Math 3410 Section 3, Spring 2019
Differential Equations I
TuTh 3:30-4:50, Chil 245

General Course Information

Instructor
John Krueger
408 GAB
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Office Hours
Wednesday 11-1 and 1:30-3:30

Textbook
Elementary Differential Equations and Boundary Value Problems, Boyce and DiPrima, 11th edition (required)

Prerequisites
Math 1720 Calculus II

Course Content
First-order equations, existence-uniqueness theorem, linear equations, separation of variables, higher-order linear equations, systems of linear equations, series solutions and numerical solutions.

Course Website
http://www.math.unt.edu/∼jkrueger/3410.html
On the website you can find up-to-date office hours, homework assignments, homework solutions, handouts, website links, exam review sheets, and exam solutions.

Grading
20% Homework, 25% Midterm 1, 25% Midterm, 30% Cumulative Final Exam.
[90,100] = A, [80,89] = B, [70,79] = C, [60,69] = D, [0, 59] = F.
Your lowest homework grade will be dropped.

Exam Dates
Exam 1: Tuesday, February 26.
Exam 2: Tuesday, April 9.
Final Exam: Tuesday, May 7, 1:30-3:30.

Grade Curve
I will reserve 3 percentage points as a possible curve on your final grade. Students who use cell phones during classtime, systematically skip class, come to class late regularly, or violate other class policies are not eligible to receive these points. I will make a determination of how much of a curve, if any, individual students will receive only when I am computing final grades after the semester has ended.

Class Policies and Procedures

Homework

Homework is due at the beginning of class on the due date. Students who do not attend class the day a homework is due must turn in the homework under my office door by the beginning of class on the due date. I do not accept homework electronically except in the case of an emergency. Students who cannot turn in homework on time due to exceptional circumstances are encouraged to discuss their options with me.

Since homework is part of your final grade, it is not allowed for students to access homework solutions online, through solution manuals, or elsewhere. I will post homework solutions on the website and students can check their work against those. It is not fair for some students to have the ability to access solutions and others not, and it is impossible for the instructor to assess the appropriate grade for homework which was completed with the assistance of someone else's solutions. For this reason, accessing pre-written solutions is prohibited, and anyone who does it will receive a 0% on the concerned homework assignment and possibly be reported to the university for cheating. If you use resources other than the textbook or lecture notes to help you do the homework, you are required to provide a reference to that resource on your work.

Quizzes

Depending on need and on how much time is available, we might have quizzes once in a while. I will announce quiz dates in advance. Each quiz will count as one homework assignment and be included in your homework average.

Grading

In order to get full credit on a particular problem, you need to have a correct answer and also to justify your answer with clearly written work. You will not get any credit if you simply write down the final answer and not provide any justifications.

In this class, the solutions to problems usually split up into several different steps. Oftentimes doing one step incorrectly will ruin the rest of the problem, by either making the remaining steps trivial or unreasonably complicated. As such, it is sometimes difficult or impossible to grade the rest of the problem after a mistake is made. The grader will make a reasonable effort to assess the remaining part of an incorrect problem, but there is no promise that you will get credit. For these reasons, you are required to **double check your work** while solving a problem. If the work becomes unreasonably simple or complicated, a student should take that as a sign that they might have made a mistake, and go back and check.

Students who make elementary mathematical mistakes which then ruin the rest of the problem should expect to get little or no credit. For example, if a student fails to correctly compute a relatively simple integral or derivative, or makes basic mistakes about trigonometric functions, they will not get much credit.

If you do not agree with the way a problem was graded, you should review the posted solutions to the problem before asking the instructor about it. In general, asking the instructor for points back will not be successful unless there is a clear, genuine mistake in the grading. I do not have time to regrade complex problems on the spot; complicated grading issues should be addressed during office hours, rather than after class.

Your final grade is a reflection of your performance on the work assigned to you during the semester. It is not possible to improve your grade through doing additional work.

Cell phones, computers, multitasking
The use of cell phones during class is distracting not only for the person doing it, but also for students around them and for the instructor. For this reason, students are prohibited from using cell phones during class time. This includes during the lecture as well as when work is being returned. Cell phones should be put away in your bag or pocket during lecture. Students are prohibited from using cell phones in their laps or making attempts to use phones hidden from the instructor's view.

Students who plan to use a computer or tablet to take notes must request permission from the instructor. Students are prohibited from using such devices during class for any purpose other than note taking. It is also prohibited to do work for other classes during class time.

Attendance
Attendance is strongly recommended. Students will need the lecture notes in order to prepare for the exams. The textbook by itself is not a suitable resource for exam preparation, since the lecture notes are not exactly the same as the material in the textbook, and the textbook contains much more material than is need for exam preparation. Important information and announcements are oftentimes made during class time, and students are responsible for that information. Students who miss class have the responsibility to ask another student to copy their lecture notes and learn about any class announcements. I will not repeat a lecture for an individual student during office hours if they missed class.

Other Policies
While much of the material in the course obviously depends on prior math courses, such as calculus, it is possible that some of the new methods you will learn overlap in some way with material you have learned in other classes. In general, you are required to do your work using the methods which are taught in this class, and not use methods learned in other classes in their place.

Class is not the appropriate time to discuss controversial or contentious issues. Attempting to involve the instructor in a debate or challenging the instructor during class is considered a class disruption. Questions about class policy which cannot be resolved with a brief and neutral answer should be addressed outside of class.

Students who need to pass the class in order to graduate, or to score a particular grade in order to maintain their GPA, have the responsibility to make the required effort needed to achieve this goal. This is not the responsibility of the instructor. Attempting to persuade the instructor to give or change a final grade based on effort, offers to do additional work, or explanations of personal circumstances is strongly discouraged.

Students are expected to be attentive and respectful during class. Conversations should stop once the lecture begins. Sleeping during class is prohibited.

Class participation is strongly encouraged. Students should feel comfortable asking for clarification when they do not understand something in lecture. It is helpful if students raise their hand before addressing the instructor. It is difficult to communicate with the class when more than one person speaks at the same time. Impolite behavior or talking at great length without permission is considered a class disruption. If you have a question you would like to ask the instructor outside of class, it is better to ask after lecture rather than before.

ODA

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA). For additional information see the Office of Disability Accommodation website at http://disability.unt.edu.

Calendar of Topics

The following is a (very) tentative schedule of the topics which we will cover in the class.

Week 1: Introduction, linear homogeneous equations
Week 2: Linear equations, separable equations
Week 3: Separable equations, applications
Week 4: Second order equations, existence-uniqueness theorems
Week 5: Linear operators, Wronskian, linear independence
Week 6: Second order linear homogeneous equations with constant coeefficients
Week 7: Reduction of order, second order nonhomogeneous equations
Week 8: Variation of parameters
Week 9: Midterm exam
Week 10: Method of undetermined coefficients
Week 11,12: Laplace transform method
Week 13: Series solutions
Week 14: Other applications
Week 15: Final exam review