

Applied Mathematics 677

Numerical Solution of Partial Differential Equations

(see Course Descriptions for the applicable academic year: <http://www.ucalgary.ca/pubs/calendar/> )

*Syllabus*

<u>Topics</u>	<u>Time</u>
Numerical methods for ODEs: multistep methods, Runge-Kutta methods, stability and accuracy, error control.	10
Finite difference methods for elliptic equations: difference operators, convergence analysis.	5
Finite element methods for elliptic equations: construction of finite element approximations, function spaces and norm equivalences, proof of convergence for the homogeneous Dirichlet boundary value problem, a posteriori error analysis and adaptivity, extensions to higher dimensions.	12
Iterative solution of sparse linear systems.	3
Partial differential equations of evolution. Stability and convergence for finite difference and finite element methods.	6
TOTAL HOURS	36

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