

# MATH3351, Differential equations II, Tuesday and Thursday, 3:30-4:50

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**Office Hours:** Tue, Thu: 2:30-3:30, Tue 5-6, Wed 2-3, 4-6, and by appointment

**Text:** Differential Equations and Boundary-Value Problems, W. Boyce, R. DiPrima, D. Meade, 12th edition, published by Wiley.

**Learning outcomes:** The students will extend their knowledge of differential equations and their solutions acquired in MATH 3350 by developing new methods to solve differential equations and by studying the concept of partial differential equations and their solutions and applications. In particular, students learn:

- about the fundamental properties of linear systems and their solutions
- how to solve partial differential equations by separation of variables or Fourier series
- to apply these techniques to the three classical equations: the heat, wave, and Laplace's equation
- about Frobenius' Theorem and its applications
- many examples of Boundary Value Problems that appear in physical sciences and engineering

The students will understand the concept of differential equations, their solutions and applications to physical sciences and engineering.

*Course Outline:*

Chapter 7. Systems of First Order Linear Equations (8.24-9.12) (6 days)

Chapter 10. Partial Differential Equations and Fourier Series (9.19-10.17) (9 days)

Chapter 11. Boundary Value Problems and Sturm-Liouville Theory (10.24-10.14) (7 days)

The rest of the semester is devote to the review of the material.

Midterm dates: September 14, October 19, November 16

**Assessment of learning outcomes:** There will be 3 midterm exams, each worth 11% of the final grade, a final comprehensive worth 33% of the final grade, and

quizzes of a total value of 33% of the final grade. Homework will be assigned, but not collected. Quizzes will be given periodically over the problems in the homework. The lowest two quiz grades will be dropped. No make up will be given for the quizzes. Attendance is mandatory, and will be taken into account when evaluating student's performance. The midterm exams are given during class time. The final exam is scheduled according to the university policy depending on the class time, and will be given at a location to be communicated later.

**How to study?** First, you should read the classroom notes. Second, you should read the textbook, trying to solve by yourself the detailed examples from the book, then look at how they are solved there. Do the homework regularly. If you have any questions, past or present, ask them in class. Listen to teacher's explanation carefully. If this all fails, come and ask for help and advice during the office hours.

**Other matters:**

ADA accommodations (TTU Operating Policy 34.22). Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

Absence for observance of a religious holy day (TTU Operating Policy 34.19).  
1. "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code 11.20. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Academic Honesty (TTU Operating Policy 34.12). It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension. Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic

advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an a

TTU Resources for Discrimination, Harassment, and Sexual Violence: Texas Tech University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University. Report any incidents to the Office for Student Rights and Resolution, (806)-742-SAFE (7233) or file a report online at [titleix.ttu.edu/students](http://titleix.ttu.edu/students). Faculty and staff members at TTU are committed to connecting you to resources on campus. Some of these available resources are: TTU Student Counseling Center, 806-742-3674, <https://www.depts.ttu.edu/scc/> (Provides confidential support on campus.) TTU Student Counseling Center 24-hour Helpline, 806-742-5555, (Assists students who are experiencing a mental health or interpersonal violence crisis. If you call the helpline, you will speak with a mental health counselor.) Voice of Hope Lubbock Rape Crisis Center, 806-763-7273, [voiceofhopelubbock.org](http://voiceofhopelubbock.org) (24-hour hotline that provides support for survivors of sexual violence.) The Risk, Intervention, Safety and Education (RISE) Office, 806-742-2110, [rise.ttu.edu](http://rise.ttu.edu) (Provides a range of resources and support options focused on prevention education and student wellness.) Texas Tech Police Department, 806-742-3931, <http://www.depts.ttu.edu/ttpd/> (To report criminal activity that occurs on or near Texas Tech campus.)