Course: Math 4032 (Combinatorial Analysis) Spring ’007

Instructor: Prasad Tetali, office: Skiles 126, email: tetali@math.gatech.edu
Office Hours: Mon, Wed. 11am – noon; Thurs. 2:00 – 3:00pm

Course Outline:

Suggested Text books:
(2) *Combinatorics: Topics, Techniques, Algorithms* by Peter Cameron,  
(Cambridge University Press, 1996 (reprinted)).


Course Objective.

- Introduction to advanced topics in combinatorics; to demonstrate the strength (and joy) of combinatorics when used in conjunction with other branches of mathematics such as analysis, probability and linear algebra.

Topics include the following: Most topics will be discussed for about a week.

  - Introduction to
  - Extremal graph theory
  - Extremal set theory
  - Ramsey theory
  - The Probabilistic Method
  - Revisiting : Recurrence relations and Generating functions
  - Permanents
  - Entropy techniques and asymptotic enumeration
  - (0,1)-matrices
  - Hadamard matrices and Reed-Muller codes
  - Projective and Combinatorial geometries
  - Polya’s theory of counting
  - Linear algebraic methods
  - Lattices and Mobius inversion

General grading policy: Homeworks 20%, Tests 50%, Final exam 30%

Test 1: February 7th  Test 2: March 14th  Test 3: April 18th

No make-up tests will be allowed.
Homeworks will be assigned, collected and graded on a regular basis. You are strongly advised to (attempt to) solve all the homework problems. **Late submission of HWs is discouraged with a penalty of 20%**.

Suggestions:
- Please feel free to ask questions at any time: before, after or during the class.
- Please make use of my office hours.
- Class participation and discussion is highly encouraged.