MATH 546: Numerical Analysis of Elliptic PDEs.

Location: WILS 5
Time: M-W-F 2:10-3
Instructor: Sergey Lapin
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Office Hours: M-W 3:30-4:30

Suggested books:

- J.W. Thomas "Numerical Partial Differential Equations: Conservation Laws and Elliptic Equations"
- G. Birkhoff, R. Lynch "Numerical Solution of Elliptic Problems"
- S. Larsson, V. Thomee "Partial Differential Equations with Numerical Methods"
- K.W. Morton, D.F. Mayers "Numerical Solution of Partial Differential Equations"

Course outline:

1. Introduction and mathematical preliminaries
2. Overview of elliptic partial differential equations
3. Finite difference methods for elliptic equations
4. Solvability and convergence of elliptic difference schemes
5. Direct methods
6. Iterative methods
7. Numerical solution of Neumann problems

8. Numerical solution of mixed problems
9. Variational methods and Finite Element Approximation
10. Integral equation methods

Grading:

- Homework assignments - 40%
- Final project - 60%

Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Disability Resource Center (DRC). All accommodations MUST be approved through the DRC (Admin Annex Bldg, Room 205). Please stop by or call 509-335-3417 to make an appointment with a disability specialist.