Mathematics 212
SYLLABUS
Spring 2002

Instructor: Mrs. Jan Smith
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Office Hours: 10:30 a.m. -- 2:30 p.m. MW
1:30 p.m. -- 3:30 p.m. T,Th
10:30 a.m. -- 12:00 p.m. Fri.
(Other times by appointment)

Textbook:
Dennis Zill, *A First Course in Differential Equations: The Classical Fifth Edition*

Other References:
George Simmons, *Differential Equations with Applications and Historical Notes*, Second Edition, 1991

Abramovitz and Stegun, *Handbook of Mathematical Functions*, 1970

Course Content: Mathematics 212 is a first course on ordinary differential equations. The course includes appropriate topics involving first-order differential equations, linear differential equations, linear systems, and series solutions. A listing of specific topics is included.

Course Objectives: At the end of the course, the students should be able to solve various ordinary differential equations (o.d.e.) by various methods; be familiar with and be able to apply the main points in the general theory of o.d.e.s; and be able to investigate some qualitative aspects of a given o.d.e. even if it cannot be solved explicitly.

HONOR CODE: THE HONOR CODE OF OXFORD COLLEGE APPLIES TO ALL WORK SUBMITTED FOR CREDIT. WHEN YOU WRITE YOUR NAME ON SUCH WORK, YOU ARE PLEDGING THAT THE WORK WAS DONE IN ACCORDANCE WITH THE RULES STIPULATED ON THE WORK OR IN THIS SYLLABUS.

Attendance: Students are expected to attend all classes and are responsible for all material covered in class as well as any changes made in the schedule regarding homework, problem sets and project dates. Class attendance and consistent preparation for class will determine the success or failure the student realizes in this course.

Written Work: Express your thoughts in complete sentences. Use mathematical symbols wherever appropriate and make your work neat and legible. Pay attention to the way problems are solved in class and in the textbook.

Homework: Homework will be assigned on a regular basis in class, but will not be collected. It is important that you complete most of the problems assigned. Handouts with additional problems and information will be used to supplement the textbook.

Problem sets: There will be three problem sets and a final exam. Instructions for each problem set will be given at the time the specific problem set is assigned. Your textbook and your own notes may be used on some sections of the problem sets. Some sections may require that you use no notes and that you complete the segment in one sitting. Help from another person may not be sought or used on either section.

Project: A project investigating one of several special topics will be due at the end of the term. The project will consist of both a written and an oral component. The oral presentation will be given in class during the last week or so of class. Further details of the project will be given at the appropriate time in the semester.

Grading:

3 Problem Sets @ 100 points each	300
Project	100
Final Exam	100
Total points	500

The following scale will be used to assign letter grades:

A:	450 – 500	points
B:	400 – 449	points
C:	350 -- 399	points
D:	300 -- 349	points
F:	Below 300	points

Grades of A-, B+, B-, C+, C-, D+ may be assigned for sums of points near the above cutoffs in total points.

Religious Holiday Observance: Any conflicts between the course schedule and religious holy days are to be negotiated by the students with the instructor.

Some Important Dates:

January 21	Holiday
January 23	Last Drop/Add Day
February 20	Last Day to Drop with W
March 11 - 15	Spring Break
April 30	Last Class Day
May 2 - 8	Final Exams

Topics:

Introduction: Basic Definitions (Syllabus, 1.1)

Separable Differential Equations (2.1, 2.2)

Separable and Homogeneous Equations (2.2, 2.3)

Exact Equations (2.4)

Linear Equations (2.5)

Equations of Bernoulli, Ricatti, and Clairaut; Review (2.6)

Substitutions; Review (2.7)

Orthogonal Trajectories (3.1)

Applications of Linear and Nonlinear Equations (3.2, 3.3)

Higher-order Linear Differential Equations (4.1)

Homogeneous Linear Equations with Constant Coefficients (4.2, 4.3)

Method of Undetermined Coefficients (4.4)

Variation of Parameters (4.7)

Cauchy-Euler Equation (6.1)

Review of Power Series; Power Series Solutions (6.2)

Solutions About Ordinary Points (6.3)

Solutions About Singular Points (6.4)

Systems of Linear First-Order Equations (8.3)

Introduction to Matrices (8.4)

Matrices and Systems of Linear First-Order Equations (8.5)

Homogeneous Linear Systems (8.6)

Undetermined Coefficients (8.7)

Variation of Parameters (8.8)