

Syllabus: Physics 581
(Methods of Mathematical Physics)

Fall 2009

Class Meetings: Lectures Tuesday and Thursday in Room 105
2:00 – 3:20pm

Lecturer: A.P. Balachandran

Email: bal@phy.syr.edu

Office Hours: Tuesdays, 4:00-7:00pm. You may contact the Professor to arrange a different appointment time.

Phone: (315) 443-3469

Course Description:

The course will largely rely on class notes. The following lecture notes by M. Stone are also helpful:

[Http://webusers.physics.illinois.edu/~m-stone5/mma/mma.html](http://webusers.physics.illinois.edu/~m-stone5/mma/mma.html)

Note: These lectures have two parts.

I plan to cover the following topics in this order:

- 1) Vector spaces
- 2) Hilbert spaces
- 3) Eigenvalue problems
- 4) Complex variable: contour integration, Cauchy's theorem
- 5) Ordinary second order differential eqs, special functions
- 6) Brief treatment of variational problems
- 7) If time permits, group theory or partial differential eqs.

Performance with the regularly given home works is very important. Solutions have to be submitted on designated dates. Final grades depend strongly on the performance of home works.