Syllabus for Mathematics 3113-001
Introduction to Ordinary Differential Equations
Fall 2003

Please read this syllabus carefully. You will be responsible for all the information given here, and for any modifications to it that may be announced in class.

Text: The textbook for this course is *Differential Equations and Boundary Value Problems*, (3rd edition), by C. Henry Edwards and David E. Penney. If you really, truly have financial difficulty obtaining the 3rd edition, you can get by on the 2nd edition. You will need to obtain the updated problems from sections 1.2, 1.3, 1.4, and 1.6 of the 3rd edition, and work from those for the homework, but the assigned homework problems are identical in the other sections. The 3rd edition also has a few additions and improvements to the text itself, so I do recommend that you obtain it if possible.

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Class Participation: The first day of class, you may select your regular seat, which should be used for all lectures. If you are unable to see or hear properly or are otherwise dissatisfied with your seat, please consult me about a reassignment.

You are expected to attend all lectures, and are responsible for all information given out during them. As explained under "Grading System" later in this syllabus, excessive absences will result in points lost from your class participation grade, while superior attendance will add a few extra points to your total.

Homework: Problem assignments are given on the Class Schedule and Homework Assignments page. To receive credit, homework must be turned in on time, and in the following format:

1. Use standard sized blank, ruled, or graph paper. I recommend that you use a loose leaf notebook so that you can insert new pages and replace old pages with corrected ones. If you do not use a notebook, then staple or otherwise attach your pages together, so that nothing gets lost. I also suggest that you put only a few problems on each page.

2. Each problem should be clearly and uniquely identified in the format c.s #n, where "c" is the chapter, "s" is the section, and "n" is the problem number. For example, problem 27 in section 15.4 would be labeled as 15.4 #27. The problems must be *in the order* in which they appear in the book.

3. The problem itself should be written out, in abbreviated form if appropriate, followed by your solution. Your homework solutions need not be polished masterpieces of mathematical exposition, but should be legible, and the solutions *should clearly indicate the steps used to arrive at the solution.* If you can write a clear explanation of what you are doing, you will understand it. If you understand it, you will retain it.

The homework will be collected on the exam dates, which are September 23, October 23, and November 20. It will be checked for completeness, with a few problems graded, and this will constitute 15% of your grade.

Warning: The homework assignments are not intended to be sufficient for you to attain proficiency. As a university-level student and manager of your own education, it is up to you to work whatever additional problems are necessary for you to achieve the command of the subject matter necessary to perform under the stressful conditions of taking an exam.

You may consult with other students about the homework problems, indeed I encourage you to do so. However, you will need to write up the solutions in your own words. It is a complete waste of time to just copy from a solutions manual or from someone else's work. If you decide to turn in work that is not your own, you will not learn the material adequately, and you will pay a heavy price on the exams which constitute 75% of your course grade.

Answers to the odd-numbered problems appear at the end of the textbook. For help, you should come to my office hours, or make an appointment with me to come at another time. Email is the best way to contact me.

Testing: *The exams will test understanding of some of the theoretical ideas and additional techniques presented in the lectures. These are part of the course and should be learned along with the basic problem-solving techniques used in the homework problems.* Examinations will be given during the regular lecture hour on the following dates, covering the listed sections.

Exam 1	Tuesday, September 23	Sections 1.1-1.6, 3.1-3.2
Exam 2	Thursday, October 23	Sections 3.3-3.5, 3.8, 4.1-4.2
Exam 3	Thursday, November 20	Sections 7.1-7.6

The final examination will be held in the usual lecture room on Monday, December 15, 1:30–3:30 p. m. University regulations require that you take it at that time. It will cover all sections listed in the class schedule, with additional weighting to sections 8.1-8.3, since these sections will not be covered on the three in-class examinations.

If you cannot take a test at the scheduled time, you should contact me *in advance.* Check the grading of your exams carefully when they are returned; all grading errors should be brought to my attention as soon as possible.

Our course web page has a link to the web pages from previous times that I have taught this course. For those courses, you can view the blank exams in pdf format, and also can view the solutions as gif files. Of course, those were different courses, and there is no reason to expect that their exams will particularly resemble the exams in our course.

