Massachusetts Institute of Technology
6.042J/18.062J: Mathematics for Computer Science
Professors Nancy Lynch and Tom Leighton

Handout 2
September 5, 1996

Tentative Course Outline

Sep	2	3	4	5 Lecture 1: Admistrivia. Proofs. PSet 1 out.	6 Recitation 1
Sep	9 Tutorial 1	10 Lecture 2: Mathematical induction. PSet 1 due. PSet 2 out.	11	12 Lecture 3: More induction. Strong induction. Well ordering.	13 Recitation 2
Sep	16 Tutorial 2	17 Lecture 4: Number theory. Euclid's GCD. RSA. PSet 2 due. PSet 3 out.	18	19 Lecture 5: Sets. Relations. Equivalence relations.	20 Recitation 3
Sep	23 MIT HOLIDAY.	24 Lecture 6: Functions. Pigeonhole Principle. PSet 3 due. PSet 4 out.	25	26 Lecture 7: Cardinality. Countability. Infinities.	27 Recitation 4

Sep-Oct	30 Tutorial 3	1 Lecture 8: Posets. Dilworth's Theorem. PSet 4 due. PSet 5 out.	2	3 Lecture 9: Graphs.	4 Recitation 5

Oct	7 Tutorial 4	8 Lecture 10: State machines. Algorithm verification. PSet 5 due.	9	10 Lecture 11: More state machines and algorithm verification.	11 Recitation 6

Oct	14 MIT HOLIDAY. Columbus Day.	15 MIT HOLIDAY. Columbus Day.	16 Quiz 1. 7pm. room 54-100	17 Lecture 12: Summations. Stirling's formula. Asymptotics. PSet 6 out	18 Recitation 7

Oct	21 Tutorial 5	22 Lecture 13: Recurrences: substitution method. PSet 6 due. PSet 7 out.	23	24 Lecture 14: Recurrences: characteristic equation method.	25 Recitation 8

Oct-Nov	28 Tutorial 6	29 Lecture 15: Counting. Permutations. Combinations. PSet 7 due. PSet 8 out.	30	31 Lecture 16: Binomial coefficients. Binomial theorem. Inclusion-exclusion.	1 Recitation 9
Nov	4 Tutorial 7	5 Lecture 17: Permutations and combinations of multisets. PSet 8 due. PSet 9 out.	6	7 Lecture 18: Generating functions.	8 Recitation 10
Nov	11 MIT HOLIDAY. Veteran's Day.	12 Lecture 19: Introduction to probability. Sample points and spaces. PSet 9 due.	13 Quiz 2. 7pm. room 54-100	14 Lecture 20: Probability laws. Events. Conditional probability. PSet 10 out	15 Recitation 11. Drop Date.
Nov	18 Tutorial 8	19 Lecture 21: Independence. Birthday paradox. Failure analysis. PSet 10 due. Pset 11 out.	20	21 Lecture 22: Random variables. Binomial distributions. Asymptotics.	22 Recitation 12

Nov	25 Tutorial 9	26 Lecture 23: Functions of random variables. Expectation. PSet 11 due. PSet 12 out.	27	28 MIT HOLIDAY. Thanksgiving.	29 MIT HOLIDAY. Thanksgiving.
Dec	2 Tutorial 10	3 Lecture 24: Markov's Theorem, Laws for expectation.	4	5 Lecture 25: Variance, Moments, Chebyshev's Theorem.	6 Recitation 13. PSet 12 due.
Dec	9	10 Lecture 26: Gambler's ruin. Random walks.	11	12	13

(Lecture topics are subject to change.)