

STUDENT SYLLABUS

MAP 2302–01

Fall 06

WEB PAGE: <http://www.math.fsu.edu/~bellenot/class/f06/ode>

MEETING TIMES: MWF 12:20-1:10 106 LOV

INSTRUCTOR Dr Steven Bellenot

OFFICE 223 Love

OFFICE HOURS M 1:30-2:30, W 11:00-12:00 or by appointment

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ELIGIBILITY: MAC2312 (Calculus 2) with C- or better. (Recommended C+ or better in Calculus 2 or C- or better in Calculus 3.) The course is not open to students with credit for MAP 3305 Engineering Math I.

TEXT: Boyce and DiPrima, *Elementary Differential Equations*, 8th Edition, Wiley, 2004.

CALCULATOR: The TI-89 graphing calculator is highly recommended as it will solve ODE's both symbolically and graphically.

COURSE OBJECTIVES: The purpose of this course is to introduce students to the ideas and techniques for solving ordinary differential equations. We will emphasize both computational methods and conceptual understanding. Our goal is to cover substantial portions of the text, exposing the students to methods and equations that arise commonly in scientific applications. This includes first order equations (Chapter 2), linear ODE's, especially second order (Chapter 3) the method of power series (Chapter 5) and the general solution methods of the Laplace transforms (Chapter 6). At same time we will do a sequence of technology enhanced numerical experiments which we will call labs.

ATTENDANCE: Attendance and class participation will be factors in determining the final grade. No food or drinks are allowed in the classroom. Please turn off cell phones and keep them hidden during class.

COMMUNICATION: It is your responsibility to register for a (free) FSU computer account so that I can send you email, which you are expected to check regularly. If you prefer to read your email elsewhere then you can arrange to have messages forwarded, but you must still obtain an FSU account in the first instance. Please – no cell phones are allowed in class.

GRADING/EXAMS: Every 3rd week there will be a 4 problem mini-test on Wednesday (Dates: Sep 20, Oct 11, Nov 1, Nov 29). Each mini-test will cover the corresponding period, plus some 'reminder' material from previous period. The final will be given Fri Dec 15 7:30am-9:30am, and will be comprehensive. Your grade will be based on how well you do on the 4 mini-tests (50%), the homework and labs (25%), and the final(25%). Letter grades will be assigned according to the usual scale (A: 90 and above; B: 80 and above; C: 70 and above; D 60 and above; F below 60). Plus/minus letter grades may be assigned to high/low numerical grades. A grade of I will not be given to avoid a grade of F or to give additional study time. Failure to process a course drop will result in a course grade of F.

EXAM POLICY: No makeup tests will be given. Late or unstapled assignments or labs will not be normally be accepted. A missed test may be excused if the student presents sufficient verifiable evidence of extenuation circumstances. If a test absence is excused, the the final exam will be used for the missing test grade. And unexcused absence from a test will be penalized. An unexcused missed assignment will result in a grade of zero. Absences from tests, and missing assignments due to family social events will not be excused. Acceptable medical excuses must state explicitly that the student should be excused from class. Students must take the final examination at the scheduled time. Students must bring FSU ID cards to all tests.

HOMEWORK: The class web page has the complete (but tentative) schedule for the semester. Some class days students will present problems and on others the homework will be collected. Most problems will not be graded directly.

HELP: Do not hesitate to come to my office hours, or to contact me via email. I check my email often, and give prompt replys to any emailed questions from my students. (Please – no html formated email, send text only.)

Details

- How I grade problems: There are several steps to solving a map2302 problem. One must understand the problem. One must select a method of solution which is not only correct but is efficient. One must execute the method and communicate its execution correctly. Finally the results must be checked for reasonableness of your answer. Partial credit is awarded with these factors in mind relative to the difficulty of the problem. Adding $2 + 2$ and getting 5 in the course of a problem could result in a score of 0/10 if the problem was $2 + 2 = ?$, to getting 10/10 if it was a silly mistake at the end of a two page problem solution.

Incorrect answers that are unreasonable are not given much partial credit. For example, the answer $(y - 1) = 2x(x - 1)$ to the question what is the equation of the tangent line to $y = x^2$ at $x = 1$ is unreasonable because lines have linear equations. Even though the error is a simple one, it is an error that should have been caught in the “is this answer reasonable phase”. What must you check so your answer is reasonable? This is one of the best reasons to attend class, it is not in the text.

Mathematics provides for many short calculations but correct communication requires sticking to mathematical rules. In particular, equations $RHS = LHS$ should only be used when the RHS and the LHS are equal. For example, the following use of L'Hopital's rule contains two $=$ -signs and neither is used correctly.

$$\lim_{x \rightarrow \infty} \frac{x}{e^x} = \frac{1}{e^x} = 0$$

The answer is wrong because of the missing limit operator for the middle expression. This kind of mistake is often caused by laziness rather than lack of understanding, or is it? It doesn't communicate understanding and so it does not deserve full credit.

There are many ways to solve most mathematical problems, but there is only so much time on a test. Choosing a correct but slow method may not cost you any points on the given problem but could rob you of time needed on other problems. For example the integral below can be done by several methods but you should pick substitution over integration by parts.

$$\int \frac{x}{1+x^2} dx$$

Finally you need to show all your steps. Some calculators (TI-89 for example) will compute the integral above for you – which is a good way to check your answer. But you have to show you can do the calculation too.

- Lab and Homework Format. Your **OWN** work, written in clear English. Neatly typed or written in ink on one side of standard 8.5 by 11 paper. Multiple pages must be stapled and **NOT** dog-eared or paper clipped. **Homework with a paper clip or with dog-eared pages will receive a zero score.** Discussion about the homework problems with other students or the professor is permissible and even encouraged, but the final output needs to be uniquely yours and not obtained by copying from another's solution.
- Honor code: A copy of the University Academic Honor Code can be found in the current Student Handbook. You are bound by this in all of your academic work. It is based on the premise that each student has the responsibility 1) to uphold the highest standards of academic integrity in the student's own work, 2) to refuse to tolerate violations of academic integrity in the University community, and 3) to foster a high sense of integrity and social responsibility on the part of the University community. You have successfully completed many mathematics courses and know that on a “test” you may not give or receive any help from a person or written material except as specifically designed acceptable. Out of class you are encouraged to work together on assignments but plagiarizing of the work of others or study manuals is academically dishonest.
- ADA statement: Students with disabilities needing academic accommodations should: 1) register with and provide documentation to the Student Disability Resource Center (SDRC); 2) bring a letter to the instructor from SDRC indicating you need academic accommodations. This should be done within the first week of class. This and other class materials are available in alternative format upon request.