

PY501 INFORMATION **Fall 2012**

Instructor: Pankaj Mehta (323 SCI, pankajm@bu.edu)

Office Hours: Wednesday 1:00-2:00, but feel free to drop by anytime.

Course Website:

All lecture notes and homeworks will be placed on the course website:

<http://physics.bu.edu/~pankajm/PY501.html>

Recommended Texts:

The course will be divided into three parts. The first third of the course will cover complex variables. The next part of the course will be an introduction to modern dynamical systems theory. In the final third of the course, we will cover Partial Differential Equations with an emphasis on application to Electromagnetism

Required Texts

1. Complex Variables and Applications (Churchill, Brown, Verhey)
2. Nonlinear Dynamics And Chaos: With Applications To Physics, Biology, Chemistry, And Engineering (Steve Strogatz)

Useful Texts (in no particular order)

1. Classical Electrodynamics (J.D. Jackson)
2. Advanced Mathematics Methods for Scientists and Engineers (Bender and Orszag)
3. Complex Variables (Schaum's Outline Series)
 - Lots of exmaples.
4. Mathematical Methods of Physics (Matthews and Walker)
 - This text was use previously in PY501. Very good but terse
5. Mathematics Methods for Physicists (Arfken)
 - This is a more elementary introduction to the material.
6. Methods of Theoretical Physics (Morse and Feshbach)
 - The golden oldie in the field.
7. Mathematical Methods of Physics (Courant and Hilbert)
 - Also a classic tome written by two great mathematicians.

Course organization:

Assignments will be handed out (almost) weekly. You can collaborate with other

students in solving the problem sets. However, the write-up that you hand in should represent your own personal efforts. Please be aware that late homework will not be accepted. Homework will count for approximately 60 % of the grade. In addition, 15% of the grade will be a take-home midterm, and the final 25% a take-home final. The discussion sections will involve working in groups to solve a mathematical physics problem.