Instructor Vera Mikyoung Hur, 269 Altgeld, 217 244 0142, verahur@math.uiuc.edu.

Times and Places TR 9:30AM (M13) and 11:00AM (P13) in 143 Henry BLD.

Office Hours are Wednesdays 9:30AM-12:30PM. Ask me questions immediately before, during and after class. Ask questions, or answer to others, on the Discussion Board in the Compass, and earn some credit!

Text is *Elementary Differential Equations and Boundary Value Problems* by William Boyce and Richard DiPrima. We will cover Chapters 1 through 3, and part of Chapter 9. I post lecture notes on the course website and they are the main texts of the course.

Course Website http://www.math.uiuc.edu/~verahur/teaching/441/index.html. Discussion Board is in the Compass site. Check your homework and exam scores at the Compass site.

Description This is a rigorous study of Ordinary Differential Equations (ODEs) and mathematical modeling. Topics include:

- solution of first-order ODEs by analytical, graphical and numerical methods;
- existence, uniqueness and continuity for first-order ODEs;
- linear second-order ODEs, in particular, with constant coefficients;
- undetermined coefficients and variation of parameters;
- sinusoidal and exponential signals: oscillation, damping, resonance; and
- matrix and first-order linear systems: eigenvalues and eigenvectors; phase plane diagrams.

Prerequisite MATH 242, MATH 243 or the equivalent. MATH 347 or MATH 348 is recommended.

Problem Sets are one each week except when there is an exam. They are to be handed in and graded. Please staple or paper-clip your homework sheets (no folding over corners). Homework solutions will be posted when the assignment is due. No late homework is accepted, but the lowest score will be omitted in computing your homework average.

Some problems on the homework will be taken from the text (some solutions in the back). Some problems I’ll just make up. Some problems are straightforward and computational. Others require you to “prove”. You are allowed (and encouraged) to work with other students! But, the homework that you hand in must be your work alone.

Exams: There will be two 80-minute midterms at the usual intervals. Exact dates of the exams will be determined in class. The Final Exam is comprehensive and 150-minutes long. The final is combined for Sections M13 and P13 of MATH 441. It will be scheduled by the registrar and the time announced sometime after March 15. Until the date of this exam is set, do not make plans to leave town prior to Saturday, May 14. All exams are in class, closed-book. No calculator is allowed.

Make-up exams will not be given, unless your absence is approved by the Emergency Dean.
**Class Participation** A small portion of the grade is the easiest to achieve. Make at least five postings on the Discussion Board about material from the lectures, errors in the lecture notes or the homework problems, or the reading from the book, at least two weeks apart. You can post questions about the homework or exams on the Discussion Board, but they will not count in computing your class participation score.

**Grading** Each midterm counts 20%, the Final exam counts 35%, the homework counts 20%, and class participation counts 5%. The lowest 20% is dropped. (A missed exam cannot be dropped from the computation of the grade.) All grades are numerical. The final grades will be assigned on the usual scale: 90–100% A, 80–90% B, 70–80% C, 60–70% D, below 60% Failing. I will try to keep you posted on any curving as the semester progresses. Two exceptions to the numerical grading for people who take all three exams: anyone who scores 95% on the Final gets an A and anyone whose scores 75% on the Final will pass. (Experience shows that these exceptions rarely make a difference.)

**Cell Phone Policy** No use of cell phones or other means of electronic communication during the class. In particular, no texting and no emails are allowed during the class.