

MATH 242

Elementary Differential Equations

Section 004 - Spring 2013

Meeting times: TTh 9:30 - 10:45 AM at LeConte ([LC](#)) 115.

Instructor: Dr. Peter G. Binev

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Office hours: TTh 10:50 - 11:55 AM at [LeConte](#) 425 or by appointment.

Text: Differential Equations: Computing and Modeling by C. Henry Edwards and David E. Penney, *Fourth Edition*, Pearson 2007. The course will cover the material considered in chapters 1, 2, 3, 4, and 7.

Description: Ordinary differential equations of first order, higher order linear equations, Laplace transform methods; numerical solution of differential equations. Applications to physical sciences and engineering.

Credits: 3

Prerequisites: qualification through placement or a grade of C or better in MATH 142.

Learning Outcomes: Upon the successful completion of this course students will be able to:

- solve initial value problems and find general and particular solutions to ordinary differential equations of the following types: separable, exact, nonlinear homogeneous, first- and higher-order linear equations, especially those with linear coefficients, systems of two differential equations;
- develop skills at using solutions methods such as: integrating functions, substitution, variation of parameters undetermined coefficients, Laplace transforms, and approximations, for example Euler and Runge-Kutta methods;
- use differential equations to solve mixture, cooling, mechanical vibration, or electrical circuit problems.

Outline: The detailed schedule with the covered sections and the assigned homework will be posted on Blackboard. The following shows the time allocated for each of the chapters:

- Chapter 1 - 3 weeks;
- Chapter 2 - 3 weeks;
- Chapter 3 - 4 weeks;
- Chapter 4 - 1 weeks;
- Chapter 7 - 2 weeks;
- Final Review - 1 week.

Attendance: Regular class attendance is important. A grade penalty will be applied to any student missing five or more classes (10%) during the semester. The "10 percent rule" stated above applies to both excused and unexcused absences. Students who anticipate potential excessive absences due to participation in permissible events as described in the USC Academic Bulletins (http://www.sc.edu/bulletin/ugrad/acadregs.html#class_atten.) should receive prior approval from the instructor to potentially avoid such penalty.

Cell Phones and Calculators: All electronic devices, especially cell phones, *must be disabled* during the class. No calculators are allowed.

Homework: A few homework problems will be assigned each class. Be sure to solve and write these problems before the next class. Some homework assignments will be collected and graded. The homework grade will account for 15% of the final grade.

Quizzes: There will be several five-minute quizzes at the end of most of the classes on problems similar to ones from the homework. Each quiz will be graded 0 or 1 (no partial scores). The quiz grade will be the number of successfully solved quizzes but will not exceed 15. It will account for 15% of the final grade.

Midterm Exams: There will be two midterm exams in a form of a test. The tentative dates of the exam are **February 12** and **April 9**. The problems on the tests will be similar to the ones from the homework and the discussions in class. There will be **no makeup exams**.

Final Exam: The final exam in a form of a test will take place on **Tuesday, May 7 at 9:00 AM**. All students **must** take the final exam.

Grading: The final grade will be determined from the homework grade (15%), the quiz grade (15%), the midterm exams (20%+20%=40%), and the final (30%). The letter grades will be assigned as follows: **A** for at least 90%; **B+** for at least 86%; **B** for at least 80%; **C+** for at least 76%; **C** for at least 70%; **D+** for at least 66%; **D** for at least 60%; **F** for less than 60%.

Academic Dishonesty: Cheating and plagiarism will not be allowed. The University of South Carolina has clearly articulated its policy governing academic integrity and the students are encouraged to carefully review it: <http://www.housing.sc.edu/academicintegrity/policy.html>.

ADA: If you have special needs as addressed by the Americans with Disabilities Act and need any assistance, please notify the instructor immediately.

Important Dates:

- January 18 – Last day to drop without **W**
- February 12 – Midterm Exam 1
- March 4 – Last day to drop without **WF**
- March 10-17 – Spring Break - no classes
- April 9 – Midterm Exam 2
- April 25 – Last Class
- May 7 – Final Exam at **9:00 AM**