

MATH 478. COMPUTATIONAL METHODS IN APPLIED MATHEMATICS

Credits: 3

Offered by: Mathematics and Statistics (Faculty of Science)

This course is not offered this catalogue year.

Description

Solution to initial value problems: Linear, Nonlinear Finite Difference Methods: accuracy and stability, Lax equivalence theorem, CFL and von Neumann conditions, Fourier analysis: diffusion, dissipation, dispersion, and spectral methods. Solution of large sparse linear systems: iterative methods, preconditioning, incomplete LU, multigrid, Krylov subspaces, conjugate gradient method. Applications to, e.g., weighted least squares, duality, constrained minimization, calculus of variation, inverse problems, regularization, level set methods, Navier-Stokes equations

- Prerequisites: MATH 315 or MATH 325 or MATH 263; MATH 317 or MATH 387 or COMP 350 or MECH 309; or permission of the instructor
- This course will be taught in the winter semester.

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