# Differential Equations
## Math 2233 Section 004
## Spring 2013

**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. I will be providing some information on D2L. To access D2L go to http://oc.okstate.edu. You will need your O-Key username and password. I will also use D2L to communicate with the class as a whole by posting discussion messages, supplements, solutions and some grade information.

**Office Hours:** 9:30-11:00 T,R; 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*, 9th Edition, Chap. 1-6. (The version without *Boundary Value Problems* can be used.) We will cover four or five sections each week. (See the homework schedule.) It will help you to stay current if you read the section before the corresponding lecture. Even though you will probably 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.

**Examinations:** There will be three in-class exams (Tentative dates: February 7, March 14 and April 18) and a comprehensive final exam, Thursday May 2 at 10:00 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.)

**Quizzes:** Quizzes will not be announced in advance and will cover material from recently (usually the previous day's) assigned homework. (10 points each)

**Group Work:** The class will be divided into small groups for some work that will be done or started during class and submitted. The group members should cooperate on determining methods of solution and compare solutions but **each individual member of the group must write up the solutions in their own way** and submit them. Group work will be graded in two ways. The submitted work will be graded 12 points and group members will assess the contribution of the members of the group for 3 points.

**Homework:** I will not collect homework but 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. The date on the homework schedule is the date

I plan to cover that section. 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 MLRC who can help you. Remember to use the tutors to help you learn, NOT to do the work for you.

**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 (75 min.) | 300 | A | 630-700 |
| Comprehensive Final | 200 | B | 560-629 |
| Quizzes and Group Work | 200 | C | 490-559 |
|  | —— | D | 420-489 |
| Total points | 700 | F | 0-419 |

There will not be any special deals for individual students, etc. The total of points for quizzes and group work 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 (Adjusted Score = Scale Factor × Raw Score + 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 5 a student may drop with an automatic "W".

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, http://academicaffairs.okstate.edu/faculty-a-staff/46-syllabus-attachment for additional rules and information.

Math 2233
Spring 2013
Homework Assignments

These problems are the minimum number that you should do. You may need to do more to become proficient.

An online direction field plotter can be found at
http://www.math.ubc.ca/~israel/applet/dfplotter/dfplotter.html

| Date | Section | Problems |
|------|---------|----------|
| 1/8  | Sec. 1.1 | 1, 3, 5, 11, 13, 15, 19, 27, 29 |
| 1/8  | Sec. 1.2 | 7, 9 |
| 1/10 | Sec. 1.3 | 2, 4, 8, 10, 12, 26 |
| 1/10 | Sec. 2.1 | 3, 7, 11, 13, 17, 19, 25 |
| 1/15 | Sec. 2.2 | 1-19 odd, 23 |
| 1/17 | Sec. 2.3 | 1, 3, 8, 10 |
| 1/17 | Sec. 2.4 | 1, 3, 7, 13, 17 |
| 1/22 | Sec. 2.5 | 1, 3, 4, 9, 10, 13, 20 |
| 1/24 | Sec. 2.6 | 1-15 odd, 19, 21 |
| 1/29 | Sec. 2.7 | 1, 3, 5, 9, 11, 13, 16 |
| 1/31 | Sec. 2.8 | 1, 3, 7, 9 |
| 2/12 | Sec. 3.1 | 1-17 odd, 21, 25 |
| 2/12 | Sec. 3.2 | 1-9 odd, 13, 23, 25, 27, 31, 39, 43, 45 |
| 2/14 | Sec. 3.3 | 1, 3, 7-23 odd, 35, 39 |
| 2/19 | Sec. 3.4 | 1-13 odd, 23, 25, 27 |
| 2/19 | Sec. 4.1 | 1-7 odd, 11, 13, 15 |
| 2/21 | Sec. 4.2 | 1-23 odd, 29, 31 |
| 2/26 | Sec. 3.5 | 1-17 odd, 19-26 part (a) |
| 2/26 | Sec. 4.3 | 1-17 odd, 21 |
| 2/28 | Sec. 3.6 | 1-17 odd |
| 3/5  | Sec. 3.7 | 1-11 odd, 16 |
| 3/7  | Sec. 3.8 | 1-11 odd |
| 3/26 | Sec. 5.1 | 1-27 odd |
| 3/28 | Sec. 5.2 | 1-13 odd, 17, 23, 25 |
| 4/2  | Sec. 5.3 | 1-9 odd |
| 4/4  | Sec. 5.4 | 1-15 odd, 17, 21, 25, 31, 35, 41 |
| 4/9  | Sec. 6.1 | 1-17 odd, 21 |
| 4/9  | Sec. 6.2 | 1-25 odd |
| 4/11 | Sec. 6.3 | 1-23 odd, 27, 29, 31 |
| 4/11 | Sec. 6.4 | 1-13 odd |
| 4/23 | Sec. 6.5 | 1-11 odd |