



University of Pretoria Yearbook 2025

BScHons *Chemistry* (02240123)

Department Chemistry

Minimum duration of study 1 year

Total credits 135

NQF level 08

Admission requirements

1. Relevant BSc degree
2. A weighted average of at least 60% for chemistry modules at final-year level

Note: Additional modules may be required in order to reach the desired level of competency



Curriculum: Final year

Minimum credits: 135

Students must choose any two of the three research modules: CMY 718, CMY 719, CMY 731.

Core modules

Research: Organic/inorganic project 718 (CMY 718)

Module credits	20.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 seminar, 6 practicals per week for 9 weeks
Language of tuition	Module is presented in English
Department	Chemistry
Period of presentation	Semester 1 and Semester 2

Module content

Students work on one project during the year which has a significant component that can be described as instrumental or computational or analysis of data or theoretical. A report and a presentation are required.

Research: Physical/analytical project 719 (CMY 719)

Module credits	20.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 seminar, 6 practicals per week for 9 weeks
Language of tuition	Module is presented in English
Department	Chemistry
Period of presentation	Semester 1 and Semester 2

Module content

Students work on one project during the year which has a significant component that can be described as instrumental or computational or analysis of data or theoretical. A report and a presentation are required.

Advanced practical techniques 730 (CMY 730)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	5 lectures per week for 6 weeks, 5 tutorials per week for 6 weeks
Language of tuition	Module is presented in English



Department Chemistry

Period of presentation Year

Module content

The module covers a range of generic characterization techniques and supporting research skills that honours graduates should be able to apply in a range of settings such as research proposal writing, ethics for chemists; and chemical information literacy. Techniques suitable for the characterization of materials; molecular modelling; NMR spectroscopy; and crystallography are presented from a practical point of view with an emphasis on the interpretation of data and use of instrumentation rather than on underlying theory.

Research: Chemistry education 731 (CMY 731)

Module credits 20.00

NQF Level 08

Prerequisites No prerequisites.

Contact time 1 seminar, 6 other contact sessions per week for 9 weeks

Language of tuition Module is presented in English

Department Chemistry

Period of presentation Semester 1 and Semester 2

Module content

Students may select one project per year which can be described as research into the teaching and learning of chemistry at tertiary level.

Analytical chemistry 743 (CMY 743)

Module credits 15.00

NQF Level 08

Prerequisites No prerequisites.

Contact time 5 lectures per week for 5 weeks

Language of tuition Module is presented in English

Department Chemistry

Period of presentation Semester 1 or Semester 2

Module content

This module will provide an in-depth coverage of analytical techniques including principles governing instrument design, data generation and data analysis. Firstly, it will explore principles of mass spectrometry and then the focus will shift to chromatography. The discussion will extend to multidimensional chromatographic systems and their coupling to mass spectrometry. Additionally, the module will address the intricacies of sampling trace organic analytes, delving into sampling protocols, potential errors, calibration methods, and analytical method validation. Lastly, the electrochemistry segment will concentrate on the theory of the electrode/electrolyte interface and electro-kinetic phenomena, alongside advanced voltammetric techniques.



Organic chemistry 744 (CMY 744)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	5 lectures per week for 5 weeks
Language of tuition	Module is presented in English
Department	Chemistry
Period of presentation	Semester 1 or Semester 2

Module content

This module encompasses advanced topics in organic synthesis covering retrosynthesis and protecting groups in synthesis. Additionally, stereocontrolled organic synthesis is addressed with emphasis on diastereoand enantioselectivity via substrate control, chiral auxiliaries, reagent control, and catalyst control is discussed. Furthermore, the module examines nucleophilic aromatic substitution approaches, reactions of heteroaromatic compounds, and pericyclic reactions.

Inorganic chemistry 745 (CMY 745)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	5 lectures per week for 5 weeks
Language of tuition	Module is presented in English
Department	Chemistry
Period of presentation	Semester 1 or Semester 2

Module content

This module discusses advanced aspects of inorganic and organometallic chemistry. Firstly, it explores the classification of ligands and complexes, providing a comprehensive understanding of their properties and interactions. The module also delves into the synthesis, structure, bonding, reactivity, and applications of organometallic complexes. Additionally, it covers main group chemistry, progressing from complexes to clusters and networks, ultimately exploring supramolecular chemistry. Lastly, the module examines reaction kinetics, mechanisms, and fundamental concepts in catalysis.

Physical chemistry 746 (CMY 746)

Module credits	15.00
NQF Level	08
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.

Advanced applied chemistry 747 (CMY 747)

Module credits 20.00

NQF Level 08

Prerequisites No prerequisites.

Contact time 5 lectures per week for 5 weeks

Department Chemistry

Period of presentation Semester 1 or Semester 2

Module content

Students must complete three advanced applied chemistry topics offered within this module: in topics such as Advanced materials; Computation and AI; Process chemistry and catalysis; Environmental chemistry; Energy; Drug discovery and development.

General Academic Regulations and Student Rules

The [General Academic Regulations \(G Regulations\)](#) and [General Student Rules](#) apply to all faculties and registered students of the University, as well as all prospective students who have accepted an offer of a place at the University of Pretoria. On registering for a programme, the student bears the responsibility of ensuring that they familiarise themselves with the General Academic Regulations applicable to their registration, as well as the relevant faculty-specific and programme-specific regulations and information as stipulated in the relevant yearbook. Ignorance concerning these regulations will not be accepted as an excuse for any transgression, or basis for an exception to any of the aforementioned regulations. The G Regulations are updated annually and may be amended after the publication of this information.

Regulations, degree requirements and information

The faculty regulations, information on and requirements for the degrees published here are subject to change and may be amended after the publication of this information.



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.