CHEM30001 Physical Chemistry IIIA

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Lectures and practical work
Time Commitment:	Contact Hours: Three 1-hour lectures per week for 8 weeks; and up to eight 1-hour tutorials 7 hours of practical class per week for 4 weeks. Total 60 hours. Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	One of **Subject** / **Study Period Commencement:** / **Credit Points:** CHEM20014 Organic and Physical Chemistry 2 — Year Long — 12.50 CHEM20025 Physical and Inorganic Chemistry 2 — Year Long — 12.50 CHEM20021 Physical Chemistry 2 — Year Long — 12.50 Or # 610-210 Light, Matter & Chemical Change A (prior to 2009) Or both of # 610-211 Light, Matter & Chemical Change B (prior to 2009) # 610-215 Physical Chemistry Practical (prior to 2009)
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:** CHEM30002 Physical Chemistry IIIB — Year Long — 12.50 CHEM30003 Physical Chemistry Practical III — Semester 1 — 6.25 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:	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:	Assoc Prof Uta Wille

Contact:	Director of Third Year Studies **Email: third-year-director@chemistry.unimelb.edu.au (mailto:third-year-director@chemistry.unimelb.edu.au)**
Subject Overview:	This level 3 chemistry subject is for students who commenced studies in chemistry prior to 2008 and intend to complete a Chemistry major. This subject investigates aspects of physical chemistry. The subject includes lecture and practical components.
Objectives:	Upon completion of this subject, students should have an understanding of 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). They should have an understanding of colloidal phenomena and how they are dictated by surface interactions. The practical component of this subject will consist of a number of experiments involving the physical and instrumental investigations of important chemical systems and phenomena.
Assessment:	Practical component: Ongoing assessment in the form of 4 written reports on laboratory-based practical exercises, in addition to two assignment-based reports, all 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 potentially can be taken as a breadth subject component for the following courses: # **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)** 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 (pre-2008 degree), BASc or a combined BSc course.

Related Majors/Minors/ Specialisations:	Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses