MA341, Applied Differential Equations

Instructor

Name	:	Medvinsky Michael
Office	:	SAS 3266
Lectures	:	KAM G20, MWF 1:55pm-2:45pm
Office Hours	:	right after the class, by appointment, or email

Prerequisites: Prerequisite: MA 242 or (MA 132 and MA 231)

Description of the course: Differential equations and systems of differential equations. Methods for solving ordinary differential equations including Laplace transforms, phase plane analysis, and numerical methods. Matrix techniques for systems of linear ordinary differential equations. Credit is not allowed for both MA 301 and MA 341.

Text: Fundamentals of Differential Equations and Boundary Value Problems, by Nagle, Saff, and Snider, 7th Edition, Addison-Wesley.

Tentative plan of lectures: The plan is tentative and will be adjusted based on the actual progress.

Weeks	Chapters	Subjects
1	1.1-1.3	Solutions & Initial Value Problems, Direction Fields
2-4	2.2-2.6	**Martin Luther King Holiday** First Order Equations, Linear, Separable, Exact Equations
5-8	4.2-4.7	Second Order Linear Equations, Homogeneous & Nonhomogeneous, Undetermined Coefficients, Superposition Principle, Variation of Parameters, **Test 1**
9-10	7.2-7.6	Laplace Transform (LT), Inverse LT, using LT to solve initial value problems, Transforms of Discontinuous Functions, **Test 2**
11-13	9.1-9.7	Systems of DEs and Linear Algebra, Homogeneous& Nonhomogeneous, **Test 3**
14 -15	1.4	Euler Method
	5.4	Phase Plane
15		Review

Exams: Dates are fixed. Please plan your schedule around these dates now.

Midterm Test I	:	Friday, Feb 11	(in class)
Midterm Test II	:	Friday, Mar 11	(in class)
Midterm Test III	:	Friday, Apr 15	(in class)
Final Exam	:	Monday, May 2	12:00 pm – 2:30 pm (in class)

Grading: Your grade will be determined by your scores on the midterm exams (40%), the final exam (30%), and homework assignments (30%).

Letter grades are determined as follows: If X is your percentage grade, then $\{X \geq 98\% \Rightarrow A+; X \geq 92\% \Rightarrow A; X \geq 90\% \Rightarrow A-; X \geq 88\% \Rightarrow B+; X \geq 82\% \Rightarrow B; X \geq 80\% \Rightarrow B-; X \geq 78\% \Rightarrow C+; X \geq 72\% \Rightarrow C; X \geq 70\% \Rightarrow C-; X \geq 68\% \Rightarrow D+; X \geq 62\% \Rightarrow D; X \geq 60\% \Rightarrow D - X < 60\% \Rightarrow D\}$. I reserve the right to modify these in special cases and to decide if the curve is needed.

Mathematics Tutoring Center: Free tutorial is available in Mathematics Multimedia Center [1] at 2103 and 2105 SAS Hall. Hours are 8am-5pm Monday-Thursday.

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[1] https://www.math.ncsu.edu/mmc/

Attendance policy Attendance will be taken each class. Attendance will be recorded, with no distinction made between excused and unexcused absences, except in the event of a missed test. If you miss class or are late, you are still responsible for all material covered and assignments due. In you missed test for a reason - please obtain a letter from student health center or absence verification office[2]. Attending less than 70% of the classes may negatively affect your course grade.

Strategies for Success:

- Attend class regularly. Check your email/Course website/Moodle site regularly. Read the relevant text book sections (and/or additional material if will be given) *before* you attend class. Ask questions and become involved during class sessions.
- Plan to do homework daily. You are encouraged to use computers to help learn and enhance the course material, as well as to solve and check homework problems. But keep in mind that your goal is to *understand* the material and that you will not have a computer with you during exams.
- Be accountable for your own education. You are responsible for resolving confusion about assignments, due dates, exam dates, accommodations, etc.
- Know how grades are computed at the start of the semester and plan your effort accordingly.
- Form study groups with other students. However, the assignments you turn in *must represent your own work*.
- Come to the office hours of the instructor or TA. If you email us - please identify yourself and the class clearly. If you request help in homework - show your work (snapping your handwork is ok) and explain your problem.

Academic Integrity and Honesty: Students are required to comply with the university policy on academic integrity and honesty found in the Code of Student Conduct. *H*onor Pledge: your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment."

paragraphAccommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office[3].

Non-Discrimination Policy NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at http://policies.ncsu.edu/policy/pol-04-25-05 or http://www.ncsu.edu/equal_op. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

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[2]https://dasa.ncsu.edu/support-and-advocacy/find-help/absence-verification/

[3]http://www.ncsu.edu/dso also see regulations at http://policies.ncsu.edu/regulation/reg-02-20-01