

MATH 3313: Elementary Differential Equations

Section 004: TTh 12:30-1:50 am, DALL 115

Instructor: Dr. Thomas Carr

Contact Information

Office: Clements 233 or Dallas Hall 200

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Office Hours: Tuesday 2:00-3:00pm and Thursday 11:30-12:30

Except in unusual circumstances I guarantee that I will be in my office during the designated office hours. You are always welcome to stop by or call at other times to see if I am available.

Required textbook: *Introduction to Differential Equations with Dynamical Systems*, by Campbell and Haberman.

Grading Policy: Quizzes = 20%

Labwork = 15%

Two in-class exams = $2 \times 20\% = 40\%$

Three-hour final exam = 25%

Homework will not be collected or graded. **However, completing and understanding the homework assignments are critical for success in the class.** Solutions to the homework assignments will be posted on the web after class on the day it is due. You should check your work against the posted solutions. If after checking your work against the solutions you have questions, please come see me in my office.

Labwork will make use of either Matlab or Python. Thus, you need to have one of these programs installed and working ASAP. It is permissible to discuss the lab problems with fellow students. However, you must turn in your own work. Copying someone else's work is not permissible, is a violation of the Honor Code, and will only hurt you come the exams.

A Quiz will be given every class.

- *If you miss class, then you miss the quiz.* (No make-up quizzes.)
- The lowest four quiz scores will be dropped.
- Note that due to the short amount of in-class time available for the quizzes, problems will generally be on the easier side. *Expect exam problems to be more challenging than the quiz problems.*

Exam Dates:

- Exam 1: Thursday, February 21.
- Exam 2: Tuesday, April 2.

- **Final Exam: Sat, May 11, 11:30-2:30.** The final exam date and time can not be changed. Plan your travels accordingly.

Please note the following:

- Makeup tests will not be given.
- There is no extra credit work.
- Calculators and cellphones will not be permitted during exams or quizzes.

Honor Code: Please review the Honor Code documented in the SMU Undergraduate Bulletin. The highest level of academic honesty and integrity will be expected.

Web resources: All material pertaining to this course will be posted on my webpage. This includes: the syllabus, homework assignments and solutions, exam solutions, previous semester's exams (no solutions), extra material.

Learning Outcomes:

- Students will be able to solve first-order separable and linear differential equations.
- Students will be able to solve second-order constant-coefficient linear differential equations using undetermined coefficients, variation of parameters and Laplace transforms.
- Students will be able to analyze simple spring models.

Course Outline

We will cover topics from the subjects listed below.

- Chapter 1, Secs. 1.1-1.9: First-order ODEs and their applications (growth and decay, mixture problems).
- Chapter 2, Secs. 2.1-2.9, 2.9, 2.10: Second-order ODEs, Homogeneous and nonhomogeneous constant coefficient, mechanical vibrations, Euler equation.
- Chapter 3, Secs. 3.1-3.4: Laplace transforms applied to ODEs.
- Chapter 4: Secs. 4.1-4.2.3, 4.3: Systems of first order linear ODEs and the phase plane.
- Chapter 5: Secs. 5.1-5.3: Nonlinear first-order ODEs and the phase line.

Official SMU notices:

- **Disability Accommodations:** Students needing academic accommodations for a disability must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 or www.smu.edu/alec/dass.asp to verify the disability and to establish eligibility for accommodations. They should then schedule an appointment with the professor to make appropriate arrangements. (See University Policy No. 2.4; an attachment describes the DASS procedures and relocated office.)

- Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)
- Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)