

MTH 244-0002 Differential Equations Fall 2019

Instructor: Orlando Merino, merino@math.uri.edu, 200F Lippitt Hall, 8744442
Textbook: An Introduction to Differential Equations, by Stanley Farlow, Dover Pubs, 2006.
Calculator: Not required, and not allowed in tests.
Meets: MoWeFr, 2 p.m.-2:50 p.m., 215 Morrill Hall.
Office Hrs: To be announced, or by appointment.
Prerequisite MTH142 (Calculus II) or equivalent

About the course MTH 244 is a first course in ordinary differential equations. Differential equations are used by scientists and engineers to model physical, biological and economic phenomena. In this course we will learn both how to use differential equations to describe different phenomena and mathematical techniques for solving differential equations. For this we will use numerical, graphical, and analytical methods. The methods to be discussed include elementary analytical techniques that lead to exact solutions of certain classes of problems, numerical algorithms or series expansions for approximating solutions, and geometric analysis. Also, the Mathematica software will be used in some computer projects to explore/expand class discussions.

Objectives At the end of the session you will be able to use numerical, graphical, analytic techniques to analyze and/or solve scalar and systems of differential equations, and to apply these concepts in the study of some basic mathematical models.

Assignments We will have homework collected every day of class, with some exceptions. Also **computer homework** may be assigned. Homework questions will be answered at the beginning of class. You may also email me your questions (merino@math.uri.edu). NOTE: *The following list may be modified any time.*

1.1: 4,6,8 1.2: 2,4,14,30,34a 2.1: 4,6,14,20 2.2: 2,4,6,10,13,14,18,30 2.4: 1,3,5,6 2.5: 5,7 2.7: 4,8,19,27 3.1: 3,6,10,11,18,42,43 3.2: 3,4,5,18	3.3: 3,7,10,11 3.4: 2,4,16,18 3.5: 1,8,12 3.6: 2,3,4,10 3.7: 3,5,13,14,24,32 3.8: 3,6,7,14 3.9: 6a, 6b, 8 3.10: 12a, 12c	4.1: 9,10,13,15 4.2: 3,4,6,10,12,13 4.3: 1,2,3,4,5 5.1: 1,2,3,9 5.2: 1,3,6,7,8,10,11,19 5.3: 2,5,10,12,13 5.4: 3,6,8 5.5: 1,2,8,10,13,19,21 5.6: 1,2,4	6.1: 1–4, 9–12 6.2: handout, probs TBA 6.3: 1,4,6,8,9,12,14 6.4: 16,17,18 6.5: 1,2,6 8.1: 2,5,7,8,10,12 8.2: 3,4,5,6,14 8.3: TBA
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Solutions to Problems: It is your responsibility to communicate clearly in writing up solutions for homework, quizzes, and exams. Your results must display your understanding well and be written in a correct, complete, coherent, and well-organized fashion. The rules of language still apply in mathematics, and apply even when symbols are used in formulas, equations, etc. Neatness counts!

Evaluation

Your grade will be based on two tests, homework, and a comprehensive final exam (given on the last day of class). Some homework may be a computer assignment. Points are distributed as follows:

Two exams (10/7 and 11/18, 25% each), Final Exam (25%), Assignments (25%).

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Expectations You are expected to attend every lecture, and to submit your work on time -- no late work will be accepted (exceptions allowed for medical reasons). **You must check SAKAI frequently.**

In class Please ask questions at any time. I will try to clarify difficult concepts, or to explore any interesting ideas you may offer. Class participation has a positive impact on the student's learning, and I encourage it.

Outside of class To keep up with the rapid pace of the class requires that you spend several hours every day doing homework, reviewing notes, reading the book, and working out extra problems, all in addition to the time spent in class.

Accommodations Any student with documentation for accommodation is welcome to contact me as early in the semester as possible so that we may arrange reasonable accommodations (contact Disability Services for Students Office at 330 Memorial Union 401-874-2098).

Academic Honesty Cheating is defined in the University Manual section 8.27.10 as *the claiming of credit for work not done independently without giving credit for aid received, or any unauthorized communication during examinations* (of course, this includes use of the "internet"). Students are expected to be honest in all academic work. The resolution of any charge of cheating or plagiarism will follow the guidelines set forth in the University Manual [8.27.10 - 8.27.20](#).

Civility If you must come in late or leave early, let me know and please do not disrupt the class. Please turn off all cell phones, ipads, etc. Please refrain from texting during class.

Make-Up Policies: Make-up exams will only be given for documented, extenuating circumstances at the instructor's discretion. The instructor must be notified before the day of the assessment if you will be participating in a University-sanctioned event or if you have some other reasonable conflict. If you are sick or are experiencing some other emergency, you must notify the instructor by email within two hours of the end of the class period for which any assessment is scheduled. Make-up assessments must be scheduled before the class meeting directly following the exam unless specific arrangements have otherwise been made. Documentation must be provided to prove that any excuse is legitimate.

Incomplete Grade Please see 8.53.20 and 8.53.21 of the University Manual.