

DIFFERENTIAL EQUATIONS SYLLABUS

MICHAEL BUTROS

SPRING 2009

COURSE INFORMATION

Section Number: 23031

Course Number and Title: Math 270 - Differential Equations

Lecture Meeting Days and Time: Monday - Wednesday, 3:45 - 5:20 PM

Class URL: <http://www.butros.info/DifferentialEquations.htm>

INSTRUCTOR INFORMATION

Instructor Name: Michael Butros

Instructor Office: Science Building - Room 45

Instructor Office Hours: M 12:30 - 2:00 PM and TH 11:15 AM - 12:45 PM

Instructor Phone: 760.245.4271 Ext. 2506

Instructor E-mail: butrosm@vvc.edu

IMPORTANT DATES:

Semester Begins: February 17, 2009

Spring Break: April 10 - 18, 2009

Memorial Day Holiday May, 25, 2009

Semester End: June 13, 2009

GENERAL CLASS INFORMATION:

Prerequisites: Math 227 - Calculus II with a grade of “C” or better.

Textbook: A First Course in Differential Equations: The Classic Fifth Edition by Zill.

Course Description: This course covers elementary differential equations, solutions of first order equations, linear equations with constant coefficients, simultaneous linear systems, series solutions, the Laplace transform, and applications to physics and engineering.

Course Objectives:

The student will be able to:

- Identify different types of differential equations.
- Solve first order linear differential equations.
- Solve linear non-homogeneous differential equations with constant coefficients.
- Solve systems of linear differential equations.
- Solve differential equations using Laplace transforms.

Course Content:

The following topics will be covered in lecture:

- Introduction to Differential Equations
- Exact Differential Equations
- Separation of variables
- First-Order Linear Differential Equations
- Differential equations reducible to First-Order
- Bernoulli Equations
- Orthogonal Trajectories
- Exponential Growth and Decay
- Cooling Problems
- Mixture problems
- Determinants

- Linear dependence and independence of functions
- The Wronskian
- Homogeneous Linear differential equations with constant coefficients
- The characteristic equation
- Linear non-homogeneous equations with constant coefficients
- The method of undetermined coefficients
- The motion of a mass on a vibrating spring
- Free and undamped motion
- Free damped motion
- Forced motion
- The motion of a simple pendulum
- Electric circuits
- Solution of Linear Systems of differential equations
- Parallel electric circuits
- Power series solutions
- Initial value problem solutions using the power series method
- Taylor's series expansion for solving initial value problems
- Introduction to Laplace transform
- Properties of the Laplace transform
- The inverse Laplace transform
- Laplace Transform solution of linear differential equations with constant coefficients

Attendance Policy: Regular attendance is strongly recommended.

Grading Policy:

The grading for this class will consist of the following components:

Component	Percentage of Final Grade
Quizzes and Homework	10 %
Test One	20 %
Test Two	20 %
Test Three	20 %
Final	30 %

The final grade will be earned according to the following scale:

Total Percentage	Final Grade Earned
90 - 100 %	A
80 - 89 %	B
70 - 79 %	C
60 - 69 %	D
0 - 59 %	F

IMPORTANT NOTE: Students with disabilities, whether physical, learning, or psychological, who believe that they may need accommodations in this class, are encouraged to contact Disabled Student Program & Services as soon as possible to ensure that such accommodations are implemented in a timely fashion.

Authorization from DSPS is required before any accommodations can be made.

CLASS CONDUCT POLICIES:

- Anyone caught cheating will receive a grade of “F” for the course, in addition, I will pursue the strongest disciplinary action available at the college.
- Only those registered for the class are allowed in the classroom during lectures and labs
- It is expected that the sound features on all cell phones will be turned off before class or lab begins. If you have to answer a call or a text message, then you should leave the classroom and return your call or message is done.
- You are encouraged to work in groups on homework and practice problems, but each student should turn in their own work.
- All assignments and exams are to be completed on the assigned due dates. There will be no make up homework assignments, quizzes, or

exams. It is your responsibility to inform the instructor if you are going to be absent on a day when an assignment or exam is due.

- You are encouraged to ask questions during the lecture.