

## COURSE SYLLABUS

### Higher Mathematics for Engineers and Scientists I

MATH 3350-H01 (CRN 26226), MATH 3350-022 (CRN 42202)

## Preliminary statement

Students will need to have access to a computer with webcam, microphone and speakers or headphones for remote delivery of the course. Additionally, students will need a scanning device, such as a photocopier or scanner, to be able to send handwritten exams and assignments to the instructor. It is advised that students identify a place with strong and stable Internet connectivity, especially for taking the exams.

If Texas Tech University campus operations are required to change because of health concerns related to the COVID-19 pandemic, it is possible that the course will move to a fully online delivery format.

## Instructor information

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## Expected 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 to solve differential equations;
- understand the fundamental properties of power series, and how to use them to solve differential equations.

## Course outline

1. Introduction to Differential Equations
2. First-Order Differential Equations
3. Higher-Order Differential Equations
4. Laplace Transform Method
5. Optional topics (depending on the instructor's preference)

## Interaction between instructor and students

### Course material

- The course material (lecture notes, videos, etc.) and all useful information can be found on the main course webpage, which is accessible through the **TTU Blackboard** platform using the TTU credentials:  
<https://ttu.blackboard.com>
- The material provided by the instructor covers the course topics in a comprehensive manner.
- A reference textbook for alternative consultation is *Advanced Engineering Mathematics, 5th Edition*, by D.G. Zill, W.S. Wright. The purchase of this book is not mandatory.

### Weekly meetings

- Classes will be offered in synchronous mode (i.e., at class time) both **face-to-face**, in class, and simultaneously **online**, via **Zoom**.
- Class recordings will also be made available on the **TTU Mediasite** platform.
- For **MATH 3350-H01**: meetings are **Tuesday and Thursday, 9:30 am - 10:50 am, room Doak Hall 156**. The classroom capacity allows all students to attend each class in person.
- For **MATH 3350-022**: meetings are **Tuesday and Thursday, 12:30 pm - 1:50 pm, room Biology 021**. The classroom capacity requires this rotation schedule to be followed:
  - students whose **last name** begins in the letter range **“A-” through “Mc-” (included)** will attend **Tuesday’s** lectures face-to-face, and **Thursday’s** lectures online.
  - students whose **last name** begins in the letter range **“Md-” through “Z-”** will attend **Thursday’s** lectures face-to-face, and **Tuesday’s** lectures online.

## Attendance policy

- Attendance is strongly encouraged for each delivery method. In particular, having the opportunity to attend in-person meetings is a privilege that must not be wasted, even more so in challenging times.
- Students who are expected to attend in class but cannot do so for various reasons (illness, self-quarantine, etc.) may join the online session.
- Classes start and end on time. Students are not allowed to leave the class before the end of the class period without authorization. During class time it is not allowed to text, chat and sleep. All electronic devices must be put in silent mode.

## Announcements

The instructor will send all announcements about the course (such as availability of new course material, opening of assignments, etc.) to the students via e-mail on their "@ttu.edu" address. It is the responsibility of the students to check their e-mail on a daily basis.

## Weekly office hours

- All office hours are held in virtual mode via the **Zoom** software. Information about the meetings will be shared with the students.
- Virtual office hours occur **every Wednesday from 01:00 PM to 03:50 PM, or by appointment.**

## Assessment of Learning Outcomes

The overall grade is determined by the following assessments. Each of them contributes to the overall grade with the specified weight.

### For MATH 3350-H01

Assessment	Date	Time	Place	Weight
<b>Midterm Exam 1</b>	Thursday, February 25	9:30 am - 10:50 am CST	online	25%
<b>Midterm Exam 2</b>	Tuesday, April 6	9:30 am - 10:50 am CDT	online	25%
<b>Final Exam</b>	Thursday, May 6	7:30 am - 10:00 am CDT	online	25%
<b>Homework</b>	Throughout the semester	-	online	25%

### For MATH 3350-022

Assessment	Date	Time	Place	Weight
<b>Midterm Exam 1</b>	Thursday, February 25	12:30 pm - 1:50 pm CST	online	25%
<b>Midterm Exam 2</b>	Tuesday, April 6	12:30 pm - 1:50 pm CDT	online	25%
<b>Final Exam</b>	Tuesday, May 11	1:30 pm - 4:00 pm CDT	online	25%
<b>Homework</b>	Throughout the semester	-	online	25%

### Grading Policy

- Let  $g$  be the overall grade in percent:

$$g < 55 \rightarrow F; \quad 55 \leq g < 66 \rightarrow D; \quad 66 \leq g < 77 \rightarrow C; \quad 77 \leq g < 88 \rightarrow B; \quad 88 \leq g < 98 \rightarrow A; \quad g \geq 98 \rightarrow A+.$$

- The grading policy may be subject to slight adjustments depending on the achievements of the students. Policies aimed at improving the class performance may be considered.

