Marshall University

College of Science

MTH 415: Partial Differential Equations

Course catalog description

Elementary partial differential equations. Heat Equation, Laplace's Equation, separation of variables, Fourier series, vibrating strings, eigenvalue problems, finite differences, Bessel functions, Legendre polynomials.

Credit hours

3 hours

Prerequisites

A grade of C or higher in MTH331 and MTH335

Course objectives

- To introduce students to fundamental partial differential equations, including the transport equation, the heat equation, the Laplace / Poisson equation (potential equation), and the wave equation.
- To give students an introduction to the classical techniques of solving partial differential equations, including using separation of variables, Fourier series, and Laplace transforms.
- To introduce students to initial value problems and boundary value problems of partial differential equations.
- To show students how to model physical systems with partial differential equations.

Suggested textbooks

- J. David Logan, *Applied Partial Differential Equations*, second edition, Springer.
- Boundary Value Problems and Partial Differential Equations, Powers.

Last updated

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