Instructor: Dr. G. Dafni, Office: LB 927-15 (SGW), Phone: (514) 848-2424, Ext. 3216
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Lectures: M-W 15:45-17:15, LB 759-6.

Office Hours: Mondays & Wednesdays, 14:00-15:15 and by appointment.


*These and other references will be put on reserve in the library.

Topics: The course will consist of the following topics taken from Chapters 1-4 of the text and from the references, plus applications:

- Banach spaces, Hilbert spaces, linear functionals, dual spaces (tentative dates Sept. 9, 16, 21, 30).
- bounded linear operators, adjoints (tentative dates Oct. 7, 14).
- the Hahn-Banach, Baire category, Banach-Steinhaus, open mapping and closed graph theorems (tentative dates Oct. 19, 21, 26, 28).
- compact operators, the spectral theorem for self-adjoint compact operators, the Fredholm alternative.
- the weak/weak* topologies, topological vector spaces, distributions, Sobolev spaces, other topics & PhD student presentations.

PhD students: More advanced material will be assigned to PhD students for independent study throughout the semester. The results will be presented in a written or oral presentation and will be included in the homework & exams, and the grade will be factored into the final grade.

Pre-requisites: Previously: real analysis/metric spaces (equivalent to MATH 464); previously or concurrently: measure theory (equivalent to MATH 467/669), basic complex analysis (equivalent to MATH 366).

Assignments: Homework will be assigned approximately once every two weeks, during lecture. In the case of an absence, it is the student’s responsibility to find out the homework assignment. **Late homework will not be accepted.**

Exams: Midterm: Monday, November 2, 2015; Final: to be announced.

Evaluation: **MSc:** Homework 40%, Midterm exam 20%, Final exam 40%.
**PhD:** Homework 30%, Presentation 10%, Midterm exam 20%, Final exam 40%.