### Examinations

- The instructor will specify what topics must be studied for each exam.
- All exams are administered online on the Blackboard page. This avoids the spreading of infections that can occur by handling papers. Students must not come to class for the exams.
- The system will not accept exam submissions past the end of the exam time. Therefore, students *must* submit their exams in a timely manner. Only under *exceptional* circumstances, such as serious technical issues, students who did not manage to upload their exam on Blackboard must *immediately* send a copy via email to the instructor. Failure to do so for such students will result in a score of 0 for the exam. The instructor will then inform the students about the resubmission procedure on Blackboard.
- To receive full credit, it is essential that students show their work for each problem and do not limit themselves to showing the final answer without proper justification.
- There are usually no make-ups for the examinations. However, arrangements can be made for reasons of illness, stated in writing by a medical doctor, or observance of a religious holiday, or other very reasonable motivations.

### Homework

- Most homework assignments will be given through the online **Webwork** system. The link will be provided on Blackboard.
- Each student will receive an invitation e-mail with instructions on how to access their Webwork account.
- Handwritten assignments may be assigned via Blackboard.
- Students will be informed about the opening of the assignments, which must be completed before the given deadline.

## TTU Operating Policies

- **Americans with Disabilities Act (TTU OP 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 OP 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 OP 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.
- **The grade of "I" (TTU OP 34.12)** The grade of "I" is given only when a student's work is satisfactory but, due to reasons beyond his or her control, cannot be completed. It is not given in lieu of an "F" or "W". The instructor assigning the grade will stipulate in writing at the time the grade is given the conditions under which the "I" may be removed. The assigned work and a change of grade must be recorded within one calendar year from the date of the "I". Failure to do so results in an "F" for that course.

## Classroom Policies

### · **Online Classroom Decorum**

Texas Tech University is a community of faculty, students, and staff sharing an expectation of cooperation, professionalism, and civility in all forms of university communication and business. This expectation applies to all interactions in a classroom setting where an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Disruptive students may be subject to sanctions according to the Texas Tech University Code of Student Conduct. Faculty members are also expected to maintain the highest standards of professionalism in all interactions with all constituents of the university ([www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php](http://www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php)).

Regarding the online classroom's civility, please remember one rule, "the online class setting is the same as the face-to-face class setting". Disruptive behavior may result in academic response or disciplinary sanctions ranging from a verbal warning to grade implications to potential removal from the course. Disciplinary actions may be initiated pursuant to the Texas Tech University Code of Student Conduct. Students are expected to maintain online behaviors that are conducive to learning. Examples of behavior that may be considered disruptive include:

1. Using or posting inappropriate, obscene, or lewd comments, language, or content or discussing inappropriate topics online or via email.
2. Enabling or participating in online classroom hijacking ("Zoombombing") by participating in online classroom streams without being enrolled in the course or by sharing streaming classroom links with parties not enrolled in the course.
3. Spamming, hacking, or using TTU or Blackboard platforms for commercial purposes.
4. Cyberbullying or online harassment.
5. Interfering with or stopping instructional delivery.
6. Using non-readable fonts or font sizes.
7. Interrupting class discussion by speaking out of turn or having excessively distracting background noise(s) while unmuted.

### · **Expectations for Student Participation in Online Synchronous Course**

This course is designated as an online synchronous course. That means that we will meet in real time at a regularly scheduled class time via a video conferencing tool (e.g., Collaborate, Zoom, Teams, etc.). To ensure that you are fully engaged in class discussions and account team meetings during class time, you are expected to do the following:

1. Attend all classes regularly.
2. Log into the video conference on time and remain logged in for the duration of the class period.
3. Activate your camera so that you are visible to the instructor and other students in the class. Your camera should remain on for the duration of the class period.
4. Refrain from engaging in non-class activities during class time that create a distraction for others in the class and/or limit your ability to engage in the course (e.g., walking around, talking to others off camera, working at a job, driving a vehicle, etc.).

