STA 4821 Fall 2003 Summary of FEEDS Lectures

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01. 26 August 03. Discussed syllabus (objectives, rules, etc.), gave course website address, discussed HW1 (Birthday Problem).

02. 28 August 03. Sample space and events, frequency and probability, axioms of probability, basic theorems, equally likely elementary events, examples via dice. Next: HW0, combinatorics.

03. 02 September 03. Previewed HW0 except for convolution.

04. 04 September 03. Finished discussion of HW0, due in 3 weeks. Chapter 2 (permutations, combinations) up to page 54.

05. 09 September 03. Finished Chapter 2, began discussion of poker (Ex 20, p66).

06. 11 September 03. Did Ex 20 (poker, p66), Ex 26 (bridge, p26), Ex 47 (Fibonacci, p70). Began conditional probability.

07. 16 September 03. Conditional probability, definition and examples, including Monty Hall problem.

08. 18 September 03. Theorem of total probability, application to sampling (with replacement vs. without replacement), Monty Hall (revisited), gambler's ruin (problem defined, not formulated, vote on gambler's probability of winning $10K before losing $1M, answer next time).

09. 23 September 03. Gambler's ruin. Bayes' theorem (HIV test). Definition of independence.

10. 25 September 03. Independence (dice examples, P(A before B) with and without replacement). Introduced craps.

11. 30 September 03. Craps, card craps with and without replacement.

12. 02 October 03. Discussed HW0 in detail, including Fundamental Theorem of Calculus.

13. 07 October 03. Reviewed sample midterm exam (Summer 03).

14. 14 October 03. Solved midterm exam in detail.

15. 16 October 03. Probability mass function, distribution function (discrete and continuous; examples - dice, U(0,1)); Fundamental Theorem of Calculus, introduction via analogy with discrete F(b)-F(a) to density function.

16. 21 October 03. Example U(0,1) to illustrate use of density and distribution functions. Expected value for discrete (single die, sum of two dice) and continuous (X~U(0,1)). Began HW2 (expected value for Birthday Problem).

17. 23 October 03. HW2 due in one week. Variance, examples (dice, U(0,1), exp), V(X+Y)=V(X)+V(Y); began Poisson process.

18. 28 October 03. Derived exponential distribution (as time between events in a completely random "Poisson" process); began discussion of HW3 and Inverse Transform Method.

19. 30 October 03. Complete discussion of Inverse Transform Method, HW3 (due in one week).

20. 4 November 03. Reviewed HW3, discussed HW4 (sums of independent random variables), derived convolution integral and applied it to cases 1 and 2 of HW4.

21. 6 November 03. Finished discussion of HW4. Recapitulated topics and page references since midterm. Began discussion of Normal distribution, standard Normal Z.

22. 13 November 03. Continued discussion of Normal distribution, began HW5 (Central Limit Theorem).

23. 18 November 03. Deferred HW5. Introduced Queueing Theory, began discussion of HW6 (The M/G/1 Queue): described simulation (except for table of waiting time df), began discussion of theory.

24. 20 November 03. Discussed theory for HW6, introduced FIFO vs LIFO preemptive-resume.

25. 25 November 03. Solution to case (3) of HW4 (convolution).Compared FIFO vs LIFO. Distributed course evaluations.

26. 2 December 03. Solved HW5 (CLT; not required to be handed in), began discussion of confidence intervals.

27. 4 December 03. Answered questions about exam. Illustrated use of confidence intervals in election polling.