# Computational fluid dynamics 411 (MKM 411)

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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 |
| **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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