

**Differential Equations**  
**Math 2233**  
**Spring 2015**

**Faculty:** Prof. D. Alspach, MS 529, 744-5784.

**Electronic Access:** If you need to reach me, one of the best ways is by electronic mail. For regular correspondence regarding the course use the mail facility built into D2L. For other correspondence my address is [alspach@math.okstate.edu](mailto:alspach@math.okstate.edu). I will be providing some information on D2L. To access D2L go to <http://oc.okstate.edu>. You will need your O-Key email address and password. I will also use D2L to communicate with the class as a whole by posting messages, homework assignments, handouts, supplements, solutions and some grade information. **You should check the news and content sections on D2L two or three times a week.**

**Office Hours:** 9:30-10:20 MWF; other times by appointment. You can also drop by my office to see if I am available.

**Text:** Boyce and DiPrima, *Elementary Differential Equations and Boundary Value Problems*, 10th Edition, Chap. 1-6. (The version of the text without *Boundary Value Problems* can be used.) We will cover about three sections each week. It will help you to stay current if you read the section before the corresponding lecture. Even though you may not understand everything, by reading the section you will have a context for the lecture or in-class work and will be able to ask questions about the parts you did not understand. Also I will not necessarily cover everything in each section and my way of covering some material may differ from that of the author.

**Calculators:** A graphing calculator or computer will be necessary for some homework problems and some in-class work, but calculators, phones, laptop/palmtop computers, etc., will not be permitted during tests. Answers should be given in exact form unless a numerical approximation is specifically requested. For example, if  $e^{\sqrt{2}x}$  is the exact answer, an answer of  $e^{1.414x}$  will not be given full credit.

**Graphing Software:** Some homework problems request graphs of direction fields or solutions. If you have access to and know how to use software such as Maple, Mathematica or MatLab, to do this you may use those. If not there is a web based free program called Sage Cell that you can use. Instructions will be provided on D2L. In general hand drawn direction fields and graphs of functions are too crude for many purposes.

**Examinations:** There will be three in-class exams (Tentative dates: February 13, March 27 and April 24) and a comprehensive final exam, Friday May 8, 10:00-11:50 am. If you must miss a scheduled exam, you must contact me **before** the exam. A make-up exam will be given only if missing the exam was unavoidable due to serious illness or injury or similar circumstances. (Travel plans, cheap airline tickets, etc, do not qualify.) If you have a disability and will be taking an exam at the testing center, you should contact me at least three business days before the exam.

**Quizzes:** Most classes there will be a short quiz over the homework from the previous class. **There will be no make-up quizzes.** The four missing or lowest scores will be dropped. **You must attend class for the whole period** to receive credit for the quiz.

**Homework:** Assignments will be given in class and also posted on D2L. I will collect homework but only a few problems will be graded from each assignment. It is very important that you do the homework. You should do the assigned problems for a section immediately after the section has been discussed in class. You should write complete solutions with supporting work. This will help you learn the material, be a resource for studying for exams and provide practice for writing solutions on the quizzes and exams. Answers to most problems are in the back of the book. If you have difficulty with any of the homework problems, you can ask about them during the next class meeting.

**Help:** I am available during my office hours and other times can be arranged. There are tutors at the MLSC who can help you. Remember to use the tutors to help you learn, NOT to do the work for you. The MLSC is located on the fifth floor of the library. DE tutors are available at special times. See <http://math.okstate.edu/mlsc> for the schedule.

**Grading:** When I grade a paper I am looking for more than just answers. **This course is about correct processes for solving problems and understanding of concepts.** A correct answer with little or no supporting work may be given little credit. You should use sentences to define any unknowns and indicate units as appropriate. On tests it is important to clearly indicate what is scratch work and what is to be graded. In particular the answer to a computational problem should be indicated either by the word **Solution:** or by drawing a rectangle around the answer.

	Points	Grade	Points Needed
3 Exams (50 min.)	300	A	630-700
Comprehensive Final	200	B	560-629
Quizzes and Homework	200	C	490-559
	—	D	420-489
Total points	700	F	0-419

There will not be any special deals for individual students, extra work to raise a grade, etc. The total of points for quizzes and homework will be normalized to achieve the 200 point contribution to the grade.

**Curving:** The only curving that will be done is that a linear adjustment ( $\text{Adjusted Score} = \text{Scale Factor} \times \text{Raw Score} + \text{Offset}$ ) may be made to all scores on a particular exam. I reserve the right to decide borderline cases based on subjective impressions of effort, conscientiousness, etc.

**Drop Policy:** Before April 10 a student may drop with an automatic “W”.

**University Policies:** Above are the specifics for this class. There are general guidelines for all classes which cover academic misconduct, students with disabilities, and so forth. See the University Syllabus Attachment on D2L for additional rules and information.

## How to Succeed In This Course

Try these steps.

- Look over the section of the text before the lecture over the material. Pay special attention to definitions and any new notation.
- Take notes during class. I do not always follow the text and may emphasize alternative methods.
- Before starting the homework read the section and review your notes from class.
- Carefully **write** the solutions to the homework problems. The homework serves several purposes: Checking your understanding of the material, practicing using the notation, learning the material and preparing for exams. Finding solutions on the internet, copying from other students or using software, e.g., Wolfram Alpha, to do the homework defeat the purposes.
- Be honest with yourself about what you know and can do and how much time it takes to learn the material. This is a three credit hour course so you should expect to spend **at least 6 hours per week outside of class** on this course.
- Learn to monitor your own work. Many times steps can be checked. In applications units should make sense. Answers should be reasonable given the problem. In most cases you will be finding solutions to differential equations so *your answer should satisfy the differential equation and any initial conditions*. Your goal on each homework is to reach a level of understanding and skill that you are getting answers equivalent to those given in the solutions on the first try.
- If you have done the homework and studied the material as it is covered, you will not need to *cram* for an exam. You should review and when the sample questions are made available, you should work the problems under exam conditions: no calculator, internet, notes, friends or textbook. I do not provide solutions to the sample problems. **Just as on the exam and in real life you need to get the answers correct without access to the solutions.**