

University of Pretoria Yearbook 2025

Chemical engineering materials 211 (CIM 211)

Qualification Undergraduate

Faculty [Faculty of Engineering, Built Environment and Information Technology](#)

Module credits 12.00

NQF Level 06

Programmes [BEng in Chemical Engineering 4-year programme](#)

[BEng in Chemical Engineering 5-year programme](#)

Prerequisites CHM 181, admission to relevant programme

Contact time 3 tutorials per week, 3 lectures per week

Language of tuition Module is presented in English

Department Chemical Engineering

Period of presentation Semester 1

Module content

Introduction to the synthesis, processing, structure, physical properties, and engineering applications of key materials, including metals, ceramics, polymers, and composites. Stress concepts, exploring stress in structural elements, oblique planes, various load conditions, stress components, and design considerations. Stress and strain, including statically indeterminate problems, thermal effects, Poisson's ratio, generalized Hooke's Law, shearing strain, and stress-strain relationships. Mechanical testing aspects such as strength, ductility, hardness, toughness, fatigue, and creep, along with discussions on failure mechanics. Structural, mechanical, thermodynamic, and design-related considerations relevant to chemical engineering applications. Materials specification, focusing on the corrosion of metals and the degradation of polymer components.

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.