

University of Pretoria Yearbook 2022

Process heat transfer and control 312 (NPB 312)

Qualification Undergraduate

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

Module credits 16.00

NQF Level 07

Programmes [BEng \(Metallurgical Engineering\)](#)

[BEng \(Metallurgical Engineering\) ENGAGE](#)

Prerequisites No prerequisites.

Contact time 2 tutorials per week, 4 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.

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