Grading system: There will be 300 points possible as follows:

Points:	Percent:	
30	10	Class participation
45	15	Homework
50	16.67	Exam 1
50	16.67	Exam 2
50	16.67	Exam 3
75	25	Final exam
300	100	Total possible

The class participation grade will be determined as follows. If you have 4 absences or less, you will receive the full 30 points of class participation credit, plus 2 bonus points for each class fewer than 4 missed (thus you can earn up to 8 bonus points for superior class participation). The 5th through 10th absences will each subtract 5 points from the 30 points of class participation grade.

Course grades will be determined according to the following scale:

Total points:	Percent:	Grade:
262.5−300.0	87.50−100.00	A
232.5−262.0	77.50− 87.34	B
202.5−232.0	67.50− 77.34	C
165.0−202.0	55.00− 67.34	D
0.0−164.5	0.00− 54.84	F

Grades are calculated by computer but errors in recording or entering scores can occur. Please keep your tests and homework so that you can verify the posted totals at the end of the semester, if you think that an error may have occurred.

Withdrawal Policy: Until September 8, there is no record of a grade for dropped courses. From September 9 through October 31, you may withdraw and receive a "W" grade, *no matter what scores you have so far achieved.* After October 31, University regulations specify that you may withdraw only in "very unusual circumstances," and only with the permission of the Dean. *Avoidance of a low grade is not sufficient reason to obtain permission to withdraw after October 31.*

Grade of Incomplete: The grade of "I" is a special-purpose grade given when a specific task needs to be completed to finish the coursework. This is typically a term paper or other special assignment, so rarely makes sense in a mathematics course. An "I" cannot be given to avoid receiving a low grade.

Calculators: This is a course of mathematical concepts and techniques, not a course of mechanical computation, so we will have little use for calculators. A few of the homework problems may require the use of a basic scientific calculator, which can perform numerical calculations, and can give values of the trigonometric, inverse trigonometric, exponential, and logarithm functions. Such a calculator can be purchased at discount stores for a few dollars. A basic scientific calculator can be used during exams, although it is not necessary to have one. However, since knowing the graphs of the standard functions from trigonometry and calculus is an essential skill, *use of graphing calculators during exams is prohibited.* Use of any calculator with the capability to store formulas or other information is also prohibited during exams.

Academic Misconduct: Cases of academic misconduct are inexcusable and will be punished to the maximum extent possible under University regulations. *Don't do it.*

Students with Disabilities: If you have a disability that may interfere with the demonstration of your abilities, please contact me as soon as possible to arrange accomodations necessary to ensure your full participation in the course.

Final Grades: You may pick up your graded final exam from me at any time within one year after the end of the course. After one year, they will be discarded. Grades will be posted on our course website as soon as they are available.

Internet Resources: On the Internet there are numerous websites that contain theory, tutorials, and problems with solutions, for calculus and in some cases more advanced material. Our course web page has a link to some of these sites, and if you follow it to the UC Davis Calculus Page, there is a much longer list there.

Advice: It is important to think about the subject daily or almost daily (you will learn much more in two hours a day for seven days than in seven hours a day for two days). Mathematics is best absorbed in small bits through repeated exposure, so it is more effective to work the homework problems from one section a few at a time over a period of days, rather than all at once in an extended session. This means you may be working problems from several sections of the book at the same time– this is actually better, since they will reinforce each other. If you approach the homework in this way, you will spend no more total time or effort, and will learn more. Occasional work sessions with fellow students can be very productive, as long as one avoids the pitfall of becoming dependent on others.

Working problems is your most important learning technique, but the exams will also draw on the ideas and key examples given in class. Take careful notes during the lectures, or if this does not work well for you, obtain them from someone else. The lectures provide your road map to learning the subject.

Always use correct mathematical notation. For example, always write "$\sin(x)$" and "$\cos(x)$", never just "sin", which makes "sin cos" ambiguous— does it mean the product "$\sin(x)\cos(x)$" or the composition "$\sin(\cos(x))$"? Good notation will help keep you on the right track during exams, but you will only use good notation in a stressful exam situation if you have been using it habitually on your homework problems.

Never write "$=$" between two mathematical objects of different types. For example, do not equate a vector and a scalar quantity. It *cannot* be correct, and always indicates that you do not really have a clear concept in your head.

Nothing is more important than staying completely caught up; cramming is even less effective in mathematics than in other courses. If you need help, go to office hours or arrange an appointment immediately; do not compound your difficulties by delaying.