Course Information

Course Number:	Math 308
Course Title:	Differential Equations
Sections:	505 and 506
Time:	505 - TR, 11:30 AM - 12:45 PM
	506 - TR, 1:30 PM- 2:45 PM
Location:	505 – Online (Zoom meeting ID: 921 9608 3409)
	506 - Online (Zoom meeting ID: 997 5172 9919)
Credit Hours:	3 hours

Instructor Details

Instructor:	Sang Rae Lee
Office:	Blocker 328G
Phone:	Math Department: 979-845-3261 *(There is no phone in my office, so email is a better way to reach me.)*
E-Mail:	srlee@math.tamu.edu
Office Hours:	Online, Wed. 10:00 AM - 12:00 PM, Thur. 2:50-3:50 PM, or by appointment (Zoom meeting ID: 632 892 2626)

Here is the course web page

Course Description

Math 308: This is a course in differential equations. Topics include linear ordinary differential equations and systems of linear differential equations, second order linear equations, solutions using Laplace transforms, solutions by power series, and elements of nonlinear systems.

Course Prerequisites

MATH 221, MATH 251, or MATH 253 or concurrent enrollment; knowledge of computer algebra system.

Course Objectives

We will cover much of chapters 1-3, 5, 6-7 and some of chapter 8 and 9 from the textbook. This course is to provide students with quantitative and problem-solving skills of differential equations. At the conclusion of this course, students should be able to:

- Solve basic first order ODEs
- Solve higher order linear ODE and systems of linear ODEs
- Construct simple ODE models (linear and non-linear)
- Conduct qualitative analysis of ODE models.

Course Learning Outcomes

Upon successful completion of this course, students will:

- Use differential equations to model mechanical and electrical systems.
- Visualize solutions to first order differential equations and 3 × 3 systems of first order linear differential equations using direction fields and phase planes.
- Solve basic first order differential equations and initial-value problems.
- State the conditions required for a first order differential equation to have a unique solution.
- Find the equilibrium points of an autonomous differential equation and determine their stability.

- Solve homogenous second order linear differential equations and initial value problems with constant coefficients.
- Use the methods of Undetermined Coefficients and Variation of Parameters to find solutions to nonhomogenous second order linear differential equations and initial value problems with constant coefficients.
- Use Laplace Transforms to solve basic initial value problems.
- Determine the mathematical and practical effect of step functions and impulse functions on second order linear initial value problems with constant coefficients.
- Use Power Series to solve second order linear differential equations.
- Write a higher order differential equation as a system of first order differential equations.
- Solve homogenous systems of first order linear differential equations.
- Conduct qualitative analysis of 3 × 3 systems of linear first order differential equations with constant coefficients.
- State methods of numerically approximating solutions to first order initial value problems.

Textbook and/or Resource Materials

- Textbook: Elementary Differential Equations and Boundary Value Problems by Boyce, DiPrima, and Meade, 11th Edition. Earlier editions may be used for the purpose of studying the materials, but homework problems are from the 11th edition.
- Calculator: No calculator is allowed on in-class quizzes or exams. Calculators may be used on homework or take-home assignments.
- Texas A&M Student ID: You must have a picture ID for exams.

Grading Policy

The course grading will be based on the tables below. At the end of the semester you will receive the grade you earned, according to the grade breakdown and grading scale given. Due to FERPA privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please schedule a one-on-one Zoom meeting with me.

Grade Breakdown

Activity	Date	Percentage
Homework	Weekly	20%
Quizzes	Weekly	10%
Exam I	Feb/25	20%
Exam II	Apr/8	20%
Final Exam	See below	30%
Total		100%

Grading Scale

Range	Grade
90 ≤ Average ≤ 100	A
80 ≤ Average < 90	B
70 ≤ Average < 80	C
60 ≤ Average < 70	D
Average < 60	F

Grading Appeal Policy – Students have one week upon the return of assignments and exams to notify the instructor of any inaccuracies in their graded work. After 1 week, the grade will stand. Students have

1 week from the day grades are posted in the eCampus gradebook to bring any inaccuracies to the instructor's attention. Students should bring all grade disputes to the instructor in a one-on-one Zoom meeting. Due to FERPA privacy issues, grade disputes will not be discussed over email or in the classroom.

Homework – Weekly homework is designed to help students understand the material and to prepare them for the quizzes and exams. Homework assignments (pdf version) will be posted on eCampus and announced in class. All your works may be scanned as PDF format and submitted in Gradescope.

Programming Homework – There will be a couple of computer assignments throughout the semester using Python. Programming assignments will be considered as a part of the Homework for grading. All your works may be scanned as PDF format and submitted in Gradescope.

