



Math 2320.02E, Differential Equations

CLASS SYLLABUS: Spring 2025

INSTRUCTOR INFORMATION

Instructor: Dr. Aditi Ghosh, Assistant Professor of Mathematics

Office Location: HENDERSON 303,

Office Hours(face to face/zoom): M,W: 12 pm -1pm, TR: 11:00 am -12:30 pm and and by appointment.

Class: TR 9:30 am 10:45 am in Binnion 302

Office Phone-903-886-5508

Office Fax: 903-886-5945

Email Address: Aditi.Ghosh@tamuc.edu

Preferred Form of Communication: email

Communication Response Time: usually within 24 hours during weekdays, M-F.

COURSE INFORMATION

This is a face-to-face class conducted on D2L Brightspace. Use the link <https://leo.tamuc.edu>, then, click the icon, D2L Brightspace for the class website. Please visit the class website to be familiar with it.

Course Materials:

Main Text Book: Elementary Differential Equations by William E. Boyce & Richard C. DiPrima

References: A First Course in Differential Equations with Modeling Applications 10th Edition by Dennis Zill/

Elementary Differential Equations with Boundary Value Problems, previously published by Brooks/Cole Thomson Learning, 2000. Free download at <http://digitalcommons.trinity.edu/mono/9/>.

Student Solutions Manual for Elementary Differential Equations with Boundary Value Problems, previously published by Brooks/Cole Thomson Learning, 2000. <http://digitalcommons.trinity.edu/mono/10/>

You might use Mathematica /Matlab or TI-89 to solve a differential equation. **TI-89 will not be allowed in Exams.**

Course Description: First order differential equations, higher order differential equations, series solutions, the Laplace transformations, systems of first order linear equations, initial-value problems.

Prerequisites: Math 2414, Calculus 11.

Student Learning Outcomes: Upon successful completion of this course, students will be able to:

1. Classify differential equations into partial differential equations and ordinary differential equations, linear or nonlinear, homogeneous or nonhomogenous, first order, second order or higher order differential equations.
2. Explain a general solution and a particular solution, an initial-value problem, the Existence and Uniqueness Theorem; Wronskian Determinants and fundamental set of solutions; Explain Growth-Decay Model and Predator-and-Prey Model that use differential equations to model real world problems.
3. Use methods such as Separating Variables, Variation of parameters, Finding a Potential Function, Substitution and Euler's Method to solve 1st order differential equations for explicit solutions and approximation solutions.
4. Explain the solution structure of higher order linear differential equations and solve some higher order linear differential equations with constant coefficients, some second order linear differential equations with general coefficients, and some system of first order linear differential equations

COURSE REQUIREMENTS

Evaluation is based on homework, glossary, quiz, tests.

Attendance: Attendance is required. It is critical that you keep up with the pace of this class. Once you are behind our pace, you can get lost easily. You are strongly suggested to study ahead of our pace.

Homework: Without doing homework, one cannot learn. Thus, homework must be done and submitted to show your study and attendance. Homework assignments will be given most of the weeks. Missing questions and answers without work do not earn credit. **Homework will be through D2L or in person submission.**

Quiz/Class Activities: You will be assessed through quiz weekly from problems on your HW.

Late HW will not be taken. **Late homework will not be collected.** The point value of each will be based on its complexity and scope. We will also have short in class presentations from students on topics (like matlab presentation, R presentation, project discussion) given by the instructor every 10-15 mins of class. This will help exchange of ideas, invite more queries and discussions. Bonus grade will be determined from them. All students should complete and hand in their homework and take active part in class presentations, because this is the only way to develop an understanding of the concepts we will be studying in this class. On the other hand, feel free to interact with other students to exchange ideas, to learn tricks, and to get instructions about how to do each assignment. You may work and discuss homework together on D2L. To do so, click Activities, Discussions for each week on D2L. When you share your homework in Discussion on D2L, everyone can see it and download it. You still need to submit your homework in D2L. Feel free to ask your instructor questions in class or in office hours. The assignment you submit must be your own work. Plagiarism is prohibited. Students are expected to provide 6-8 hours each week on the course outside the class.

There will be three exams in the form of written exams. Two midterm and the other final exams, each worth 100 points. These will be discussed in details in class.

HW/Quiz /Class Activities are worth 25 % and the two exams 50%, Finals 25%

Exam 1: 12:00 PM – 1:15 PM, end week of Feb (dates to be discussed in class)

Exam 2: 1:00 PM – 1:15 PM, April /second week of April (dates to be discussed in class)

No late Exams will be taken unless university excused absence.

Final Exam: Comprehensive two hours, 8:00 AM – 10:00 AM, May 8th.

Grading: The maximum possible points available in this course are:

Homework	100 points
Tests	200 points
Final	100 points
Quiz	100 points
Total	500 points

Your course grade will be based on the percentage of the points you make to the total points available in the course:

A \geq 90%, B \geq 80%, C \geq 70% D \geq 60% F < 60%.

