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**Fourier Methods and Partial Differential
Equations**

MATH-338*

This is a course with topics of special interest in Engineering Physics and Geological Engineering.

Textbook: *Boundary Value Problems*, 4th Edition
by David L. Powers (Academic Press)

Supplementary Text: *Partial Differential Equations and Boundary Value Problems*
by N. Asmar

Prerequisites: MATH 227* or 272* or 280*; MATH 225* or 226* or 231* or 237*;
or permission of the instructor.

Instructor: A. Reicker

Evaluation:	Homework	20%
	Midterm	20%
	Final Examination	60%

Topics:

- Review of Ordinary Differential Equations
- Introduction to Fourier Series expansions
- The one-dimensional Heat Equation and the method of Separation of Variables
- The one-dimensional Wave Equation
- Convergence of Fourier Series and the Fourier Transform
- Separation of Variables in higher dimensions and other coordinate systems
- Sturm-Liouville Theory
- Laplace Transform techniques