

# Elementary Differential Equations – Syllabus

MATH 3200, Section 001, Fall, 2006

**Instructor:** Stephen C. Billups

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**Course Website:** math.ucdenver.edu/~billups/courses/ma3200/

**Class Hours:** TR 1-2:15 pm, NC-1314

**Prerequisites:** Math 2411 (Analytical Geometry and Calculus II), Corequisite: Math 3191 (Applied Linear Algebra)

**Required Textbook:** Abell & Braselton, *Modern Differential Equations*, (2nd edition), Brooks Cole, 2001.

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**Overview:** This course is an introduction to ordinary differential equations. There are three main aspects we will be concerned with: 1) how to solve them, 2) how to interpret the solutions, and 3) how to apply them to solve real world problems.

## Course Objectives:

1. Learn to recognize and classify various types of ordinary differential equations.
2. Get used to thinking about and working with functions as “variables”.
3. Understand the qualitative nature of solutions to certain classes of differential equations, with emphasis on exponential growth, oscillations, and equilibrium solutions.
4. Learn to solve certain types of elementary differential equations analytically, with an emphasis on first order differential equations and higher order linear differential equations.
5. Develop skill in formulating differential equation models to address problems arising in engineering, physics, and other applied areas.
6. Gain exposure to a few numerical and graphical tools for studying and solving differential equations.

**Assignments:** Expect to spend 4-8 hours per week outside of class. If you routinely spend more than this amount of time, *please let me know!!*.

**Quizzes:** There will be a short quiz at the beginning of class on most Tuesdays. To help you prepare for the quiz, I will post a study guide each week, which will include a list of practice problems. You are not expected to turn in these problems, but you are expected to practice working these problems until you are able to solve them quickly. The time limit for the quiz will be short, so you must be able to work quickly! *Your lowest quiz grade will be dropped.*

**Homeworks:** There will be several in-depth homework assignments. These assignments will require you to go beyond simply applying solution techniques— they will require you to think independently, to analyze results, to use computer technology, and to explain your solutions clearly in writing.

You are encouraged to consult with fellow students; but you may not copy work from another student. All computer work should be your own, and your writeups should be done independently—that is, you must explain your solutions in your own words. Homeworks are due at the beginning of class. *Late homework will be assessed a 10% penalty if turned in by the beginning of the next scheduled class meeting, but will not be accepted after that time.*

**Tests:** There will be two mid-term exams and a final exam. There will be no make-up exams. If you miss a test for any reason, the weight of that exam will be added to the final. Rescheduling of the final is extremely rare and will only be permitted in very unusual circumstances. Please plan accordingly.

If your final exam score is higher than one of your midterm scores, the lower of the two midterm scores will be replaced by the final exam score. (But, be aware that the final exam will be harder than the midterms—it is rare for students to do significantly better on the final).

**Grading:** Grades will be weighted as follows:

Quizzes	20%
Homework	25%
Exam 1	15%
Exam 2	15%
Final Exam	25%

Grades will be awarded according to the following cutoffs: 93%=A, 90=A-, 87=B+, 83=B, 80=B-, 77=C+, 73=C, 70=C-, 67=D+, 63=D, 60=D-, <60=F.

**Incompletes:** Incompletes may be given only in situations in which you have been in good standing all semester and are unable to finish the required course work for reasons that are beyond your control.

**Cheating:** Cheating of any kind will result in a course grade of F and possible expulsion from the University. So don't do it.

**CLAS Academic Policies and Important Dates:** You should have received a document titled *Fall 2009 CLAS Academic Policies*. This handout summarizes CLAS Academic Policies, which you must comply with. The handout also includes a list of important dates and deadlines that you should be aware of.

**Important Dates:**

Oct. 1	Midterm Exam 1
Nov. 19	Midterm Exam 2
Nov. 23-29	Thanksgiving Break, no classes
Dec. 8 or 10	Final Exam (Date to be announced)