TECHNOLOGY REQUIREMENTS

TI-83/84 or other calculators with similar capability is highly recommended. Scanner/digital camera/cell phone that you can make PDF files of your work and submit them to D2L. Make one PDF file for each test, project, glossary for each chapter, and homework for each chapter. Please visit the following video clips for making one PDF file:

- o Using CamScanner: <https://www.youtube.com/watch?v=sZFcQJCmtMI>
- o Android: <https://www.youtube.com/watch?v=FWIVYd2Zc-E>
- o iPhone: <https://www.youtube.com/watch?v=10XH6VfGLqI>

D2L/LMS: All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). You will obtain the course materials through LMS. You cannot distribute the course materials without permission of the instructor. To access LMS, go to myLeo, then Apps, then My Leo Online D2L Brightspace. You also have an email account via myLeo - all my emails sent from D2L (and all other university emails) will go to this account, so please be sure to check it regularly.

AI use in course

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

Below are technical requirements

LMS Requirements: <https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements: [https://support.youseeu.com/hc/en-us/articles/115007031107-](https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements)

Basic-System-Requirements

ACCESS AND NAVIGATION

You need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Course readings, assignments and discussions will be completed /turned in through

LMS. Your grades will be available in LMS. The course materials are only for this course. You cannot distribute the course materials without permission of the instructor

This course is presented using weekly units. Each unit contains video lectures, a discussion area, assignments, a quiz or an exam. You should begin by reading the course syllabus, paying particular attention to the assignments and Suggested Day-by-Day Schedule, and then complete the Start Here unit.

Note: Computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

Interaction with Instructor: You may email and telephone your instructor and visit your instructor at LMS. I will try to respond to your email within 24 hours, Monday through Thursday. My response over the weekend may be delayed.

The following features are available through Activities, Discussions:

Student Lounge: This space is for students to communicate with each other. I may visit the Student Lounge and join your discussion. **Weekly Discussion:** This space is for student questions related to the week's content. Please feel free to answer one another's questions. I will check answers (as well as questions) for correctness, but do not hesitate to respond to a posting if you feel you can answer the question thoroughly and directly. **Math Lab:** Free tutoring service offered by the Mathematics department (Binnion Hall Room 328). Please visit the web site for the hours of operation and more details.

<http://www.tamuc.edu/academics/colleges/scienceEngineeringAgriculture/departments/mathematics/students/default.aspx>

The TAMUC One Stop Shop- provides as many student resources as possible in one location.

<http://www.tamuc.edu/admissions/oneStopShop/>

The TAMUC Academic Success Center provides academic resources to help you

achieve academic success.

<http://www.tamuc.edu/CampusLife/CampusServices/AcademicSuccessCenter/default.aspx>

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support

at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: <https://www.britannica.com/topic/netiquette>

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01. <http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatemen/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatemen/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

Graduate Student Academic Dishonesty 13.99.99.R0.10

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: Office of Student Disability Resources and Services

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from

discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry **Statement**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer. Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

Tentative Schedule

- Weeks 1-2 First Order Differential Equations
- Weeks 3-4 Applications of First Order Differential Equations, **Exam I (Written Exam)**
- Weeks 5-6 Second Order Linear Equations
- Weeks 7-8 Applications of Second Order Linear Equations
- Weeks 9-10 Laplace Transform, **Exam II- Written Exam.**
- Week 11-12 Higher Order Linear Equations, Systems of First Order Linear Equations
- Weeks 13-14 Numerical Methods, Series Solutions of Second Order Linear Equations, Boundary Value Problems. **Final Exam**

COPYRIGHT: The course materials are only for use in this course. You cannot distribute the course materials without permission of the instructor.

A&M-Commerce Supports Students' Mental Health

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel

Regarding the University's Pandemic Response

COVID-19 Statements from the University

The COVID-19 situation is constantly evolving and is subject to change based on the recommendations and requirements given by the CDC, state and local leaders, and the Texas A&M University System.

- 1) Students, faculty, and staff are strongly encouraged to get vaccinated, wear a mask in public indoor settings, and wash hands frequently. These actions can reduce the spread of COVID-19.
- 2) The following requirements will be in place this fall:
 - a. Students, faculty and staff must participate in the mandatory COVID-19 testing program at intervals designated by the university.
 - b. Students, faculty and staff who test positive or have been identified as a close contact may be required to quarantine/isolate consistent with current CDC guidance as shown [here](#).
 - c. Students, faculty and staff who test positive for COVID-19 are required to isolate. Those with COVID-19 symptoms or who have had close contact with someone (within 6 feet of someone for a cumulative total of 15 minutes or more over a 24- hour period) who received a positive test result for COVID-19 are required to email the A&M-Commerce Emergency Operations Center at eoc@tamuc.edu for additional guidance on how to proceed.
 - d. Students new to the university must confirm they've read and agree to adhere to the following guidelines. Please click the following link to complete the acknowledgment: [COVID-19 Acknowledgment](#).
- 3) Students who do not comply with mandatory COVID-19 reporting, testing and/or quarantine/isolation requirements will go through the Student Conduct Process. This may result in a student facing possible separation (i.e., suspension or expulsion) from the University or being considered a student "not in good standing."
- 4) Please go to the [University home page](#) for reading the entire Fall 2021 COVID-19 Management and Guidance Plans for details, and scheduling a COVID test.