

Marshall University

College of Science

Mathematics Department

MTH 335: Differential Equations

Course catalog description

First and second-order ordinary differential equations. Applications include vibrations and electrical circuits. Laplace transform, approximate solutions, orthogonal functions, Fourier series; partial differential equations including heat, wave, and Laplace equations.

Credit hours

4 hours

Prerequisites

A grade of C or higher in MTH 231.

List of topics

- Introduction to Differential Equations
- Initial-Value Problems
- First-Order Differential Equations including Separable Variables, Linear Equations, Exact Equations, Homogeneous Equations, Bernoulli's Equations
- Second and Higher-Order Homogeneous and Nonhomogeneous Linear Equations with Constant Coefficients
- Variation of Parameters and Cauchy-Euler Equations
- Solving systems of Linear Equations
- Modeling with First and Second-order Differential Equations including growth and decay, Newton's Law of Cooling, Mixture of solutions, Series Circuit, Logistic Equations, Spring Mass System
- Series Solutions of Linear Equations and Bessel's Equations
- The Laplace Transform and Convolution
- Solving Differential Equations with Laplace Transform

Suggested textbooks

- A First Course in Differential Equations by J. David Logan
- Differential Equations with Boundary Value Problems by Zill and Wright

Last updated

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