

**Mathematics 212**  
**SYLLABUS**  
**Spring 2003**

**Instructor:** Mrs. Jan Smith  
**Office Location:** Seney Hall 115C  
**Phone #:** 4-4661  
**E-mail:** oxfmajs@learnlink.emory.edu

**Office Hours:** 9:30 a.m. -- 11:30 a.m. MWF  
2:00 p.m. -- 4:00 p.m. MW  
12:00 p.m. -- 3:00 p.m. Tues.  
(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

**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 worth 100 points each. 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.

### **Grading:**

The following scale will be used to assign letter grades:

A:	270 – 300	points
B:	240 – 269	points
C:	210 -- 239	points
D:	180 -- 209	points
F:	Below 180	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.

<b>Some Important Dates:</b>	January 20	Holiday
	January 22	Last Drop/Add Day
	February 19	Last Day to Drop with W
	March 10 - 14	Spring Break
	April 29	Last Class Day
	May 1,2,5,6,7	Final Exams

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**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)