

MATH 401: GREEN'S FUNCTIONS AND VARIATIONAL METHODS

Topics

- Green's functions for ODEs and for PDEs. Applications to Electromagnetics, Boundary Integral Methods etc. (5 weeks)
- Calculus of Variations (3 1/2 weeks)
- Eigenfunction Expansions and Distribution of Eigenvalues (3 1/2 weeks)
- Introduction to Perturbation Methods (1 week)

Prerequisites

- Differential Equations: Math 215/316 or 255/257: Math 400.
- Some exposure to Physics is helpful.

References

There is no official text for the course. However, the following references are helpful.

- Zauderer: Partial Differential Equations of Applied Math
- Carrier and Pearson: PDE's
- Courant and Hilbert: Methods of Math. Physics Vol. 1 and 2.
- Gustafson: PDEs
- Gelfand and Fomin: Calculus of Variations
- Stakgold: Green's Functions and Boundary Value Problems

Instructor and Office Hours

Michael Ward, Room 1217 Math Annex, 822-5869.

Grading

There will be 1 midterm and (roughly) weekly homework assignments. The grading scheme is 30% for the midterm, 20% for the homeworks and 50% for the final exam.