P4820 Mathematical Physics III
Outline

Text: Mathematical Methods for Physicists: Arfken & Weber

Reference: Mathematics for Physicists: Susan M. Lea

- Laplace Transforms: Arfken chapters 15.8-15.12

  - Definition/properties
  - Solving differential equations
  - Convolution
  - General inversion

- Generalised Functions: Arfken chapters 1.15, 5.5, 15.1, 10.5

  - Delta function
  - Theory of distributions

- Sturm-Liouville Theory: Arfken chapters 10.1-2, 10.3?, 10.4-5

  - Spherical harmonics
  - Bessel functions
  - Orthogonal polynomials
  - Green's Function

- Fourier Series Applications: Arfken chapters 14.1-14.5   -

  Fourier's Theorem
  - Coefficients
  - Sine and Cosine Series
  - Solving Differential Equations
  - Convergence