Course Information

Course: Math 842 (Methods of Applied Math I)

Semester: Fall 2006

Instructor: Steve Cohn

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Office Hours: My office hours are Monday 10:30-11:20, Wednesday 8:30-9:20, Thursday 3:00-3:50 and by appointment.

Text: *Mathematics Applied to Deterministic Problems in the Natural Sciences* by C.C. Lin and L.A. Segal, SIAM Books. This book is one of the classics of applied mathematics. Unfortunately, it doesn't cover the course perfectly. For topics not included in the text, I'll have other sources put on reserve in the math library.

Course Description: The usual 842 topics include an introduction to mathematical modeling (chapter 1), scaling, dimensional analysis and the Buckingham Pi theorem (chapter 6), asymptotic expansions (chapter 3), perturbation theory (chapter 7), the calculus of variations and and integral equations. We will cover at least the first five of those. Depending on the amount of time remaining and our inclination, we could replace integral equations with some topic of greater interest to physicists, e.g. random processes or the Fourier transform.

Prerequisites: You'll need a little physics, a little linear algebra, and a solid working knowledge of single- and multivariable calculus.

Exams: We'll have two 55-minute exams and a comprehensive final.

Homework: Homework will be assigned (approximately) weekly. Though you may exchange hints and sources, the work done in producing a written solution to a homework problem must be substantially your own. Sources should be cited. Grading of homework problems will be based on both the math and the writing. Poorly or sloppily written solutions will not be graded.

Grading: Each midterm will count for 25% of your grade, and the homework 15% the final, 35%.