

University of Pretoria Yearbook 2017

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), (MKM 321)
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 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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