Math 2233 - Differential Equations  
Syllabus - Summer 2014

Instructor: Dr. Birne Binegar  
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Lecture Times 9:00 - 10:15 MWFTh, MSCS 514  
Office Hours: MTWTh 10:30–11:15

Required Text: Elementary Differential Equations and Boundary Value Problems, 10th Edition,  

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  
homeowrk assigned during a given week will be due at the  
begining 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.

Grading: Final grades will be determined exclusively from homework, midterm,  
and final exam scores.

Exam 1 100 possible pts.  
Exam 2 100 possible pts.  
Exam 3 (non-cumulative final exam) 100 possible pts.  
Homework and Quizes 50 possible pts.  
(350 total possible pts.)

Letter grades will be assigned as follows:

A: 315 - 350 pts.  
B: 280 - 314 pts.  
C: 245 - 279 pts.  
D: 210 - 244 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
   C. Taylor Series 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