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# University of Pretoria Yearbook 2016

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## 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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