

Math 400

Instructor: Neil Balmforth, njb@math.ubc.ca

1. Definitions and classification - Parabolic (heat), elliptic (Laplace) and hyperbolic (wave) equations
2. Review of solution by separation of variables and Fourier series
3. Eigenfunction expansions and Sturm-Liouville theory
4. Solution by integral transforms
5. Quasi-linear first-order equations
6. Shocks and applications to traffic flow

Optional text (none required): *Elementary Partial Differential Equations*, R. Haberman.

Approximate breakdown of marks: 63% final, 25% midterm, 12% assignments