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M 412.01: Partial Differential Equations

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SYLLABUS: MATH 412, PARTIAL DIFFERENTIAL EQUATIONS

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Time and Place: MWF 9-9:50am, Math 211.

Text: Mark S. Gockenbach, Partial Differential Equations, 2nd Ed., SIAM, 2011.

Prerequisites: Math 221 & 311.

Office Hours: Tues 2pm, Wed & Fri 3pm, but I am happy to schedule other times to meet.

Final Exam: 10:10-12:10, Tuesday, May 8.

GRADING & ASSESSMENT: your grade will be determined by your performance on the homework and on a final exam.

HOMEWORK: Homework will be given approximately every 1.5 weeks.

LEARNING GOALS:

1. To understand and use Fourier series.
2. To solve basic Sturm-Liouville boundary value problems.
We may not get to this.
3. To solve the heat, wave, Laplace's and Poisson's equations using separation of variables.
Actually, you will learn the more general Fourier series method.
4. To formulate models from various scientific fields in terms of PDEs. Develop a way of thinking oriented towards modeling.
5. To learn about and implement modern numerical methods for solving PDEs.
I have added this learning goal; we will learn about the finite element method.

HOW TO BE SUCCESSFUL: Come to class and do your own work as much as possible. Math is learned by doing, not by reading the book or some else's solution to problems.

FOR ANY STUDENT WITH A DISABILITY: If you have a disability that has, or might have, an effect on your performance in this class, please let me know. I will do my best to accommodate you.