



Course Title: Differential Equations

Course No. MAT 234

Class Hours: 4

Laboratory Hours: 0

Credit Hours: 4

Department Head Approval: _____
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Date: Spring 2007

Dean Approval: _____
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Prerequisite:

MAT-233 or approval of mathematics department chairperson.

Textbook of Course:

<u>Author</u>	<u>Title</u>	<u>Publisher</u>
Simmons, Kranz	<u>Differential Equations</u> Theory, Technique, and Practice	McGraw-Hill

Catalog Course Description:

An introduction to differential equations for students interested in mathematics and sciences – both physical and social sciences. Covers first-and second-order ordinary differential equations and systems of first-order equations, both linear and non-linear. Qualitative and numerical analysis are emphasized along with analytic techniques such as Laplace transforms and matrix methods. Applications and modeling of real phenomena are discussed throughout the course.

Objectives of Course:

1. To master elementary methods for solving first-order linear ordinary differential equations, and second-order linear ordinary differential equations with constant coefficients.
2. To apply differential equations in solving such problems of the physical and engineering sciences as those of elementary mechanics, growth and decay phenomena, and oscillation theory.
3. To introduce the theoretical background of differential equations in the terms of linear algebra and matrices.
4. To learn numerical and graphical methods for solving differential equations by the use of methods such as Euler to Runge-Kutta.

5. To be able to handle systems of first order linear equations.
6. To be familiar with alternative methods to solve differential equations including Laplace transforms and infinite series.

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