3090 - Methods in theoretical physics (Fall 2015)

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. This is an excellent book and we will be following it somewhat 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%.

Homework problems are the most essential part of this class. Assignments will be due on **Fridays before 4pm**. You may turn in your assignments during class or at my office (in person or under my door).

No extensions will be given unless there is an emergency or other extreme circumstance. Late homework will be penalized 10% per day (or fraction thereof).

Midterms will be tentatively scheduled for the weeks of Sept 28th and November 2nd. Exact dates TBD.

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: Wednesday 4–5pm or by appointment.

Contact information:

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- Course website: http://www.yorku.ca/stulin/3090