

Marks distribution →

1st Jan 2024

① Mid-Sem - 20

② End-Sem - 50

③ Internal - 30

- Assignment (15)
- Quizzes (10)
- Classtest (b/w midsem and endsem) (5)

(5th March - 8:00 to 10:00)

2 p.m tutorial - quizzes on tutorials
Thursday

→ 3 questions, do enough
and answer.

He will ~~not~~ ~~unavailable~~ next week

so normal classes on - 1, 2, 3, 4, (8, 11) → Tutorials.

↓ ↓

Swapped with analysis on 2, 3 - you know, I stopped caring.
Come to everything.

⊗ Best 10/11 quizzes.

⊗ 2 week time for assignments.

Syllabus →

① Axioms of Probability, Boole's and Bonferroni's inequalities.

② Earlier attempts to define probability.

③ Conditional probability, Bayes Theorem.

④ Random variables and distributions (longest and rigorous)
Markov ineq, Chebyshev ineq.

Chernoff bounds

⑤ Order Statistics

⑥ Markov chains.

Ref: Sheldon Ross.

Δ Random experiment: An act which could be repeated under similar circumstances but whose outcomes are not fixed.

Δ Fixed def of probability → (Cardano, 1663)

• The proportion of the required outcome, to all outcomes

True only if we assume all outcomes have equal probability (may not be true)

Laplace tried to generalise to infinite sets.

□ Birthday problem

$m \rightarrow$ pigeonholes

$n \rightarrow$ pigeons

$p \rightarrow$ probability

Given m and p , find n s.t. the probability of an overlap is higher than p

$$n > \frac{1}{2} + \sqrt{2m \log\left(\frac{1}{1-p}\right)} + \frac{1}{4}$$

Hw: Toss a coin a hundred times and note down the outcomes.

Corollary: If $3n+1$ pigeons are placed in n^2 pigeonholes, then there's an overlap with probability higher than 0.48339.