5. Maintain the same level of civility and professionalism that would be expected in a face-to-face classroom setting.

Failure to meet these expectations may result in the following consequences:

1. Being counted as absent for the class meeting.
2. Not receiving credit for class participation for that class period.
3. Other consequences as stipulated in the syllabus, Texas Tech Code of Student Conduct, or other university policy.

Repeated failure to meet expectations (e.g., attendance, participation in class, etc.), in addition to the above consequences, may result in one or more of the following consequences:

1. Referral to the appropriate Associate Dean.
2. Academic penalty, ranging from a warning to failure of the course.

## COVID-19-Related Policies

- **Illness-Based Absence Policy** If at any time during this semester you feel ill, in the interest of your own health and safety as well as the health and safety of your instructors and classmates, you are encouraged not to attend face-to-face class meetings or events. Please review the steps outlined below that you should follow to ensure your absence for illness will be excused. These steps also apply to not participating in synchronous online class meetings if you feel too ill to do so and missing specified assignment due dates in asynchronous online classes because of illness.

1. If you are ill and you think the symptoms might be COVID-19-related:
  - Call Student Health Services at 806.743.2848 or your health care provider.
  - Self-report as soon as possible using the Dean of Students COVID-19 webpage. This website has specific directions about how to upload documentation from a medical provider and what will happen if your illness renders you unable to participate in classes for more than one week.
  - If your illness is determined to be COVID-19-related, all remaining documentation and communication will be handled through the Office of the Dean of Students, including notification of your instructors of the period of time you may be absent from and may return to classes.
  - If your illness is determined not to be COVID-19-related, please follow steps 2 below.
2. If you are ill and can attribute your symptoms to something other than COVID-19:
  - If your illness renders you unable to attend face-to-face classes, participate in synchronous online classes, or miss specified assignment due dates in asynchronous online classes, you are encouraged to visit with either Student Health Services at 806.743.2848 or your health care provider. Note that Student Health Services and your own and other health care providers may arrange virtual visits.
  - During the health provider visit, request a “return to school” note;
  - E-mail the instructor a picture of that note;
  - Return to class by the next class period after the date indicated on your note.

Following the steps outlined above helps to keep your instructors informed about your absences and ensures your absence or missing an assignment due date because of illness will be marked excused. You will still be responsible to complete within a week of returning to class any assignments, quizzes, or exams you miss because of illness.

- **Addressing Accommodation Requests from High-Risk Students Returning to Campus** Texas Tech University is taking considerable measures to provide effective social distancing and sanitation protocols as we prepare to return to campus. We need to be mindful that, because of underlying health conditions, some students will be at higher risk for COVID-19. Other students, although healthy themselves, might live with someone who has compromising health conditions. Students in one or both of these two categories might request accommodations or alternatives to fulfill course requirements to avoid potential exposure to the virus.

The Office of the Provost authorizes instructors of record (IoRs), in coordination with their department chairs, academic advisors, and academic associate deans, with the flexibility necessary to make instructional accommodations for students to avoid exposure to COVID-19. Accommodations might include, as examples, alternatives to face-to-face group assignments, remote learning such as online instruction or off-site activities, changing to an online section of the same course or to an independent study with the same learning objectives as the original course, or approval of a substitute course that is offered online and can fulfill the same degree requirements of the original course.

Keep in mind the following criteria when considering making an accommodation for a student: (1) whether the requested accommodation would make a substantive alteration of the course material or objectives; (2) whether the accommodation provides an equally effective alternative to the original objectives or activities of the class; and (3) whether the accommodation can be uniformly applied should more than one student request it. If the IoR can satisfactorily address these three requirements for accommodation, and is comfortable providing it, then it is appropriate to do so. If the IoR feels unable to provide accommodation that satisfies these three criteria or is unsure how the requested accommodation can be provided, the IoR is encouraged to contact their academic associate dean's office for guidance. Students should also be advised to follow the steps for reporting illness-related absences outlined on the Dean of Students COVID-19 webpage. If a high-risk student asks for a substantial alteration to the essential elements of the class, then the IoR, advisor, or associate dean should suggest that the student work with SDS to provide a Letter of Accommodation (LOA).