University of Pretoria Yearbook 2018

Thermodynamics 221 (MTX 221)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
Programmes	BEng Industrial Engineering
	BEng Industrial Engineering ENGAGE
	BEng Mechanical Engineering
	BEng Mechanical Engineering ENGAGE
	BEng Mining Engineering
	BEng Mining Engineering ENGAGE
Prerequisites	FSK 116 or FSK 176
Contact time	1 practical per week, 1 tutorial per week, 3 lectures per week
Language of tuition	Afrikaans and English are used in one class
Department	Mechanical and Aeronautical Engineering
Period of presentation	Semester 2

Module content

Application overview. Concepts: system, control volume, property, state, process, cycles, mass, volume, density, pressure, pure substances, property tables, ideal gases. Work and heat. Internal energy, enthalpy, specific heat capacity. First Law of Thermodynamics for system and control volume. Conservation of mass. Processes: Adiabatic, isentropic, compressible and incompressible gases. Second Law of Thermodynamics for system and control volume. Entropy and enthalpy. Third Law of Thermodynamics. Introduction to vapour power, cooling and gas cycles. Experimental techniques in thermodynamics.