



University of Pretoria Yearbook 2020

Chemical engineering 310 (CIR 310)

Qualification Undergraduate

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

Module content Fundamentals of phase and chemical equilibrium with emphasis on vapour/liquid systems leading to the study of separations and reacting systems. Concepts and formalism of thermodynamics. Postulates and laws of thermodynamics. Thermodynamic functions (enthalpy, entropy, Gibbs free energy). Thermochemistry and Ellingham diagrams. Phase Equilibria: Phase diagrams of single substances, phase boundaries, the Phase Rule. Phase diagrams of mixtures, steam distillation, eutectic mixtures. Solution thermodynamics: Ideal and non-ideal solutions, excess properties and activity coefficient models. The equations of state of ideal and real gases, residual properties and fugacity. Vapour-liquid equilibrium from equations of state and the approach. Application of thermodynamics to equilibrium between fluid- (gas and liquid) and condensed (liquid and solid) phases. Chemical reaction equilibrium.

Module credits 8.00

Programmes [BEng Chemical Engineering](#)

[BEng Chemical Engineering ENGAGE](#)

Prerequisites (CTD 223), CHM 215

Contact time 2 lectures per week, 2 tutorials per week

Language of tuition Module is presented in English

Department Chemical Engineering

Period of presentation Semester 1

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