Syllabus for MATH4545: Fourier Series and PDE's
SPRING 2017

This is a first Partial Differential Equations course, covering the derivation and solution of the heat equation and wave equation. It introduces the technique of separation of variables, and develops Fourier Theory and Sturm-Liouville Theory. Applications are given to heat flow in a rod and to vibrating strings. The method of characteristics, and the theory of shock waves will also be presented.

INSTRUCTOR: Prof. S. Jekel, 525 Lake, X-5639, e-mail: jekel@neu.edu

OFFICE HOURS: Wednesday 1:30 – 3:00, Thursday 3:30 – 5:00, or by appt.

TEXT: Constanda, Solution Techniques for Partial Differential Equations, 3rd edition

TOPICS:
• Fourier Series
• Sturm-Liouville Problems
• The Heat Equation, Wave Equation and Laplace Equation
• Solution by Separation of Variables
• Non-homogeneous Problems and Eigenfunction Expansion
• Laplace Transforms
• The Method of Characteristics

HOMEWORK:
There will be daily homework assignments. Solutions will usually be discussed in class.
Some problem sets will be designated as ones to be handed in.

GRADING:
• Quizzes 60%, (Five announced quizzes will be given; four best will count.)
• Final Exam 30%
• Homework 10%