

COLLEGE OF STATEN ISLAND
Department of Mathematics
Course Outline: Math 337, Revised August 2007
Applied Combinatorics & Graph Theory

Text: *Applied Combinatorics* by Alan Tucker, 5th Ed., John Wiley & Sons Publisher.

LESSON	SECTION	TOPICS	HOMEWORK PROBLEMS
1	5.1 5.2	Two basic counting principles; Simple arrangements & selections	1,2,5,6,7,9,13,14,32,33 1,2,3,7,17,21,30,41,50,51
2	5.3	Arrangement and selections with repetitions	2,3,5,7,9,12,28,31
3	5.4	Distributions	1,2,7,9,11,12,18,23,24,27,28,56
4	5.5	Binomial coefficients	1,3a,3c,13,14c,e
5	6.1	Generating function models	1b,2b,c,3a,c,4a,b,5,8a,b,13,14,16,17
6	6.2	Calculating coefficients of generating functions	1,4,5,13,17,20,22
7	6.4	Exponential generating functions	2,6,7,8,9
8	7.1 7.3	Recurrence relations models Solution of linear recurrence relations	2,3,6,7,9,12,15,22,24 1,2,3a,c
9	7.4 7.5	Solution of inhomogeneous recurrence relations Solutions with generating functions	1a,c,9,10,12 1a-d
10		REVIEW	
11		Exam #1	
12	8.1	Counting with Venn diagrams	2,7,10,15,17,29,34,36
13	8.2	Inclusion & exclusion formula	2,4,6,9,11,18,28
14	1.1	Graph Models	1,2,3,4,7a,b,16,18,20a,23,24c
15	1.2 1.3	Isomorphism Edge Counting	1,5a,c,5e,6b,d,e,g,7,14 1,2,3,4,5,6,7,9,13,14
16	1.4	Planar graphs	1a,1b,2,3b,c,e,f,i,5,7a,c,d,g,8,16,17,18a, 20, 21
17	2.1	Euler cycles, Eulerization	1,2,3,4,5,12a,c
18	2.2	Hamiltonian circuits & applications	1,2,3,4b-d,g,i,n,7a,b,9
19	2.3	Graph coloring	1a-d,k,l,o,q,10,11,12,13
20	2.4	Coloring theorems	1,2,3,4,8a,12,13,14,16,18
21		REVIEW	
22		Exam #2	
23	3.1	Properties of trees	1,2,3,4,6,7,8,10,11,14,15,16,19,22,24,26,27
24	3.3	Traveling salesman problem	TBA
25	4.1	Shortest path problem	TBA
26,27	4.3	Network Flows	1,2,3
28		REVIEW FOR FINAL	