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# University of Pretoria Yearbook 2020

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## Numerical analysis 733 (WTW 733)

**Qualification** Postgraduate

**Faculty** Faculty of Natural and Agricultural Sciences

**Module credits** 15.00

**Programmes** BScHons Applied Mathematics

BScHons Financial Engineering

BScHons Mathematics

BScHons Mathematics and Mathematics Education Applied Analysis

BScHons Mathematics and Mathematics Education Differential Equations and Modelling

BScHons Mathematics of Finance

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Mathematics and Applied Mathematics

**Period of presentation** Semester 1

### Module content

An analysis as well as an implementation (including computer programs) of methods are covered. Numerical linear algebra: Direct and iterative methods for linear systems and matrix eigenvalue problems: Iterative methods for nonlinear systems of equations. Finite difference method for partial differential equations: Linear elliptic, parabolic, hyperbolic and eigenvalue problems. Introduction to nonlinear problems. Numerical stability, error estimates and convergence are dealt with.

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