MA242—Section 3

Instructor

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Meeting Times

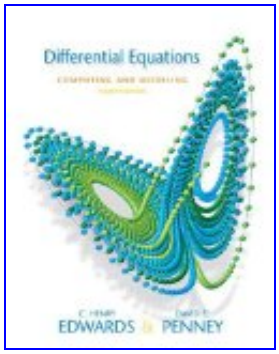
Lectures:	**MWF** 12:20 AM – 1:10 PM LeConte 115
Office Hours:	**TTh** 2.00 PM — 5.00 PM LeConte 307

Prerequisites

Qualifications through placement or a grade of **C** or better in MATH 142. The deadline to drop/add is Friday, January 13th. The first day in which a "W" grade is assigned is therefore Saturday, January 14th. The last day to obtain a "W" grade or to elect a pass/fail grade is Monday, February 27th. The first day in which a "WF" grade is assigned is therefore Tuesday, February 28th.

Text

Differential Equations: Computing and Modeling by C. Henry Edwards and David E. Penney. **Prentice Hall** 2008 (fourth edition)



Differential Equations Computing and Modeling (4th Edition)

Course Structure and Grading Policies

Homework problems will be assigned at the end of each lecture; however, they will not be collected and graded. They serve as a guideline to understand the type of problems that will appear on your exams. Your final score for the course will be computed as follows:

- Midterms: each test counts 20% of the final grade, for a total of 60% of the course grade. There will be three in-class midterm exams tentatively scheduled as follows:

Test #	Date
1	Wed Feb 01
2	Fri Feb 24
3	Mon Mar 26

The dates of the tests will be confirmed during the class, generally the previous week.

No make-up tests will be given. Only medical, death in the family, religious or official USC business reasons are valid excuses for missing a test and must be verified by letter from a doctor, guardian or supervisor to the instructor.

- Final exam: 40% of the course grade.The final exam is scheduled on Wednesday, April 25th, at 2:00 PM.

The course grade will be determined as follows:

GRADE	RANGE
A	90%-100%
B+	85%-89%
B	80%-84%
C+	75%-79%
C	70%-74%
D+	65%-69%
D	60%-64%
F	below 60%

Further Information

- Remember to change your e-mail address on Blackboard if necessary [blackboard.sc.edu]
- **ADA**: If you have special needs as addressed by the *Americans with Dissabilities Act* and need any assistance, please notify the instructor immediately.
- The Math Tutoring Center is a free tutoring service for MATH 111, 115, 122, 141, 142, 170, 221, 222, and 241. The center also maintains a list of private tutors for math and statistics. The center is located in LeConte, room 105, and the schedule is available at the Department of Mathematics website [www.math.sc.edu]. No appointment is necessary.
- The **Student Success Center** and one of four **Academic Centers for Excellence (ACE)** are on the mezzanine level of the Thomas Cooper Library and can be reached by phone at (803) 777-0684 or by going online at [www.sc.edu/academicsuccess] Other ACE locations around campus make access to these resources easy (Sims Hall, Bates House, Columbia Hall). The centers are at the crossroads of services and information about many special resources for students, including advice on developing successful study habits, time management, and effective learning strategies as well as availability of tutoring.

Learning Outcomes

Many of the principles or laws underlying the behavior of the natural World are statements or relations involving rates at which things happen. When expressed in mathematical terms, the relations are equations and the rates are derivatives. Equations containing derivatives are called differential equations. Therefore, to understand and to investigate different problems it is necessary to be able to solve or study differential equations.

Some examples of situations where this happens involve the motion of particles, the flow of current in electric circuits, the dissipation of heat in solid objects, the propagation and detection of seismic waves, or the change of populations.

We will focus mainly in the resolution of some particular kind of differential equations. In the case where we are not able to solve them, we will learn numerical approaches to obtain approximations to the solutions.

Summarizing: A student who successfully completes Elemental Differential Equations (MATH 242) will be able to master concepts and gain skills needed to accomplish the following:

- Solve initial value problems and find general or particular solutions to ordinary differential equations of the following types:
    - Separable
    - Exact
    - Nonlinear homogeneous
    - First- and higher-order linear equations, both homogeneous and inhomogeneous, especially those with constant coefficients
    - Systems of two differential equations
- Develop skill at using solution methods such as
    - integrating factors
    - substitution
    - variation of parameters
    - undetermined coefficients
    - Laplace transform
    - approximations
- Use differential equations to solve mixture, cooling, mechanical vibration, or electrical circuit problems.

HW Assignments, Quizzes, Exams

- **Mon Jan 09**: 1.1. General Introduction to Differential Equations [p.8 #1--26]
- **Wed Jan 11**: 1.1 & 1.2. Intro to modeling. Integrals as general and particular solutions. [p.9 #27--36; p.17 #1--10] [Review: Integration]
- **Fri Jan 13**: Separable equations and applications. [p.43 #1--28,33,37,43]
- **Wed Jan 18**:
- **Fri Jan 20**:
- **Mon Jan 23**:
- **Wed Jan 25**:
- **Fri Jan 27**:
- **Mon Jan 30**:
- **Wed Feb 01**: TENTATIVE—First Midterm. Chapter 1 [Practice Exam #1]
- **Fri Feb 03**:
- **Mon Feb 06**:

- **Wed Feb 08**:
- **Fri Feb 10**:
- **Mon Feb 13**:
- **Wed Feb 15**:
- **Fri Feb 17**:
- **Mon Feb 20**:
- **Wed Feb 22**:
- **Fri Feb 24**: TENTATIVE—Second Midterm. Chapter 2 [Practice Exam #2]
- **Mon Feb 27**:
- **Wed Feb 29**:
- **Fri Mar 02**:
- **Mon Mar 12**:
- **Wed Mar 14**:
- **Fri Mar 16**:
- **Mon Mar 19**:
- **Wed Mar 21**:
- **Fri Mar 23**: TENTATIVE—Third Midterm. Chapter 3 [Practice Exam #3]
- **Mon Mar 26**:
- **Wed Mar 28**:
- **Fri Mar 30**:
- **Mon Apr 02**:
- **Wed Apr 04**:
- **Fri Apr 06**:
- **Mon Apr 09**:
- **Wed Apr 11**:
- **Fri Apr 13**:
- **Mon Apr 16**:
- **Wed Apr 18**:
- **Fri Apr 20**:
- **Mon Apr 23**:

- **Wed Apr 25**: 2.00pm Final Exam. Chapters 1, 2, 3, 4 and 7