MATH 2A. 27515

Differential Equations Fall 2023

Tue Thu 08:30 AM-10:45 AM

Location G1

Instructor: Fatemeh Yarahmadi

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Course Description
Ordinary differential equations and selected applications.

Textbook & Required Materials:
Text: A First Course in Differential Equations, 11th edition, by Dennis Zill.

Graphing Calculator: TI-83/TI-83+/TI-84/TI-84+

Computer/smartphone to complete online homework assignments and submit activities on Canvas.
You should keep a **notebook** where you take notes and work the problems for reference.

Prerequisite:
Mathematics 1D with a grade of C or better.

Attendance:
A major part of the class involves participation, discussing assignments and problems with your classmates. You are expected to attend all lectures and meet all deadlines for homework, quizzes, and discussions. We are learning a lot of different concepts that build on one another and it is very difficult to catch up if you fall behind. Time management is critical in our course.

Instructor Communication:
I am looking forward to working closely with you this term, and you can expect me to play an active role in our course. I will hold live lectures, post announcements every week, join you in breakout rooms and class discussions to help you understand course concepts, and provide detailed feedback on assignments within one week of submission. I will also answer questions throughout the term in the Q&A Discussion in Piazza and in our weekly discussions. Please let me know when you need help—that's why I'm here!

Canvas:

All class content, assignments and announcements will be on Canvas, which you can access through MyPortal. The course will be divided into <u>weekly</u> modules in Canvas. Weeks will run from Monday to Sunday, and all work for the week (including <u>Discussions and HW</u>) will be due Sunday night at 11:59 pm.

<u>Discussions</u>: There will be discussion topics posted throughout the term. The deadline for responding to the topic will be indicated when the assignment is posted. You may not respond to the discussion once the deadline has passed.

<u>Homework</u>:

Written sets for submission: During the term, I will send out homework and group activities sets to be discussed, written up, and submitted on Canvas. Homework and group activities is essential in any math class. You cannot expect to pass the class without putting consistent effort into homework and group activities. Show all work and explain any reasoning. You may not submit your assignments once the deadline has passed.

<u>HW Guidelines:</u>

The process of solving homework problems reflected in step-by-step solutions. The following are some specific criteria:

Guidelines for homework:

- Your name, class, and section number should be written at the top of the first page.
- Work must be NEAT and ORGANIZED. Write the questions (problems) IN ORDER.
- It is important for you to SHOW YOUR WORK! You are graded on the work you show to get the final answer, not just the final answer. Be sure to show your "scratch work" that goes with the problem.
- Do your work underneath the assigned problem then circle your final answer.
- At the end of each homework assignment, write a brief "Chat" paragraph

  - A key component in learning is thinking about how and what you are learning. What are you doing that is working? What areas could you improve upon? What comes easily for you? Is there a pattern in your homework? At the end of each homework assignment, write a very brief paragraph about what you learned, what you feel you need to review, and any thoughts or feelings you have about the math you're doing.

This is also a great opportunity for you to communicate with your instructor! There are no "right" answers. Be honest and use this as a learning process.

- Submit pdf file of your homework on Canvas

Projects: Projects will be assigned throughout the term. Project due dates are indicated on Canvas. You may not submit your assignments once the deadline has passed.

Exam Reviews: There will be an exam review assigned before each exam. The purpose of the review is to aid the student in studying for the exams. You may not submit your assignments once the deadline has passed.

Midterm Exams: There will be three midterm exams. Each exam includes handwritten portion which you will upload to Canvas. Each midterm exam will focus the material covered since the previous exam. More details on exam dates and procedures can be found in Canvas. You may not submit your assignments once the deadline has passed.

Final Exam: The final exam will cover all material from throughout the term. More details on the final exam will be available on Canvas.

