

MATH 3303

Ordinary Differential Equations

Spring 2006

Instructor: Dr. Scott Gordon, 324 Boyd.

Office Phone: 678-839-4134.

E-mail: Office: sgordon@westga.edu; Home: lsa_gordon@bellsouth.net.

Time and Location: M, W, F 1:00–1:50, 303 Boyd.

Office Hours:

M	11:00–1:00, 2:00–3:00*
W	11:00–1:00, 2:00–3:00*
F	11:00–1:00

(*2:00–3:00 in 205 Boyd)

If you would like to see me but cannot come during one of these times, please call first or make an appointment.

Textbook: *Differential Equations with Boundary Value Problems (Sixth Edition)* by Dennis Zill and Michael Cullen. We will cover Chapters 1–6, 8.

Course Description: Types of equations: separable, exact, linear, nonlinear, linear systems. Methods of solution: separation of variables, characteristic equations, initial value problems, integrating factors, methods of undetermined coefficients and variation of parameters, power series solutions, eigenvalues and eigenvectors for linear systems. Modeling: spring/mass systems, beam deflection, predator-prey models, chemical reactions.

Attendance Policy: If you have three or fewer unexcused absences during the semester, your lowest test score will be dropped. If you miss a class, you must contact me with a reason as soon as possible in order to have the absence excused. I may not excuse your absence if you are absent excessively and not performing adequately in the class.

Homework: Problems assigned after each lesson will be divided into two categories: exercises and turn-in problems. Exercises will not be collected and graded and are designed to help you understand the important concepts and prepare for the tests. Turn-in problems will be collected (generally) one week after they are assigned. You may ask me for help with these problems but you may not discuss them with your classmates or seek assistance from anyone else. Full credit will be given only if your answers are correct, well-organized and well-justified, and turned in on time. There will be 100 points worth of turn-in problems assigned during the semester.

Tests: There will be five 50-minute tests, worth 80 points each. Test dates: 1/30, 2/17, 3/8, 4/5, 4/24.

Rescheduling Tests: If you have a valid reason for missing a test, you may be allowed to reschedule, but you must make arrangements with me prior to the test. If you miss a test and have not made arrangements with me to take it at another time, you will receive a zero (This may be used as your dropped score).

Grading Errors: In order to have a grade changed as a result of a grading error, you must bring the error to my attention within one week of the time you received the graded test.

Final: There will be a *cumulative* final exam worth 180 points.

Grading: Your numerical grade will be your total points (on problem sets, tests, and the final) as a percentage of the total number of possible points (600). Your letter grade will be determined according the following grading scale: A: 88–100, B: 76–87, C: 64–75, D: 52–63, F: 0–51.

Withdrawal: March 2 is the last day to withdraw from the course with a grade of W.

First Homework Assignment: Exercises: p.10 #1–7 odd, 21, 24. Turn-in problems: p.10 #13, 22 (Due Wednesday 1/18).

Academic Dishonesty Policy: Any student who engages in any form of academic dishonesty will receive an F for the course. The incident will also be reported to the Office of Student Affairs so that they can determine if further disciplinary action is warranted. Academic dishonesty is defined as one or more of the following:

1. Use of unauthorized information during a test or exam.
2. Copying material from another student's paper during a test or exam.
3. Giving or receiving information during a test or exam.
4. Giving information about the content of a test or exam to a student who will be taking the test at a later time.
5. Obtaining unauthorized information about the content of a test or exam before taking it.
6. Receiving unauthorized assistance on a problem set.
7. Assisting another student in any way with a problem set.

Learning Outcomes: The student will be able to:

1. Classify differential equations (order, linearity, etc.).
2. Solve first order equations using separation of variables.
3. Solve first order linear equations using an integrating factor.
4. Solve initial value problems.
5. Solve homogeneous, constant coefficient equations using the characteristic equation.
6. Solve inhomogeneous equations using variation of parameters and the method of undetermined coefficients.
7. Find power series solutions of a linear differential equation.
8. Solve a system of linear, constant coefficient equations using the eigenvectors and eigenvalues of the coefficient matrix.
9. Use differential equations to model spring/mass systems, deflection of beams, predator-prey models, and chemical reactions.