 Separation of variables, first order equations, Sturm-Liouville theory, integral transform methods.

Prerequisite:
One of MATH 300, MATH 305 [complex variables, contour integration, residues, branch cuts (and possibly: complex inversion formulas for Fourier and Laplace transforms)] and one of MATH 256, MATH 257, MATH 316 [ODEs, introductory PDEs, separation of variables, Fourier series solutions of PDEs (and possibly: power series solutions of ODEs, Bessel functions, Sturm-Liouville theory)].

Course web page:
http://www.math.ubc.ca/~nagata/m400/

Recommended textbook (not required):

Additional references:

Instructor, email:
Wayne Nagata, nagata@math.ubc.ca

Office location, hours:
Mathematics 112, Tu Th 15:30–17:00

Topics:
First order equations, characteristics.
Linear second order equations.
The wave and diffusion (heat) equations.
Separation of variables, Sturm-Liouville theory.
Laplace’s equation.
Eigenfunction expansions, special functions.
Integral (Fourier and Laplace) transform methods.
Nonlinear equations [if time permits].

Grading:
25% Homework
25% Midterm test
50% Final examination