University of Pretoria Yearbook 2020

Process heat transfer and control 312 (NPB 312)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
Programmes	BEng Metallurgical Engineering
	BEng Metallurgical Engineering ENGAGE
Prerequisites	No prerequisites.
Contact time	1 tutorial per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Materials Science and Metallurgical Engineering
Period of presentation	Semester 1

Module content

Elements of metallurgical process control. Introduction to process instrumentation. Control loops, identification of controlled and manipulated variables and disturbances. Principles of proportional integral controller, tuning of PID controllers. Principles of steady-state and transient heat transfer. Transient and steady-state heat transfer in metallurgy (formation of freeze layers, heating and cooling of components). Introduction to the numerical solution to steady-state and transient heat transfer problems.