

MATH 3351 – Higher Mathematics for Engineers and Scientists II

Instructor: Anthony Gruber

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Office: Math 009

Office hours: MWF 2pm – 3pm.

Classroom and Time: MA 016, MWF 12:00pm – 12:50pm.

Course website: <https://ttu.blackboard.com>

Exam grades, updates about the course, and other related announcements will be posted on this webpage.

Prerequisite: MATH 3350 or MATH 3354.

Text: *Advanced Engineering Mathematics*, by Dennis G. Zill and Warren S. Wright, 6th Revised Edition with online access, published by Jones & Bartlett (2018)

Course Description: This course covers topics in linear algebra, systems of ordinary differential equations, Fourier series and solution of classical boundary value problems for partial differential equations. Topics to be covered include: Linear transformations and matrix theory; 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.

Course Outline:

- Chapter 8 – (8.1-8.5, 8.8) Matrices and Linear Transformations
- Chapter 10 – (10.1, 10.2) Systems of Linear Differential Equations
- Chapter 12 – (12.1-12.4) Orthogonal Functions and Fourier Series
- Chapter 13 – (13.1-13.6, 13.8) Boundary-Value Problems Rectangular Coordinates
- Chapter 14 – (14.1-14.3) Boundary-Value Problems in Other Coordinate Systems
- Chapter 15 – (Selected Topics) Integral Transforms

Expected 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 concepts of partial differential equations, their solutions and applications. In particular, the 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
- application of these techniques to the three classical equations: the heat, wave, and Laplace's equation

- many examples of boundary value problems that appear in physical sciences and engineering

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

Grading Policy: Homework will be assigned periodically and will count for 30% of the grade. There will be two in-class midterm exams, each will count for 20% 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%

Note: Depending on the performance of the class, adjustments downward may be made at the discretion of the instructor.

Homework Assignments: Online homework will be assigned through Webwork. Students will receive the instructor's message for login information. Due dates are indicated on each assignment.

Webwork Link: <http://webwork.math.ttu.edu/webwork2/spr19agruberm3351s001/>

Calculators: No calculators will be allowed during exams unless otherwise stated.

Examination Schedule:

- Midterm 1: Friday, March 1st, 2019
- Midterm 2: Friday, April 26th, 2019
- Final Exam: Tuesday, May 14th, 2019, 8:00am – 10:30am

Critical Dates:

- Jan. 16: Classes begin.
- Jan. 21: School holiday, no class.
- Feb. 2: Last day to drop a course without penalty.
- Mar. 9-16: Spring Break.
- Mar. 27: Last day to drop a course with penalty.
- Apr. 22: School holiday, no class.
- May 7: 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.