University of Pretoria Yearbook 2019

Thermoflow 410 (MTV 410)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
Programmes	BEng Mechanical Engineering
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Prerequisites	No prerequisites.
Contact time	3 lectures per week, 1 practical per week
Language of tuition	Module is presented in English
Department	Mechanical and Aeronautical Engineering
Period of presentation	Semester 1

Module content

Navier-Stokes and continuity equations. Euler equations, momentum equations. Conduction in two dimensions. Similarity and dimensional analysis. Unsteady heat transfer. Convective heat transfer: forced convection (external and internal), natural convection. Thermal radiation. Heat exchangers: classification, Parallel flow and counterflow heat exchangers; double-pass, multi-pass and cross-flow heat exchangers; LMTD method, Effectiveness-NTU method, selection of heat exchangers