

MATH 308–512: Differential Equations, Fall 2009

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Class hours: Tuesdays/Thursdays 12:45–2:00pm, Blocker 128

Office Hours: Tuesdays/Thursdays 2:00–3:00pm and after appointment by email

Textbook: Brannan, Boyce: Differential Equations. An Introduction to Modern Methods & Applications

Syllabus: Differential equations are ubiquitous in science and engineering. This class teaches the basic facts about these equations. We will study solutions to the most important types of differential equations, how to obtain them and what they look like. The class also introduces the use of the MATLAB software as an important tool for the solution of mathematical problems. The class will cover selected material from chapters 1 to 7 of the textbook.

Objectives: After finishing this class successfully, you will have learned about the basic types of ordinary differential equations (ODE). You will be able to recognize these equations and apply the right methods to solve them. Additionally, you will be able to write simple MATLAB programs which allow you to visualize the solutions of ODE. Finally, you will have learned about transformations of functions, in particular the Laplace transformation, and how to use them.

The actual mathematical topics aside, you will have learned techniques to solve problems of higher complexity than in previous classes and you will also have learned how to present them in written form. By preparing your homework in groups, you will have acquired skills in discussing mathematical topics and work collaboratively.

Homework: There will be weekly homework assignments. On the first assignment, you will be asked to form a group of 3–4 students which meets and discusses homework together; this group should remain the same for the whole semester. You should still submit homework individually, but list the other group members next to your name. The purpose of these homework assignments is that you obtain practice in the techniques discussed in class as well as in writing your solution in a form which allows a reader to follow your thoughts. Solving the problems diligently is therefore a vital component of your learning experience and will also prepare you for the exams. Furthermore, the ease with which you address homework assignments will predict your performance in exams. If you find your homework difficult or are not satisfied with your homework grades, please see me in my office as soon as possible.

Homework assignments will be graded according to the following scale: (A) almost or totally correct and well written; (B) almost or totally correct, but lacks in presentation; (C) decent but deficiencies in content and form; (D) serious attempt, but severe deficiencies; (E) attempt; (F) missing.

The total homework grade is computed as the median of the assignments with two exceptions: if three or more assignments are (E) or below, the total grade will not be more than (E). If you have more than one unexcused (F), the total grade is (F).

Exams: two midterms during class hours and one final

- First midterm exam, Thursday, October 15th
- Second midterm exam, Thursday, November 19th
- Comprehensive final exam, Wednesday, December 16th, 8–10am for changes)

Please bring your own paper to the exam; paper should be white, yellow or engineering paper; please avoid strong colors.

The presentation in the exam has to follow the the schemes outlined in class. Failure to clearly identify the steps you are applying will result in loss of credit; in particular, partial credit will only be given for a correctly performed sub-step of a method.

Grades: Your grade will be at least A, B, C or D for point averages over 90%, 75%, 60% or 45%, respectively. The point averages will be computed from the final exam (40%) and the midterm exams (30% each).

Before the final, I will compute a preliminary grade as the average of both midterm exams. If you are satisfied with this grade and your total homework grade is equal or above, you can notify me and you will not have to take the final exam to receive this grade.

After the final, I will compute the average as indicated above. I will then use the homework grade for adjustments: up to 10% points for (A), 5% points for (B), 2% points for a (C) and 1% point for a (D). I will not consider any grade adjustments if the homework grade is less than (D).

Make-ups : There will be no make-up exams. Excused absences according to Rule 7 (see Student Rules) will be dealt with on an individual basis, but require a written excuse. Please let your instructor know about this as soon as possible, and preferably in advance.

Incompletes: I will consider giving an incomplete if you have successfully completed all but a small portion of the work of the course, and are prevented from completing the course by a severe, unexpected event. Simply being behind work is not a reason for an Incomplete. In that case you should consider dropping the course.

S/U grades: If you are registered S/U your grade will be 'S' if your letter grade is C or above, and 'U' otherwise. Please verify early in the semester whether you are registered for a letter grade or pass/fail.

Academic integrity: The Aggie Honor Code "An Aggie does not lie, cheat or steal, or tolerate those who do" applies, see also the Honor Council Rules and Procedures at

<http://www.tamu.edu/aggiehonor.html>

Students are strongly encouraged to work together and discuss homework problems with each other. However, copying or stealing work done by others is an act of academic dishonesty and will be persecuted according to the University policy.

Disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities.

If you believe you have a disability requiring an accommodation, please contact Services for Students with Disabilities, Koldus 126, 845-1637 as early as possible in order to find the best solution for you.

Important web pages: <http://www.math.tamu.edu/~kanschat/teaching/2008C-308/> Course homepage

<http://studentaffairs.tamu.edu/emergency> Campus Emergency Information

<http://www.math.tamu.edu/teaching/operationspg.html> Dept. of Mathematics, teaching op.

<http://www.math.tamu.edu/> Department of Mathematics

<http://disability.tamu.edu/> Disability Services

<http://student-rules.tamu.edu/> Student Rules

<http://www.tamu.edu/aggiehonor.html> Aggie Honor Code

Email policy: I will answer all emails within a week. While I will not guarantee this, I will attempt to answer all emails asking for appointments within 24 hours and all others within 48 hours. Please refer to the class number in the subject and try to give a concise description of your problem.

Copyright: All materials disseminated in class or on the web are protected by Copyright laws. Copies (or download from the web) are allowed for personal use only. Distribution of any of these materials in any form is strictly prohibited.

Disclaimer: While this handout was prepared carefully and according to information available at the beginning of the semester, changes may be necessary in the interest of good teaching. Changes to any of the information above will be announced in class and posted on the class web site. This includes in particular possible changes of exam dates.