

University of Pretoria Yearbook 2016

Computational fluid dynamics 411 (MKM 411)

Qualification Undergraduate

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

Module credits 16.00

Programmes [BEng Mechanical Engineering](#)
[BEng Mechanical Engineering Engage](#)

Prerequisites MTV 310

Contact time 3 lectures per week, 1 practical per week

Language of tuition English

Academic organisation Mechanical and Aeronautical En

Period of presentation Semester 1

Module content

Introduction to continuum mechanics, continuity equation, momentum equation, Navier-Stokes equation, energy equation, boundary conditions in thermal fluid systems, finite difference method, introduction to finite volume method (FVM), FVM for diffusion problems, FVM for convection-diffusion problems, introduction to pressure-velocity coupling in FVM. SIMPLE algorithm, selecting and assessing the applicability and limitations of the method, properly applying the method with commercial software, critically testing and assessing the end-results.

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