Quizzes – Quizzes will be given regularly throughout the semester. Some quizzes will be announced, while others may not be announced.

Exams – There will be two in class exams during the semester. The exams will be proctored through Zoom and will be entirely workout. You must bring your student ID to each exam. During each exam, you will be required to set up a streaming video camera (cell phone or USB webcam) in such a way that the proctor will be able to view your workspace during the exam. The proctoring sessions may be recorded. In order to receive credit for this course, you must consent to be proctored in this manner. Additional requirements/information about exams will be given in class closer to exam time. The tentative exam schedule is as follows:

Exam I: Thursday, Feb 25, 2021.
Exam II: Thursday, April 8, 2021.

Final Exam – The final exam will be comprehensive and is required for all students. The final will also be proctored through Zoom. You will need to bring your ID to your final exam. The final exam schedules are as follows:

Section 505: Monday, May 3, 11:00 AM - 1:30 PM
Section 506: Thursday, May 6, 8:00 AM – 10:30 AM
(The day and time of the final exam is determined by the university registrar, and may be found at http://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-Schedules)

Course Schedule

Week	Topic	Sections
Week1: 1/19, 21	Chapter 1. Introduction	1.1, 1.2, 1.3
Week2: 1/26, 28	Chapter 2. First-Order Differential Equations	2.1, 2.2, 2.3
Week3: 2/2, 4	Chapter 2. continue	2.4, 2.5, 2.6
Week4: 2/9, 11	Chapter 3. Second-Order Linear Differential Equations	3.1, 3.2, 3.3

Week5: 2/16, 18	Chapter 3. continue	3.4, 3.5, 3.6
Week6: 2/23, 25	**Exam1 (2/25, Chapter 1-3)**	3.7. 3.8, **Exam1**
Week7: 3/~~2~~, 4	Chapter 6. The Laplace Transform	6.1, 6.2, 6.3
Week8: 3/9, 11	Chapter 6. The Laplace Transform	6.4, 6.5
Week9: 3/16, ~~18~~	Chapter 6. continue, **Spring Break**	6.6
Week10: 3/23, 25	Chapter 7. Systems of First-Order Linear Equations	7.1, 7.2
Week11: 3/30, 4/1	Chapter 7. Systems of First-Order Linear Equations	7.3, 7.4. 7.5
Week12: 4/6, 8	**Exam2 (4/8, Chapter 7,6)**	7.6**, Exam2**
Week13: 4/13, 15	Chapter 5. Series Solutions of Second-order Linear Equations	5.1, 5.2,
Week14: 4/20, 22	Chapter 5. continue	5.3
Week15: 4/27, 29	Chapter 9. Nonlinear Differential Equations and Stability	9.1
Week16	**Final Exam**	

Math Learning Center (MLC) support

The **Math Learning Center** (MLC) offers various forms of support for Math 308, both online and face-to-face, including drop-in Help Sessions, Tutoring by Appointment, Week-in-Review sessions and other activities. Additionally, the MLC hosts an archive of Supplemental Material, such as Python tutorial videos and recorded review sessions.

University Policies

Attendance Policy

Attendance is essential to complete this course successfully.

Excused Absences – University student rules concerning excused and unexcused absences, as well as makeups, can be found at Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines. In particular, make-up exams or late homework will NOT be allowed unless a University approved reason is given to me in writing. Notification before the absence is required when possible. Otherwise (e.g. accident, or emergency), you must notify me within 2 working days of the missed exam or assignment to arrange a makeup. In all cases where an exam/assignment is missed due to an injury or illness, whether it be more or less than 3 days, I require a doctor's note. I will not accept the "University Explanatory Statement for Absence from Class" form. Further, an absence due to a non-acute medical service or appointment (such as a regular checkup) is not an excused absence.

Zoom Etiquette

Class Attendees – When joining class remotely via ZOOM, please join with your audio off. You may ask questions by unmuting yourself and politely interrupting me, and I will pause and give you time to ask your question. It is important to me that the students are involved in the class discussion, but it is best if we do this in an organized way.

Office Hour Attendees – When joining office hours via ZOOM, please join with your audio off. Everyone attending office hours will be joining one room, so if you would like to ask a question during office hours, please "raise your hand" and wait to be called on. If you need to speak to me privately, and have not made an individual appointment with me, please let me know through a private CHAT message and I will move you to a breakout room where we can talk one-on-one.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit

disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's Title IX webpage.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.

He/She who asks is a fool for five minutes, but he/she who does not ask remains a fool forever.