistical mechanics (Boltzmann distributions and partition functions), molecular interactions (electric dipole moments and dipole interactions, electrostatic and dispersion forces, H-bonding, hydrophobic, repulsive and attractive interactions, interactions and the liquid-vapour interface) and kinetics (collision theory, elementary reactions, steady-state approximation, reaction rates, kinetic motion in gases, molecular motion in liquids, diffusion, catalysis, enzyme kinetics, chain reactions), colloidal phenomena and how they are dictated by surface interactions, computational and theoretical chemistry, condensed matter chemistry and light-matter interactions. The practical component of this subject will consist of a number of experiments involving the physical, computational and instrumental investigations of important chemical systems and phenomena, chosen from practical experiments offered within the CHEM30015 course.
Assessment:	Practical component: Ongoing assessment in the form of up to eight reports due during semester 1 (30%) Lecture components: To address the diversity of material taught in the various modules of this subject, there will be several options for assessment. The assessment for the specific module will be announced in the first lecture. Option 1: One one-hour end of semester exam (80%) and one to two assignments conducted during the module (20%). Option 2: Several assignments (written and/or oral) conducted during the module (100%). Satisfactory completion of both theory and practical work is necessary to pass the subject.
Prescribed Texts:	P Atkins and J De Paula, Atkins' Physical Chemistry, 8th Ed, Oxford University Press, 2006.
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:	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.
Related Majors/Minors/ Specialisations:	Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses