

University of Pretoria Yearbook 2017

Thermoflow 310 (MTV 310)

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

Module content

Introduction: Liquids and gases, pressure, viscosity, temperature, heat. Introduction to Navier-Stokes and continuity equations. Definitions and properties of fluids, fluid statics, fluid dynamics, Bernoulli equations. Flow measurements. Dimensional analysis: force, drag, Reynolds number, force coefficient, power. Flow in pipes and channels: friction coefficients and Reynolds number, pressure drop; laminar, turbulent and transitional flow. Flow over bodies: drag and lift. Experimental techniques in fluid mechanics. Introduction to basic thermodynamic heat transfer concepts: conduction (steady state and transient heat conduction), extended surfaces, applications.

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