

Virginia Western Community College

MTH 267

Differential Equations

Prerequisites

Completion of MTH 264 Calculus II or equivalent with a grade of C or better.

Course Description

Introduces ordinary differential equations. Includes first order differential equations, second and higher order ordinary differential equations with applications and numerical methods.

Semester Credits: 3

Lecture Hours: 3

Required Materials

Textbook:

Elementary Differential Equations and Boundary Value Problems. Boyce & DePrima. 10th edition. John Wiley & Sons. ISBN: 9780470458310.

Course Outcomes

At the completion of this course, the student should be able to:

- Have a general understanding of the role of differential equations as a tool for solving many practical problems of engineering and science as well as a wide range of purely mathematical problems.
- Solve first order and second order nonhomogeneous differential equations.
- Solve systems of differential equations using eigenvalues and eigenvectors.
- Use Laplace Transforms to solve initial value problems.
- Derive a series solution about an ordinary point.

Topical Description

<u>Topics</u>	<u>Chapter</u>	<u>Section</u>
Definitions and examples of differential equations	1	1.1-1.4
Equations of First Order (Linear, Nonlinear, Applications)	2	2.1-2.7
Equations of Second Order	3	3.1-3.8
Higher Order	4	4.1-4.2
Systems of Differential Equations	7	7.1-7.9
Laplace Transforms	6	6.1-6.4
Series Solutions to Differential Equations	<u>5</u>	<u>5.1-5.3</u>

Maple Labs

1. Direction Fields
2. Symbolic Solutions
3. Laplace Transforms

Notes to Instructors

None.