PHYSICS 5307
Methods in Physics I (Fall 2008)

Schedule: MWF, 12:00-12:50 in Sci 010
Instructor: Mahdi Sanati
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Office and office hours: Sci 46, open door policy

Course Objectives: This is a course for graduate and advanced undergraduate students in physics. It is also open to interested students in chemistry, mathematics, and other fields. The purpose of the course is to introduce students to some basic mathematical techniques widely used in physics. The materials are essential for mastering of the other graduate core courses like classical mechanics, electrodynamics, and quantum mechanics.

Expected Learning Outcomes: Students will develop the ability to apply mathematics to wide range of physical problems.

Text: "*Mathematical Physics*", by Sadri Hassani, Springer-Verlag (1998).
We will follow the material from the textbook rather closely, but departures from it occur. Therefore, I encourage you to take notes.

Coverage: Finite-Dimensional Vector Spaces, Infinite-Dimensional Vector Spaces, Matrices and Spectral Decompositions, Complex Analysis, Differential Equations, Sturm-Liouville Systems, Operators in Hilbert Spaces, Green's Functions, Tensors

Learning Assessment: Certain problems on the exams will explicitly require facility with the course objectives and be used as learning assessments tools.

Homework: Problem sets are assigned for each chapter. Part of these problems will be used in your exams. The grades on your exams reflect how well you can do the homework problems on your own.

Exams: three midterm exams (25% each), final exam (25%)

Grades: 100-A-88, 87.9-B-76, 75.9-C-64, 63.9-D-50, 49.9-F-0

Attendance: Required, except for excused emergencies. Each recorded absence counts as
–5% and will be deducted from the course total.

Any person who, because of a disabling condition may require some special arrangements in order to meet course requirements should contact the instructor as soon as possible, so that necessary accommodation can be made. Proper documentation must be presented from the Dean of Students' Office.