

Spring 2022. MATH3350. Sections 012. (CRN 27106)

## Higher Mathematics for Engineers and Scientists I

**Instructor:** Luan Thach Hoang

Office: MA 208. Phone: (806) 834-3060 Fax: (806) 742-1112

Email address: [luan.hoang@ttu.edu](mailto:luan.hoang@ttu.edu)

Homepage: <http://www.math.ttu.edu/~lhoang/>

**Classroom and Time:** MWF 1:00 pm - 1:50 pm, Media & Communication (MCOM) 075.

**Office hours:** MW 2 pm - 3:30 pm. In person or online via Zoom. (Zoom information will be listed on [TTU Blackboard](#).)

**Course website:** <http://www.math.ttu.edu/~lhoang/2022Spr-M3350-012/>

**Potential for Course Modality Change.** If Texas Tech University campus operations are required to change because of health concerns related to the COVID-19 pandemic, it is possible that this course will move to hybrid or fully online delivery format. Should that be necessary, students will likely need a webcam and microphone and will be advised of additional technical and/or equipment requirements, including remote proctoring software.

**Prerequisite:** MATH 2350 or MATH 2450.

**Text:** *Advanced Engineering Mathematics*, by Dennis G. Zill , 6th Edition, published by Jones & Bartlett Learning.

**Course Description:** This course covers topics in ordinary differential equations. Topics to be covered include: First-order differential equations; Modeling with first-order differential equations; Higher-order differential equations; Modeling with higher-order differential equations; Laplace transform; Series Solutions of Linear Equations.

### Course Outline:

- Chapter 1 - Introduction: Sections 1.1, 1.2
- Chapter 2 - First-Order Differential Equations: Sections 2.1-2.8
- Chapter 3 - Higher-Order Differential Equations: Sections 3.1-3.6 and 3.8
- Chapter 4 - Laplace Transforms: Sections 4.1-4.5
- Chapter 5 - Series Solutions of Linear Equations: Sections 5.1, 5.3
- Chapter 6 (Selected Topics) - Numerical Solutions of Ordinary Differential Equations: Sections 6.1-6.4

**Student Learning Outcomes:** Students will study topics of differential equations, their solutions, and applications to physical sciences and engineering. In particular the students will learn to:

- recognize a differential equation and its solution
- compute solutions of first order differential equations
- compute solutions of higher order differential equations
- use Laplace transforms
- the fundamental properties of power series, and how to use them to solve linear 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 through 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. If a student does not receive Webwork message from the instructor by January 14, he/she must contact the instructor immediately.

**Webwork Link:** <https://webwork.math.ttu.edu/webwork2/spr22lhoangm3350s012s111/>

**Grading Policy:** Homework will count for 25% of the grade. 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. No make-up exams are given unless legitimate documents for excuses are presented to the instructor at least a week in advance. (The scores will be calculated to 2 decimal places, for example, 69.98.)

Grading Scale:  $A \geq 90$ ,  $80 \leq B < 90$ ,  $70 \leq C < 80$ ,  $60 \leq D < 70$ ,  $F < 60$ .

**Calculators:** Calculators are NOT allowed in all the examinations.

**Attendance Policy:** Students must go to lectures and responsible for all material covered in class.

#### **Examination Schedule:**

- Midterm 1: Friday, February 11, 2022, in class.
- Midterm 2: Wednesday, March 23, 2022, in class.
- Midterm 3: Friday, April 22, 2022, in class.
- FINAL EXAM: Thursday, May 5, 2022, 1:30 p.m. - 4:00 p.m., MCOM 075.

#### **Critical Dates:**

- Jan. 12: Classes begin.
- Jan. 17: MLK Day. University holiday.
- Jan. 18: Last day for student-initiated addition of a course on MyTech.
- Jan. 28: Last day for student-initiated drop on MyTech without academic penalty (drop does not count against drop limit).
- Mar. 12-20: Spring break.
- Apr. 18: No classes.
- Apr. 27: Last day for student-initiated drop on MyTech with academic penalty (counts against drop limit).
- Apr. 28 - May 4: No examinations.
- May 3: 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 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 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 (such as playing with electronic devices, reading newspapers, etc.) shall result, minimally, in a request to leave class.

**Advice:** Read the text book, **attend, pay attention to, and understand the lectures in class**, work on homework problems *properly*. Ask questions in class and get help from the Tutoring Centers or from the instructor during the office hours. Since a lot of material will be covered, students have to master them quickly and *do not* wait too late until the midterms or the final exam. Students are encouraged to give feedback to the instructor during the semester.

**Notes:** 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 special email messages. One is to confirm the students' email addresses, the other one is about Webwork. If a student does not receive those messages by the second class January 14, he/she must contact the instructor immediately.

## Covid Related Class Policies

**Vaccinations:** Texas Tech University strongly recommends students adhere to CDC guidelines on COVID-19, including obtaining COVID-19 vaccinations. If you were unable to obtain a vaccination prior to your arrival on campus, the COVID-19 vaccine is available at Student Health Services by appointment. You can find additional information about the vaccine [here](#).

**Face Covering Policy:** As of May 19, 2021, face coverings are optional in TTU facilities and classrooms but, based on CDC guidelines, are recommended and welcome, especially for those who have not been vaccinated for COVID-19 or who may have susceptibilities to the virus. Face coverings are required in public transportation (e.g., Citibus) and in the Student Health Clinic.

**In-Person Office Hours:** For in-person office hours, masks are optional but welcome.

**Personal Hygiene:** We all should continue to practice frequent hand washing, use hand sanitizers after

touching high-touch points (e.g., door handles, shared keyboards, etc.), and cover faces when coughing or sneezing.

**Potential Changes:** The University will continue to monitor CDC, State, and TTU System guidelines in continuing to manage the campus implications of COVID-19. Any changes affecting class policies or delivery modality will be in accordance with those guidelines and announced as soon as possible. If Texas Tech University campus operations are required to change because of health concerns related to the COVID-19 pandemic, it is possible that this course will move to a fully online delivery format. Should that be necessary, students will be advised of technical and equipment requirements, such as web cam, microphone, and remote proctoring software.

## Covid Related TTU Policies

Click [here](#) for see the full document issued by the Provost Office.

- Texas Tech University strongly recommends students adhere to CDC guidelines on COVID-19, including obtaining COVID-19 vaccinations. If you were unable to obtain a vaccination prior to your arrival on campus, the COVID-19 vaccine is available at Student Health Services by appointment. You can find additional information about the vaccine and campus vaccine clinics [here](#).
- Face coverings, although optional, are recommended and welcome; students, faculty, and staff who wish to wear them are encouraged to do so. Instructors of record may encourage (but not require) their classes to wear face masks.
- We all should continue to practice frequent hand washing, use hand sanitizers after touching high-touch points (e.g., door handles, shared keyboards, etc.), and cover faces when coughing or sneezing.
- Student absences due to illness are to be considered as they were prior to the pandemic, with consideration given to the fact that students who are isolating with COVID-19 and students who are quarantining for symptoms or direct exposure may have extended days of absence. Makeup opportunities should be provided in a reasonable timeframe.
- **Students who test positive for COVID-19** are to report the diagnosis at <https://ttucovid19.ttu.edu/User/Consent>. Doing so will generate a letter that students may present to their instructors as documentation in support of absences and will also trigger notification to the Dean of Students office, which in turn will notify the student's dean's office.
- Students who directly inform their instructors of having a known exposure to a COVID-19 positive person should be directed by the instructor to contact Student Health Services at 806-743-2848. Instructors who receive this guidance should refer to the [guidance on students who report a positive result](#).