

A First Course in Differential Equations

Math 383 Section 001

Summer 2019

Instructor: Gracie Conte

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Office Hours: T/Th 1-2 or by appointment

Course Meeting Time and Room: M-F 11:30am - 1:00pm Phillips 367

Course Information

Prerequisites: You must have earned a passing grade in MATH 233 (or an equivalent) to register for this class.

Text: *Differential Equations: Computing and Modeling*, fifth edition, by Edwards, Penney, and Calvis.

MyMathLab: The access code may be purchased using a credit card or in the UNC Textbook store. You can also bundle with a physical copy of the textbook (See options below). You must purchase an access code and enroll online in order to view and submit homework assignments. The Course ID is **conte56364**. More specific instructions for registration can be found on Sakai under Resources.

Textbook Options

1. MyMathLab that comes with an e-book version (this is less expensive)
2. Hardback Textbook + MyMathLab (this is more expensive)

Sakai: All handouts, solutions and other class material will be posted on Sakai which can be accessed by going to: <https://sakai.unc.edu/portal>

Course Content and Structure: Differential equations are equations involving relationships between functions and their derivatives. Differential equations are indispensable tools in describing physical processes and dynamical systems, and are vital in the study of the physical sciences along. Differential equations are also of mathematical interest in their own right.

You are strongly encouraged to ask questions throughout this course in class, in office hours, and to each other. The more you are engaged in the material, the more beneficial this class will be. Group study is highly recommended. Throughout the term, you should be reading along in the textbook, reviewing your notes, and working problems beyond what are assigned in the homework to get a better grasp of the material and to be better prepared for both lectures and the exams.

Class Expectations

Attendance: Attending class is necessary (but not sufficient) to succeed in this class. We will begin class promptly to use our time as effectively as possible, thus you should be on time and prepared to start class. Leaving class early tells me that you did not want to be in class that day, and will be counted as an absence. If you need to leave early, let me know in advance. You are only allowed two unexcused absences.

Electronic Devices: All cell phones and electronics, etc must be turned off (or on silent) and put away. Exceptions: taking notes on a PC, viewing the in-class handouts posted on Sakai.

Honor Code Statement: Each student is expected to abide by the Honor Code and the Student Code of Conduct. <http://honor.unc.edu>

In this class, all exams must be done individually and are closed book and closed notes. It is an instance of cheating to give or receive help on an exam, except from the instructor. On homework assignments, students are encouraged to work together in pairs or small groups, provided that all participants are contributing and the collaboration benefits the learning of all involved. Simply copying or trading answers is an instance of cheating.

Assignments and Grading

Homework: Homework will primarily be submitted online through MyMathLab. These will be assigned periodically throughout the semester. It is **your responsibility** to keep up with posted assignments and their due dates. More information about registering for MyMathLab can be found on the Sakai site under Resources.

Throughout the semester, there will also be 1 to 2 short written assignments in (addition to the online component) that will be collected in class.

You are encouraged to work collaboratively on all assignments; however, each student is responsible for their own. You may not use an on online problem-solving service for graded work.

In Class Worksheets: I aim to give students the opportunity to work with the content presented in class before ever leaving class so they can ask the questions that normally arise when they first open their homework. These worksheets are also how I will take attendance the majority of the time.

Exams: There will be two in class exams, lasting the entire class period.

- Exam 1: Tuesday, May 28
- Exam 2: Wednesday, June 5

There will be no make-up exams, except for religious and university-sponsored exceptions. You will not need a blue book or scantron.

The **comprehensive Final Exam** will be on **Wednesday, June 19 from 11:30 am 2:30 pm**. The final exam is given in compliance with UNC's final exam regulations and calendar. In order to take a make-up exam after this date, you must have an official examination excuse, signed by a Dean or authorized agent of the Dean. You must bring this excuse and a picture ID to the make-up exam.

Late Work: No late tests or make-up tests will be given. Students who need to miss a test for a UNC athletic team event, UNC academic field trip, or religious holiday can take the test in absentia or in advance with at least a week advance notice and written documentation. Exceptions will be made only in extreme circumstances with intervention from the Dean of Students office. Students can complete online homework assignments late in MyMathLab for a penalty of 25%. Late written homework will not be accepted.

Grade Calculation:

MyMathLab	15%
Written Homework	5%
In Class Worksheets	7%
Exam 1	20%
Exam 2	20%
Final Exam	33%

Course Grade:

92-100	A	77-79	C+
90-92	A-	73-76	C
87-89	B+	70-72	C-
83-87	B	67-69	D+
80-82	B-	60-66	D
		0-59	F

There are no grades of D- or A+.

There are no extra credit opportunities.

Resources

Office Hours: You are strongly encouraged to come to office hours. This is the best way to get one-on-one help with any concepts or exercises, as well as to get more in-depth knowledge of the material.

Classmates: I strongly encourage you to collaborate with your classmates on your homework. Study groups are what got me through college, so I highly suggest you do the same.

Math Help Center: (<http://math.unc.edu/undergraduate/math-help-center/>).

The Math Department sponsors free tutoring in the Math Help Center in 273 Phillips Hall. Please see the website for hours of operation. Any changes will be posted at <http://math.unc.edu/for-undergrads/help-center> and on the door of the room.

Paid Tutors: The Math Department keeps a list of paid tutors in the main office in Phillips 329 and on the Math Department website.

Tentative Schedule

Week	Date	Section	Topic
1	5/15	1.1 1.2	Introduction to Differential Equations
	5/16	1.4	Separable Equations
	5/17	1.5	Linear First Order Equations
2	5/20	1.6	Substitution Methods and Exact Equations
	5/21	1.6	Substitution Methods and Exact Equations cont.
	5/22	2.2	Equilibrium Solutions and Stability
	5/23	3.1	Introduction to Second Order Equations
	5/24	3.3	Homogeneous Constant Coefficient Equations
3	5/27	<i>No class</i>	<i>Memorial Day</i>
	5/28	Exam 1	Sections: 1.1, 1.2, 1.4, 1.5, 1.6, 2.2
	5/29	3.2 + 3.3	General Linear Equations
	5/30	3.5	Non-Homogeneous Equations
	5/31	3.5	Non-Homogeneous Equations cont.
4	6/03	3.8	General Linear
	6/04		Review
	6/05	Exam 2	Sections: 3.1, 3.2, 3.3, 3.5, 3.8
	6/06		Crash course in Linear Algebra
	6/07		Crash course in Linear Algebra
5	6/10	5.1	Linear Systems of Differential Equations
	6/11	5.2	Eigenvalue Problems for Homogeneous Systems (Real Distinct)
	6/12	5.2	Eigenvalue Problems for Homogeneous Systems (Real Repeated)
	6/13	5.2	Eigenvalue Problems for Homogeneous Systems (Complex)
	6/14	5.4	Second Order Systems - Mass Springs and Eigenvalues
6	6/17		Review
	6/18	<i>No class</i>	<i>Reading Day</i>
	6/19	FINAL	Wednesday, June 19 from 11:30am - 2:30pm

Disclaimer: The instructor reserves the right to make changes to the syllabus, including due dates and test dates. Changes to MyLabMath due dates can be found on the MyLabMath site. Other changes will be announced in class or via Sakai.