UNIVERSITY OF SOUTH CAROLINA

Course. MATH 242- Elementary Differential Equations (12327)

Lecture. TR 10:05 - 11:20, Close-Hipp Building 351.

Instructor. Patrick McFaddin (pkmcfaddin@gmail.com)

Office. Leconte College 300E.

Office Hours. Tues. 2:00- 3:00, Wed. 11:30-12:30, Thurs. 3:00- 4:00, or by appointment.

Text. C. Henry Edwards, David E. Penney, *Differential Equations: Computing and Modeling*, 5^{th} Ed., Pearson Education. It is required to own/share a copy of this text. Previous editions are acceptable.

Course Description. Ordinary differential equations of first order, higher order linear equations, Laplace transform methods, series methods, numerical solution of differential equations, applications to physical sciences and engineering.

Course Goals. Students who successfully complete MATH 242 will be able to accomplish the following:

(1) 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
(2) develop skill at using solution methods such as: integrating factors, substitution, variation of parameters, undetermined coefficients, Laplace transforms, approximations such as Euler or Runge-Kutta methods.
(3) Use differential equations to solve mixture, cooling, mechanical vibration or electrical circuit problems.

One primary goal is to develop an understanding of the mathematical content described above, and how to use it to solve practical problems. Additional goals include the development of reasoning, problem solving, the ability to work together with colleagues and communication skills. These goals may be achieved by preparing for and participating in daily lectures, in-class group quizzes and discussion of assigned reading/homework/quizzes/exams.

Approximate Schedule.

- Chapter 1: First Order Differential Equations, 4 weeks
- Chapter 2: Mathematical Models and Numerical Methods, 2 weeks
- Chapter 3: Linear Equations of Higher Order, 4 weeks
- Chapter 7: Laplace Transform Methods, 3 weeks
- Chapter 4: Systems of Differential Equations, 1 week

Requirements. There is a prerequisite of MATH 142 (with a grade of C or better). Prompt, complete attendance is expected at all classes. Please attend the entire class or do not attend at all; this is to preserve an effective learning environment for all students. Professional courtesy toward your instructor and your classmates is expected.

Tests. Three exams will be given in addition to the final exam. The tentative dates are as follows: Test 1: Tuesday, Sept. 13, Test 2: Thursday, Oct. 27, Test 3: Tuesday, Nov. 22. The final exam is scheduled for Thursday, December 8 from 9:00 to 11:30 am.

Quizzes. There will be weekly quizzes each Thursday which will be announced in class one week prior to being given. Some of these will be individual and others will be group quizzes. There may be additional (announced or unannounced) quizzes.

Homework. Homework sets will be given daily but not collected. Quiz questions will come from this collection of homework exercises.

Grading. Final grades will be determined by the following weighting:
Tests: 20% each (60% total)
Quizzes: 10%
Final Exam: 30%
The following grading scale will apply: 89- 100 A, 87- 88 B+, 79- 86 B, 77- 78 C+, 69- 76 C, 60- 68 D and below 60 is an F. Grades which fall between the above intervals will be rounded accordingly (for those students in good standing). For example, a grade of 86.5 will receive a grade of 87 B+, whereas a 86.4 will receive a grade of 86 B. The lowest quiz grade will be dropped.

Attendance. The official attendance policy of the university states absence from more than 10 percent of the scheduled class sessions, whether excused or unexcused, is excessive and the instructor may choose to exact a grade penalty for such absences: `http://bulletin.sc.edu/content.php?catoid=52&navoid=1280#Attendance_Policy`.

Electronics Policy. One aspect of being a member of a community of scholars is to show respect for others by the way you behave. One way of showing respect for others in the educational community is to do your part to create or maintain an environment that is conducive to learning. That being said, allowing your cell phone to ring in class is completely inappropriate as it distracts your classmates and thus degrades their overall classroom experience. Answering your cell phone is doubly inappropriate and will not be tolerated. For the sake of your classmates, you are expected to turn off your cell phone or set it to mute/silence BEFORE you enter class. Similarly, using laptops or mobile text devices during class is not appropriate. Furthermore, if, in the instructors opinion, phone/laptop usage becomes a problem, then the **offending party will be expelled from class**.

Tutoring. The Student Success Center offers drop-in, one-on-one, and online peer tutoring (`http://www.sc.edu/success/peertutoring.html`). The Department of Mathematics also keeps a list of private tutors `http://www.math.sc.edu/private-tutor-list`.

Remarks. Questions are encouraged at all times. Scheduling difficulties can be amicably settled by prior discussion. Please contribute as a positive member of this learning community. Notice that **there is no school on the dates Oct. 13, Nov. 8, and Nov. 24**. The last day to drop any course is **Oct. 10**.

Academic Honesty. All academic work must meet the standards put forth by the Office of Academic Integrity (`https://www.sa.sc.edu/academicintegrity/`). Students are responsible for informing themselves about those standards before performing any academic work. This policy defends the academic integrity of all student work, and will be uniformly applied to all students in the class.

Academic Accommodation. Any student with a documented disability should contact the Office of Student Disability Services (`https://www.sa.sc.edu/sds/faculty-and-staff/`) at 777-6142 to make arrangements for appropriate accommodations.

Disclaimer. The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary. It is the responsibility of the student to seek clarification of the grading policy and/or course requirements and procedures from the instructor.