3090 - Methods in theoretical physics (Fall 2014)

Course instructor: Dr. Sean Tulin

Outline: This class will be a smorgasbord of different mathematical tools and concepts that are essential for the study of advanced topics in physics. Topics to be covered (may) include:

- Vector spaces and eigenvalue problems
- Complex variables and complex analysis
- Fourier series and Fourier transforms
- Laplace transforms
- Green's functions
- Differential equations and special functions
- Group theory

Course text: *Mathematics for Physicists* by Susan Lea. I strongly recommend buying this excellent text. We will be following it fairly closely.

Grading and tests: There will be weekly homework assignments, two midterm tests, and a final exam. Your final grade will be based as follows: your homework grade counts 30%, each midterm counts 20%, and your final exam counts 30%.

As extra motivation to master the course material for the final exam, the grade of your lowest midterm will be replaced by your final exam grade if your final exam grade is higher.

Homework problems are the most essential part of this class. Assignments will be due on **Fridays** either in class or turned into my office (or under my door) before noon. No extensions will be given unless there is an emergency or other extreme circumstance. Late homework will be penalized 10% per day late.

Midterms will tentatively be on **Wednesday Oct 1st** and **Friday Nov 7th**.

Expectations: I expect that all homework you turn in will be entirely your own work. You may discuss homework problems with your peers, but you must write your own solutions independently.

Office hours: Thursdays $3-4$pm or by appointment.

Contact information:

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