

MATH 546
Numerical Analysis of Elliptic PDE's
Fall 2018 MWF 2:10-3:30, CUE 407

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Textbook:

Numerical Solution of Differential Equations

Zhilin Li, Zhonghua Qiao, and Tao Tang, Cambridge University Press, 2018.

Outline: Math 546 provides an introduction to the numerical analysis of elliptic partial differential equations. Topics include finite difference and finite element methods for elliptic pdes; iterative methods such as gauss-seidel, SOR, conjugate-gradient and preconditioning for solving the linear systems that arise from discretization of the pdes. Multigrid methods.

Prerequisites: The formal prerequisite for this is a numerical analysis course similar to Math 448/548. Any previous undergraduate course in numerical analysis would be sufficient.

Assignments and Project: There will be no in-class exams. There will be five written assignments during the semester. A special project will be due at the end of the semester and will require some programming in a language such as Fortran, C, Matlab, or Python.

Grades Final grades will be based on the assignments and final project.