

Syllabus for Calculus IV

University of Kentucky, Fall 2006

Time and place:

Section 002: MWF 9:00-9:50 a.m., CB339

Section 003: MWF 11:00-11:50 a.m., CB339

Course instructor and contact information:

Instructor: Dr. Alan Demlow, Assistant Professor of Mathematics

Office: POT 775, phone 257-6797

E-mail: demlow@ms.uky.edu

Office hours: Office hours will be held in POT 775, Tuesdays 9:45-10:45 and Fridays 1-2 or by appointment. You are also welcome to drop by my office any time the door is open.

Course website: The course website will be linked to from <http://www.ms.uky.edu/~demlow/>.

Textbook: *Elementary Differential Equations and Boundary Value Problems* (8th Edition), by William E. Boyce and Richard C. DiPrima

Course overview: Ordinary differential equations (ODE) have long been a fundamental part of the mathematical vocabulary used to describe natural phenomena. ODE have been studied using a wide range of tools and techniques. These include:

1. Classical attempts to find exact solution formulas;
2. Numerical methods which yield precise but approximate quantitative information about solutions;
3. Qualitative methods which provide a less precise, but very rich, geometric understanding of ODE.

About 75% of this course will emphasize exact solution techniques, while 25% will focus on qualitative methods. Numerical techniques are considered only briefly. Material to be covered includes most of Chapter 1, Chapter 2, and Chapter 3, and selected sections from Chapter 7, Chapter 9, and (time permitting) Chapter 5.

Homework: Homework will be assigned in lecture each Friday and will be due the following Friday by 2 p.m. (slide it under the door of my office if I'm not there). I will select a few of the assigned problems to grade each week, but you are required to complete all assigned problems. You are encouraged to work with others while solving homework problems, but you must write up your own solutions. Late homework will not be accepted. Homework will be worth 100 points, or 1/6 of your final grade.

Exams: There will be three one-hour in-class preliminary exams during the course of the semester (worth 100 points, or 1/6 of your final grade, each) and a final exam (worth 200 points, or 1/3 of your final grade). The exam schedule with an approximate breakdown (subject to change!) of material covered on each is:

Prelim 1:	Sept. 22	Chapter 1, Sections 2.1 through 2.7
Prelim 2:	Oct. 20	2.8, 3.1-3.6
Prelim 3:	Nov. 20	3.7-3.8, 7.1-7.5
Final Exam:	Dec. 11, 8.a.m. (11 a.m. section) Dec 13, 8 a.m. (9 a.m. section)	All previous material plus 9.1-9.5

Grading: Your final grade will be determined by your composite homework score for the semester (1/6), your 3 prelims (totaling 1/2 of your grade, or 1/6 for each exam), and your final exam (1/3). I will use a standard grading scale (90-100% A-/A, 80-89% B-/B/B+, etc.). If the overall class average on any individual component of the grade is too low to ensure a fair distribution of grades, that component will be curved to raise the class average.

Software: There are many software options available for solving ODEs. Some packages are able to give exact solutions to many classes of problems symbolically (Maple and Mathematica), while others are able to display approximate numerical solutions graphically or in table form (Matlab, many graphing calculators, and the ODE Toolkit provided with your text). As you do your homework during the course of the semester, you are encouraged to explore these software options and use them to check your pencil-and-paper answers, and some homework may require you to use one of them. However, no electronic aids (computers or graphing calculators) will be allowed on exams.

Attendance: You are responsible for all lecture material and announcements made in class. Attendance will not be recorded, however.

Academic integrity: All violations of academic integrity will be taken seriously and dealt with according to university regulations.

Additional notes on MA214

1. Interested parties are encouraged to visit my 214 website for a more detailed look at what I covered:

http://www.ms.uky.edu/~demlow/Courses/06_fa/214_fa06/index.html

2. When teaching this course in future semesters, I would be likely to leave chapter 9 out completely, and perhaps also chapter 7.8 depending on time constraints. Instead, I would cover some material on Laplace transforms.

