

# Math 400 Outline

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**Focus:** This class concentrates on analytic methods to solve partial differential equations (PDE's) coming from physical applications.

**Topics:**

1. Classification of equations
2. Linear and quasi-linear first order equations, shock waves
3. Eigenfunction expansions and Sturm-Liouville theory
4. Parabolic (heat), elliptic (Laplace) and hyperbolic (wave) equations
5. Solution by integral transforms

**Text:** No required text. Optional text: “Elementary Applied Partial Differential Equations,” by Richard Haberman.

**Marks:** 50% final, 25% midterm, 35% assignments.