IE 581 Probability Review Topics

Probability

Suggested videos are highlighted in yellow.
(See next page for the first highlighted video.)

All highlighted videos: approx. 2h 44m

- *Chapter 1: Introduction (1:57:03)*
  - Introduction (2:56)
  - *1.1 Applications (28:33)*
    - *Probability problems*
      - Monty Hall (Let's Make a Deal) problem (2:11)
      - Birthday problem (4:56)
    - *Statistical applications*
      - Statistical application 1 -- Univariate data set (4:12)
      - Statistical application 2 -- Bivariate data set (2:23)
      - Statistical application 3 -- Bivariate data set (3:33)
      - Statistical application 4 -- Multivariate data set (5:30)
      - Statistical application 5 -- Regression (5:46)
  - *1.2 Counting Techniques (1:11:16)*
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      - Multiplication rule -- Example 2 (1:44)
      - Multiplication rule -- Example 3 (0:56)
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      - Multiplication rule -- Example 5 (2:15)
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      - Permutations -- Example 2 (4:06)
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    - *Nondistinct permutations*
      - Nondistinct permutations (1:30)
      - Nondistinct permutations -- Example 1 (0:43)
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      - Nondistinct permutations -- Example 3 (1:36)
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      - Combinations -- Example 1 (1:45)
      - Combinations -- Example 2 (2:17)
      - Combinations -- Example 3 (2:34)
      - Notes on combinations (7:33)
      - Partitioning -- Example 1 (1:20)
      - Partitioning -- Example 2 (2:01)
      - Partitioning -- Example 3 (2:03)
      - Partitioning -- Example 4 (3:05)

        - Unifying Example (8:17)
    - *1.3 Sets (14:18)*
        - Set theory definitions (2:56)
        - Operations on sets (1:49)
        - *Venn diagrams*
            - Venn diagrams -- Example 1 (1:57)
            - Venn diagrams -- Example 2 (2:08)
        - Set theory notes (1:50)
        - Set theory application (3:38)

Review 1: Chapters 2 through 5

All highlighted videos in Review 1: 1h 54min

- *Chapter 2: Probability (2:44:06)*
    - Probability introduction (1:32)
    - *2.1 Random Experiments, Sample Spaces & Events (11:45)*
        - Random experiments (1:23)
        - Sample space examples (3:24)
        - Sample space classification (3:21)
        - Sample space subsets -- events (3:37)
    - *2.2 Probability Axioms (33:09)*
        - Approaches for computing probabilities (0:39)
        - Relative frequency approach to estimating probabilities (9:23)
        - Relative frequency approach to estimating probabilities -- limiting case (1:26)
        - Subective approach to estimating probabilities (3:28)
        - Classical (equally-likely) approach to calculating probabilities (4:07)
        - Probability axioms (1:55)
        - Complementary probability (2:59)
        - Probability result concerning subsets (3:03)
        - Probability of unions of events (6:09)
    - *2.3 Equally-Likely Case (45:24)*
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        - Computing probabilities -- Example 3 (1:52)
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        - Independence in a parallel system (2:36)
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        - Discrete random variables -- Example 8 (6:12)
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Review 2: Chapter 6
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