

University of Pretoria Yearbook 2016

Finite element applications in Civil Engineering 780 (SIR 780)

Qualification	Postgraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	24.00
Programmes	BEngHons Geotechnical Engineering BEngHons Structural Engineering BEngHons Transportation Engineering BEngHons Water Resources Engineering BScHons Applied Science Applied Science: Geotechnics BScHons Applied Science Applied Science: Structures
Prerequisites	No prerequisites.
Language of tuition	English
Academic organisation	Civil Eng
Period of presentation	Year

Module content

A research term paper will be prepared.

This course covers general finite element theory; discretization aspects related to geometry, nodes and numbering, element type and shape; interpolation functions; formulation of element characteristic matrices and vectors for elasticity problems; assembly and solution of the finite element equations; modelling procedures and results processing. More advanced applications of finite elements such as non-linear static elasticity, buckling, dynamics and transient thermal problems will be covered. In terms of the application of the Finite Element method, the student will choose a specific field (e.g. structures, geotechnical, transportation or water/hydrology) to apply the theory that was covered in the course to solve typical Civil Engineering problems.

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