

Differential Equations: MATH 254
MWF 12:00pm – 1:00pm in HT 207
Spring 2009 Syllabus and Schedule

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Course: This course is an introduction to ordinary differential equations and their applications. Topics will include linear and nonlinear first-order ODEs, methods for linear equations with constant coefficients, numerical methods, and Laplace transforms. We will discuss applications to problems involving motion, growth and decay, temperature, damped and undamped vibrations, and electrical circuits.

Textbook: Ordinary Differential Equations by Tenenbaum and Pollard, published by Dover 1985.

Office Hours: MTWRF 11:00 am – 12:00 pm. Office hours are a valuable resource and I hope you take advantage of them early and often. If you need to see me at a time other than an office hour, feel free to “drop in” or make an appointment.

Grading: Your grade is determined by your understanding of mathematics and your ability to communicate this knowledge to me on exams and other assignments.

Homework Assignments (25%) One learns mathematics by doing mathematics. Thus, these homework assignments are an essential aspect of the course, requiring an investment of careful thought. Solutions to the assigned problems should be written up clearly, and should contain explanation of all critical steps.

Three Mid-Semester Exams (45%, 15% each)

Final Exam (20%) The final exam will be comprehensive and held from 8am to 11am on Saturday, May 9th.

Class Attendance and Participation (10%) Your presence and contribution to discussions, with questions or comments, are an essential aspect of how this course runs. Students are expected to attend all classes.

Mathematics Department Grading Scale:

100 ← A → 94 ← A- → 91 ← B+ → 88 ← B → 82 ← B- → 79 ← C+ → 76

76 ← C → 70 ← C- → 67 ← D+ → 64 ← D → 58 ← D- → 55 ← F → 0

Note: The Academic Dishonesty Policy as explained in Scot's Guide will be strictly enforced. Plagiarism could result in the failure of the course and possible suspension from the college. See Academic Dishonesty in Scot's Guide and Planner.

Math 254-01 Tentative Schedule

Monday	Wednesday	Friday
1/12 Winter Break No Classes	1/14 Course Introduction	1/16 Basic Concepts – 3AB
1/19 MLK Jr. Day No Classes	1/21 General & Particular Solutions 3C, 4AC	1/23 Direction Fields 5AB
1/26 Euler’s Method 44	1/28 Separable Equations 6C	1/30 Autonomous ODEs
2/2 Applications	2/4 Applications	2/6 Runge-Kutta Method 47
2/9 Exact ODEs 9AB	2/11 Review	2/13 Exam 1
2/16 Integrating Factors 10ABC	2/18 Linear 1 st Order ODE 11ABC	2/20 Linear 1 st Order ODE 11ABC
2/23 Applications	2/25 Complex Numbers 18AB	2/27 Linear ODEs of order n 19AB
3/2 Linear ODEs of order n 19AB	3/4 Linear ODEs with Constant Coefficients – 20AB	3/6 Linear ODEs with Constant Coefficients – 20AC
Spring Break	Spring Break	Spring Break
3/16 Linear ODEs with Constant Coefficients – 20AD	3/18 Applications	3/20 Applications
3/23 Review	3/25 Exam 2	3/27 Method of Undetermined Coefficients – 21
3/30 Method of Undetermined Coefficients – 21	4/1 Applications	4/3 No Differential Equations
4/6 Applications	4/8 Runge-Kutta for Systems 53, 54	4/10 No Classes Easter Break
4/13 No Classes Easter Break	4/15 Laplace Transforms 27AB	4/17 Laplace Transforms 27AB
4/20 Linear ODEs via Laplace Transforms – 27C	4/22 Linear ODEs via Laplace Transforms – 27C	4/24 Laplace Transform Tables & Convolutions – 27D
4/27 Applications	4/29 Impulse Functions	5/1 Review
5/4 Exam 3	5/6 Course Review	5/8 Finals Week Begins

Final Exam: Saturday, May 9 from 8am – 11am