MATH 2A. 37498

Differential Equations Winter 2022

Instructor: Fatemeh Yarahmadi

E-mail: yarahmadifatemeh@fhda.edu

Office Hours: Monday 8:00 am-10:00 am and Wednesday 4:00 pm-6:00 pm, Friday 10-12 (Zoom link is available on Canvas)

My office hours are times for conversation about the course and your work in it. I am here to answer questions, offer feedback, discuss a course concept, or just listen as you explore a line of reasoning. I can also direct you to resources to help you meet challenges you face outside of class.

Questions outside of office hours? I will respond to your message or Q&A Discussion post on Piazza within 24 hours, M-F. If you do not get a response after 24 hours, please resend.

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, submit activities on Canvas, and attend required live class meetings.
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:
Because this is an online class, there are no on-campus meetings. However, this does not mean that you will be able to move through the class at your own speed. A major part of the class involves participation, discussing assignments and problems with your classmates.
Thus, everyone needs to be doing the same work at approximately the same time. You are expected to 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 an online course. You will be considered present if there is

evidence of your participation in required course activities including, but not limited to, submitting an assignment, participating in an online discussion, and working in a group.

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 weekly modules in Canvas. Weeks will run from Monday to Sunday, and all work for the week (including Discussions and HW) will be due Sunday night at 11:59 pm.

Asynchronous Group Activity:
There will be required group activities. Even though the problems will be discussed in group, write up your own solutions independently.
- **Every member** of the group will be taking a role.
- Groupwork are done in Google doc.
- Your name and your role should be written at the top of the first page.
- Work must be NEAT and ORGANIZED. Do 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.

Discussions:
There will be weekly discussion topics posted on Canvas. The deadline for responding to the topic is Sunday 11:59 pm. You may not respond to the discussion once the deadline has passed.

Pre-Requisites:
There will be weekly pre-requisite calculus topics posted on Canvas. The deadline for responding to the topic is Monday before the start of the module.

Homework:

Written sets for submission: During the term, I will send out homework sets to be written up and submitted on Canvas. Homework is essential in any math class. You cannot expect to pass the class without putting consistent effort into homework. The deadline for submit the homework is <mark>Sunday 11:59 pm</mark>.

HW Guidelines:

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. Do 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
- Submit one single pdf file of your homework on Canvas

Projects and Presentation:

Students are required to finish a class project by the end of the term, and it has 100 points. For more details about the project, please check your Canvas.

Group Quizzes:

There are **four group quizzes** will be available on Canvas and each will be worth 25 points. Quizzes will focus on the material covered during that week. Students are expected to discuss the questions with their groups.

Exam Reviews:

There will be **three exam reviews** each assigned before each midterm exam worth 10 points each. The purpose of the review is to aid the student in studying for the exams.

Midterm Exams:

There will be **three exams** to test your understanding of the concepts from lecture and the homework. They should be straightforward for those who complete and understand the

homework. Each exam will be worth 90 points. A total of 270 points will be counted toward your final grade.

No make-up exams will be given. If you are forced to miss an exam, you need to contact me **before** the exam with a valid reason.

Final Exam:
The final exam will cover **all material** from throughout the term. You will have two hours to complete the final. More details on the final exam will be available on Canvas.

Grading Policy:

Homework	50 pts (6.25%)
Group Activities and Discussion	50 pts (6.25%)
Projects and Presentation	100 pts (12.5%)
Group Quizzes	100 pts (12.5%)
Midterm Reviews/ Midterms	300 pts (37.5%)
Final	200 pts (25%)
Total	**800 pts**

Quarter grade:			
≥100%	A+	78-79.9%	C+
93-99.9%	A	70-77.9%	C
90-92.9%	A-	68-69.9%	D+
88-89.9%	B+	63-67.9%	D
83-87.9%	B	60-62.9%	D-
80-82.9%	B-	0-59.9%	F

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 Online Tutoring Center.
- Form an online 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

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Week
January	2	3 First Day of Winter Quarter	4	5	6	7	8	1
	9 HW 1 Due	10	11	12	13	14	15	2
	16 Quiz 1/ HW 2 Due	17 Campus Closed	18	19	20	21	22	3
	23 Quiz 2/ HW 3 Due	24	25	26	27	28	29	4
February	30 Exam 1 Due	31	1	2	3	4	5	5
	6 HW 4 Due	7	8	9	10	11	12	6
	13 Quiz 3/ HW 5 Due	14	15	16	17	18 Presidents' Holiday Campus Closed	19	7
	20 Exam 2 Due	21 Presidents' Holiday Campus Closed	22	23	24	25 Last Day to Drop With a "W"	26	8
March	27 Quiz 4/ HW 6 Due	28	1	2	3	4	5	9
	6 HW 7 Due	7	8	9	10	11	12	10
	13/ Exam 3 Due	14	15	16	17	18	19	11
	Final Week							12

Class Project and recorded presentation during week 11 Due on Sunday 11:59 pm

Final Exam during week 12 Due on Friday 11:59 pm

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.