MATH 308-514: Differential Equations

Instructor: Guido Kanschat, email: `kanschat@tamu.edu`

Class hours: Tuesdays/Thursdays 3:55–5:10pm, Blocker 131

Office Hours: Tuesdays/Thursdays 2pm–3:30pm, Blocker 505C and by email appointment

Textbook: Nagle, Saff, and Snider: Fundamentals of Differential Equations and Boundary Value Problems (custom edition for TAMU)

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 8 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.

Homework: There will be weekly homework assignments which are neither collected nor graded. I encourage you to discuss homework problems with your classmates, including strategies for solving different kinds of problems. The purpose of these homework assignments is that you obtain practice in the techniques discussed in class. Solving the problems diligently is therefore a vital component of your learning experience and will also prepare you for the quizzes and exams.

Quizzes: There will be quizzes of 10 to 15 minutes on a weekly to biweekly basis. They will consist of modified homework questions. You are encouraged to bring your homework results for reference. The quizzes serve a dual purpose: not only are their results used for your grades. They also tell you how you are doing in this class and help you decide whether you're doing okay, have to work harder, need more help, or should drop the course.

Exams: two midterms during class hours and one final

- First midterm exam, October 2nd
- Second midterm exam, October 30th
- Comprehensive final exam, December 9th, 1–3pm (see Math Teaching Operations for changes)

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 (30%), the midterm exams (25% each) and quizzes (20%).

If your quiz average and both midterm exams are above 90% each at the end of the semester, you will be allowed to opt out of the final exam and I will give you an A for the class.

Make-ups : There will be no make-up exams or quizzes. Excused absences according to Rule seven (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.

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 operations

`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.

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.