

Math 2233 - Differential Equations Syllabus - Summer 2017

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Lecture Times: 9:00 - 10:15 MTWTh, CLB 103
Office Hours: MTWTh 10:30–11:00
Required Text: *Elementary Differential Equations and Boundary Value Problems*, 10th Edition,
by W.E. Boyce and R.C. DiPrima, John Wiley & Sons, 2012, ISBN 978-0-470-45831-0

Prerequisites: Calculus II
Course Objectives: Upon completing this course, students should understand the general theory of differential equations and the basic techniques for solving differential equations/boundary value problems involving one unknown function and one independent variable.

Homework: Homework problems will be assigned daily in class. All the homework assigned during a given week will be due at the beginning of the first class of the following week. Several of the homework assignments may involve the use of the computing facilities at the MLSC (Mathematics Learning Success Center), located on the fifth floor of the Library.

Examinations: There will be two midterm examinations worth 100 pts each and one final examination worth 125 pts.

Grades: Grades will be determined exclusively from homework, midterm, and final exam scores.

2 Midterm Examinations	200 possible pts.
Homework and Quizzes	25 possible pts.
Final Examination	<u>125 possible pts.</u>
	350 possible pts.

Letter grades will be assigned as follows:

A:	315	-	350 pts.
B:	280	-	314 pts.
C:	245	-	279 pts.
D:	210	-	243 pts.
F:	0	-	209 pts.

Math 2233

Course Outline

I. Introduction

- A. Differential Equations: Solutions and Classification

II. Approximate Methods

- A. Graphical Methods
- B. Numerical Methods

III. First Order Ordinary Differential Equations

- A. First Order ODEs : General Theory
- B. Separation of Variables
- C. First Order Linear ODEs
- D. Constants of Integration and Initial Conditions
- E. Exact Equations
- F. Integrating Factors
- G. Change of Variable

FIRST EXAM

IV. Second Order Linear Ordinary Differential Equations

- A. Second Order Linear ODEs : General Theory
- B. Reduction of Order
- C. Second Order Linear Equations with Constant Coefficients
- D. Non-homogeneous Equations
- E. Variation of Parameters
- F. Euler Equations

V. Higher Order Differential Equations

- A. Higher Order ODEs
- B. Higher Order Linear ODEs with Constant Coefficients

SECOND EXAM

VI. Series Solutions of Second Order Linear ODEs

- A. Review of Power Series
- B. Power Series Solutions
- C. Singular Points and Convergence of Series Solutions
- D. Series Solutions about Singular Points

VII. Laplace Transforms

- A. The Laplace Transform
- B. Laplace Transform Techniques

FINAL EXAM