University of Pretoria Yearbook 2025

Physical chemistry 746 (CMY 746)

Qualification	Postgraduate
Faculty	Faculty of Natural and Agricultural Sciences
Module credits	15.00
NQF Level	08
Programmes	BScHons in Chemistry
Prerequisites	No prerequisites.
Contact time	5 lectures per week for 5 weeks
Department	Chemistry
Period of presentation	Semester 1 or Semester 2

Module content

This module encompasses a comprehensive study of selected physical chemistry topics. The topic chemical kinetics explores the rates of chemical reactions, equilibrium dynamics, and the intricacies of complex reactions. The theoretical foundations of statistical mechanics are covered, including Boltzmann distributions, partition functions, thermodynamic functions, ensembles, and equilibria. The module includes a discussion of the theory and applications of thermal analysis for the determination of kinetics and the elucidation of reaction mechanisms. Furthermore, the module addresses the principles of crystallography and its application to structure determination at the molecular level. Lastly, quantum chemistry is examined, encompassing the quantum mechanics of one- and many-electron models, Hartree-Fock theory, electron density models, including density functional theory, and molecular orbital interpretations.

University of Pretoria Programme Qualification Mix (PQM) verification project

The higher education sector has undergone an extensive alignment to the Higher Education Qualification Sub-Framework (HEQSF) across all institutions in South Africa. In order to comply with the HEQSF, all institutions are legally required to participate in a national initiative led by regulatory bodies such as the Department of Higher Education and Training (DHET), the Council on Higher Education (CHE), and the South African Qualifications Authority (SAQA). The University of Pretoria is presently engaged in an ongoing effort to align its qualifications and programmes with the HEQSF criteria. Current and prospective students should take note that changes to UP qualification and programme names, may occur as a result of the HEQSF initiative. Students are advised to contact their faculties if they have any questions.