# MthSc 208, Introduction to Ordinary Differential Equations
## Fall 2011
## MWF 2:30-3:20pm, Martin Hall M-105
## Th 2:00-2:50pm Martin Hall M-105

## General information

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|---|---|
| Instructor: | Dr. Matthew Macauley |
| Email: | `macaule@clemson.edu` |
| Web: | `http://www.math.clemson.edu/~macaule/` |
| Phone: | (864) 656-1838 (no voicemail) |
| Office: | Martin O-325 |
| Office hours: | (subject to change!) MWF after class, and by appointment |
| Text: | *Differential Equations: An Introduction to Modern Methods and Applications* by Brannan and Boyce. |
| Web: | I will post course material on my website. Warning: Course Hero is a SCAM! |

## Learning Outcomes

By the end of the semester, students will to be able to:

1. Explicitly solve a variety of $1^{st}$ and $2^{nd}$ order ordinary differential equations (ODEs).

2. Understand how ODEs arise in modeling in biology, physics, chemistry, engineering, and finance.

3. Understand the connections between solutions to ODEs and direction fields.

4. Have a basic understanding of linear algebra and its role in the study of ODEs, and how to solve systems of linear ODEs.

5. Take a Laplace transform and use this to solve certain ODEs.

6. Derive the Fourier series of a periodic function.

7. Be able to solve partial differential equations (PDEs), and recognize the differences between the heat, wave, and Laplace equations, as well as different boundary conditions.

8. Explain in simple terms, e.g. to grandparents or to younger siblings, how differential equations are relevant to several familiar settings in your major.

9. Be *well-prepared* and *confident* to succeed in your upper-division math, science, and engineering couses.

10. ...and much much more!

## Grading

Final grades will be determined by the following rubrik:

| | |
|---|---|
| Homework | 20% |
| Attendence / participation | 5% |
| Midterm 1 | 25% |
| Midterm 2 | 25% |
| Final exam | 50% |

▶ Your lowest midterm grade, or half the weight of your final exam, will be dropped. Make-up exams will be given ONLY with an official written excuse in advance, and will not necessarily be the same as the regular exam.

▶ If you get an A or B on the final exam, then your final grade in the course will be AT LEAST the grade you earned on the final exam, *as long as you (i) attend class very regularly, AND (ii) maintain a passing grade on the homework.*

Letter grades will then be assigned by:

$$\text{A} \geq 90\% > \text{B} \geq 80\% > \text{C} \geq 70\% > \text{D} \geq 60\% > \text{F}$$

Homework assignments will accumulate from lecture to lecture and will be due roughly three times a week. I will post the assignments on my website. Late homework will *not* be accepted.

## Midterm dates (tentative)

| | |
|---|---|
| Midterm 1: | Thursday, September $22^{\text{nd}}$ (in class) |
| Midterm 2: | Thursday, November $3^{\text{rd}}$ (in class) |
| Final: | Thursday, December $15^{\text{th}}$, 3:00–5:30. |

## Attendance

Attendance on test days is mandatory. On other days, I will take attendance, and it will factor into your homework grade. My deal that an A (or B) on the final exam results in an A (or B) in the course is *only* valid if you have no more than 5 excused absences. Students may leave after 10 minutes if the professor or a guest lecturer does not arrive in that time.

## Laptops, cell phones, PDAs

All use of cell phones, laptops, and PDAs is prohibited during lecture. Calculators, cell phones, laptops, and PDAs will not allowed during exams.

Cell phone policy: `http://www.youtube.com/watch?v=FYwpxU_G4Z0`

## Academic integrity

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a high seminary of learning. Fundamental to this vision is a mutual commitment to truthfulness, honor and responsibility, As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a high seminary of learning. Fundamental to this vision is a mutual commitment to truthfulness, honor and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form."