MthSc 434: Advanced Engineering Mathematics
Spring 2012
Martin Hall M-203,   TTh 11:00-12:15pm

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Office Hours: T 3:00–4:00, Th 2:00–3:00, or by appointment
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Textbooks
   (i) Course notes available in bookstore. Based on *Advanced Engineering Mathematics*, by Zill and Cullen.

   (ii) *Linear Partial Differential Equations and Fourier Theory*, by Marcus Pivato. Free online version: `http://euclid.trentu.ca/pde/`

Prerequisites   MthSc 208 (Differential Equations).

Policies
- Attendance: I will take attendance. If you miss a class for some reason, it is your responsibility to get notes, etc. from someone in class. I will not repeat lectures during my office hours. I prefer to know in advance if you cannot make a lecture, and may give you an excused absense if you inform me at least 12 hours before class.

- 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.

- If you want to know your grade at any point during the semester, consult the grading rubric below.

- All drop/add procedures are your responsibility.

- Absent Professor Policy: If the instructor has not arrived within 15 minutes of the scheduled class time, you may assume that class has been canceled.

- 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`

Learning Outcomes   By the end of the semester, students will to be able to:
- Understand the basic theory of differential operators and linear ordinary differential equations (ODEs) from a high-level perspective. In particular, understand the beautiful linear algebra hiding behind the scenes.

- Solve ODEs whose solutions are generalized power series and understand the convergence of these solutions.

- Derive the Fourier series expansions of periodic functions, and understand the theory behind the construction in terms of inner product spaces.

- Understand boudary value problems of ODEs and solve the corresponding Strum-Louiville equations.

- Construct, interpret, and utilize solutions to one-dimensional partial differential equations (PDEs), such as the heat and wave equation. Understand the difference between different boundary and initial conditions.

- Solve the standard PDEs (heat, wave, and Laplace's equation) in two-dimensions, both in rectangular and polar coordinates.
- Explain in simple terms, e.g. to grandparents or to younger siblings, how ordinary and partial differential equations are relevant to several familiar settings in your major.
- ... and much much more!

Grading   The final grade will be calculated as follows:

HOMEWORK:	25%
ATTENDENCE:	5%
QUIZZES:	10%
MIDTERM 1:	20%
MIDTERM 2:	20%
FINAL EXAM:	40%

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.

GRADING SCALE: A $\geq$ 90% > B $\geq$ 80% > C $\geq$ 70% > D $\geq$ 60% > F

Homework   Homework assignments will accumulate from lecture to lecture and will be due roughly once or twice a week. I will post the assignments on my website, as I like to make all materials freely available to everybody (Warning: Websites such as *Course Hero* are a SCAM!). Students can collaborate on their homework problems, but they *must* write up and submit their homeworks separately. Late homeworks will **not** be accepted, but anyone typesetting their homework using LaTeX will get an extra 24 hours to complete it (okay to hand-draw pictures, though). You should keep all the graded homeworks in case of missing grades due to missing name or typo errors.

Key Dates

January 11 (Wed)	Classes begin; late enrollment fee applies
January 16 (Mon)	Martin L. King Jr. holiday
January 18 (Wed)	Last day to register or add a class
January 25 (Wed)	Last day to drop a class or withdraw from the University without a W grade
March 16 (Fri)	Last day to drop a class or withdraw from the University without final grades
March 19 – 23	Spring break
April 30 – May 4	Final Exam week
May 2 (Wed)	MthSc 434 Final Exam (3:00–5:30pm)
May 11 (Fri)	Commencement

The official statement on 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, 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.

When in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty including a description of the misconduct, to the Dean of the Graduate School. At the same time, the faculty member may, but is not required to, inform each involved student privately of the nature of the alleged charge.