Grading Policy:

Homework, Group Activities, and Discussion	200 pts (25%)
Projects and Presentation	100 pts (12.5%)
Midterm Reviews/ Midterms	300 pts (37.5%)
Final	200 pts (25%)
Total	**800 pts**

A	100%	to 94.5%
A-	< 94.5%	to 89.5%
B+	< 89.5%	to 86.5%
B	< 86.5%	to 83.5%
B-	< 83.5%	to 79.5%
C+	< 79.5%	to 74.5%
C	< 74.5%	to 69.5%
D+	< 69.5%	to 66.5%
D	< 66.5%	to 63.5%
D-	< 63.5%	to 59.5%
F	< 59.5%	to 0%

Important Dates and Deadlines: http://www.deanza.edu/calendar/dates-and-deadlines.html

De Anza Final exams schedule: https://www.deanza.edu/calendar/final-exams.html

For detailed information on Homework, Quizzes, Projects, Discussion please log into your Canvas course page.

Academic Integrity:

All students are expected to exercise high levels of academic integrity throughout the quarter. You are encouraged to work together but you are expected to write up your answers independently. Any instances of cheating or plagiarism will result in disciplinary action, including getting a '0' on the assignment and report to the PSME dean, which may lead to dismissal from the class or the college

Student Honesty Policy:

"Students are expected to exercise academic honesty and integrity. Violations such as cheating and plagiarism will result in disciplinary action which may include recommendation for dismissal."

Disabled Services:

Students who have been found to be eligible for accommodations by Disability Support Services (DSS), please follow up to ensure that your accommodations have been authorized for the current quarter. If you are not registered with DSS and need accommodations, please go to http://www.deanza.edu/dss.

This syllabus is subject to change at the instructor's discretion. Changes will be announced in class and on Canvas.

Recipe for Success:
- If you ever have any questions, Email me! You are welcome to send email to me whenever you need help!
- Visit the Tutoring Center.
- Form an study group.
- Watch all lectures, participate in every discussion, and complete every homework assignment.
- Read the sections to be discussed in class prior to the lecture

Section	Course Content
1.1	Definitions and Terminology
1.2	Initial-Value Problems
2.1	Solution Curves Without a Solution
2.2	Separable Equations
2.3	Linear Equations
2.4	Exact Equations
2.5	Solutions by Substitutions
3.1	Linear Models
3.2	Nonlinear Models
3.3	Modeling with Systems of First-Order DEs
4.1	Preliminary Theory—Linear Equations
4.2	Reduction of Order
4.3	Homogeneous Linear Equations with Constant Coefficients
4.4	Undetermined Coefficients—Superposition Approach
4.5	Undetermined Coefficients—Annihilator Approach
4.6	Variation of Parameters
4.7	Cauchy-Euler Equations
4.9	Solving Systems of Linear DEs by Elimination
4.10	Nonlinear Differential Equations
5.1	Linear Models: Initial-Value Problems
6.1	Review of Power Series
6.2	Solutions About Ordinary Points
7.1	Definition of the Laplace Transform
7.2	Inverse Transforms and Transforms of Derivatives
7.3	Operational Properties I
7.4	Operational Properties II
7.5	The Dirac Delta Function
7.6	Systems of Linear Differential Equations

Tentative Schedule

WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	Friday
1	September 25	26 Ch 1	27	28 Ch 1	29
2	October 2	3 Ch 1	4	5 Ch 2	6
3	9	10 Ch 2	11	12 Ch 2	13
4	16	17 Ch 3	18	19 Exam 1	20
5	23	24 Ch 3	25	26 Ch 3	27
6	30	31 Ch 4	November 1	2 Ch 4	3
7	6	7 Ch 4	8	9 Exam 2	10
8	13	14 Ch 4	15	16 Ch 6	17
9	20	21 Ch 6	22	23 Thanksgiving holiday	24
10	27	28 Ch 6	29	30 Exam 3	December 1
11	4	5 Ch 7	6	7 Ch 7	8

DECEMBER 11-15 Final exams https://www.deanza.edu/calendar/final-exams.html

Student Learning Outcome(s):

• Construct and evaluate differential equation models to solve application problems.

• Classify, solve and analyze differential equation problems by applying appropriate techniques and theory.

Office Hours:

T,TH	12:00 PM	02:00 PM	Zoom,In-Person,By Appointment	S55