Differential Equations II

Instructor: Luan Thach Hoang
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Office hours: MWF 2:00 pm - 3:00 pm

Classroom and Time: MA 110, MWF 12:00 pm - 12:50 pm.

Course website: *http://www.math.ttu.edu/~lhoang/2018Spr-M4354/*
Updates about the course and other related announcements will be posted on this webpage.

Prerequisite: MATH 3354 or MATH 3350.

Text: *Differential Equations with Boundary-Value Problems,* 8th edition, by Dennis G. Zill and Warren S. Wright, published by Cengage.

Course Description: This course covers topics in ordinary and partial differential equations. Topics to be covered include: Systems of linear first-order differential equations; Orthogonal Functions and Fourier Series; Boundary-Value Problems in Rectangular Coordinates; Boundary-Value Problems in Other Coordinate Systems; Integral Transforms.

Course Outline:

- Chapter 8 – (8.1, 8.2) Systems of Linear Differential Equations
- Chapter 10 – (10.1-10.4) Plane Autonomous Systems
- Chapter 11 – (11.1-11.3) Orthogonal Functions and Fourier Series
- Chapter 12 – (12.1-12.6, 12.8) Boundary-Value Problems in Rectangular Coordinates
- Chapter 13 – (13.1-13.3) Boundary-Value Problems in Other Coordinate Systems
- Chapter 14 – (14.1-14.4) Integral Transforms

Expected Learning Outcomes: Students will learn solution techniques for systems of ordinary differential equations. Students will also learn elements of Fourier series and how to apply these series in the solution of boundary value problems for partial differential equations, specifically, the heat equation, wave equation, and Laplace's equation in rectangular and other coordinate systems. In addition, students will obtain a general understanding of transform methods in the solution of initial and boundary value problems for partial differential equations.

Methods of Assessment of Learning Outcomes: Assessment of the learning outcomes will be achieved through homework assignments, three midterm exams, and a final exam.

Homework Assignments: will be assigned weekly. There are two types:

- **Online homework** will be assigned though Webwork. Students will receive the instructor's message for login information. Due dates are indicated on each assignment. Students should spend very first week to get familiar with the system.

  Webwork Link: *http://webwork.math.ttu.edu/webwork2/spr18lhoangm4354s002*

- **Written homework** will be collected in class.

Grading Policy: Homework will count for 25% of the grade. The lowest score for each online and written homework will be dropped. There will be three midterm exams in class, each will count for 15% of the grade. The final exam will count for 30% of the grade. All in-class exams are closed-book. No make-up exams are given unless legitimate documents for excuses are presented to the instructor at least a week in advance. Grading Scale: A: 90%-100%, B: 80%-89%, C: 70%-79%, D: 60%-69%, F: below 60%

Calculators: Only scientific calculators are allowed in exams. These calculators can calculate the values of the standard algebraic, trigonometric, exponential and logarithmic functions. Graphing calculators and calculators that can do symbolic manipulations are not allowed.

Examination Schedule:

- Midterm 1: Wednesday, February 14, 2018.

- Midterm 2: Wednesday, March 21, 2018.

- Midterm 3: Friday, April 20, 2018.

- FINAL EXAM: Friday, May 11, 2018, 1:30 p.m. - 4:00 p.m. Room: MA 110.

Critical Dates:

- Jan. 18: Classes begin.
- Feb. 2: Last day for student-initiated drop on MyTech without academic penalty.
- Mar. 10 - 18: Spring Break. No classes.
- Mar. 28: Last day for student-initiated drop on MyTech with penalty.
- Apr. 2: No classes.
- May 2 - 8: No exams.
- May 8: Last day of classes.

TTU OPs:

ADA accommodations (TTU Operating Policy 34.22). Any student who, because of a disability, may require some special arrangements in order to meet 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 student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or (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. 2. A student who intends to observe a religious holy day should make that intention known 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. 3. A student who is excused under Section 2 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 it 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 act.

Civility in the Classroom: Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to assure that all students have the opportunity to gain from time spent in class, unless otherwise approved by the instructor, students are prohibited from engaging in any other form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class.

Advice: Come to class regularly, work on homework problems. Ask questions in class and get help from the instructor during the office hours. Master the material quickly and *do not* wait too late until the midterms or the final exam. Students are encouraged to give feedbacks to the instructor during the semester.

NOTE: When needed, the instructor will communicate with the students using their TTU email addresses. At the beginning of the semester, the instructor will send out two messages, one to confirm the students' email addresses, and another to inform about Webwork. If a student does not receive these messages by the time of the second class, he/she must contact the instructor immediately.