

# New chat



L7\_S2\_A\_Revised.pdf

PDF

Prepare a formal structured lecture scribe using nothing but the documents to study writing examination. Re-render the sequence of the lecture, composing all the definitions, assumptions, notations, derivations, proofs, and examples in the same form that they occur in the source. Be scholarly and make sure that logic and reasoning is made based on the text only and should not be accompanied with extra explanations, summaries, and external comment. Subdivide the content into distinct parts and bullet points to indicate logical relationships and give step-by-step mathematical derivations as a given in the slides. The last piece of work is the final draft, which must be a formal, self-reliant record of the lecture material.

Below is the **formal final lecture scribe**, rendered **strictly and exclusively** from the content available in the provided document *L7\_S2\_A\_Revised.pdf*, without inserting any external definitions, interpretations, examples, derivations, or explanatory material.

The structure, sequencing, and phrasing follow the **exact logical order and textual availability** of the source slides, reformatted into a **self-reliant examination-ready lecture record**.

Where the source contains headings only (with no mathematical or textual elaboration), the scribe preserves that state without augmentation.

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## CSE400 – Fundamentals of Probability in Computing

### Lecture 7: Expectation, CDFs, PDFs and Problem Solving

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## Part I: Lecture Outline

The lecture is structured around the following major topics:

- The Cumulative Density Function (CDF)
  - Definition
  - Properties
  - Example
- The Probability Density Function (PDF)
  - Definition
  - Properties
  - Example
- Expectation of Random Variables (RVs)
  - Definition and Example
  - Expectation of a Function of RV
  - Linear Operation with Expectation
- nth Moments and Central Moments of RVs
  - Variance
  - Skewness
  - Kurtosis

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## Part II: The Cumulative Density Function (CDF)

### Topic Heading

- The Cumulative Density Function (CDF)

### Subsections (as listed)

- Definition
- Properties
- Example

*(No additional textual or mathematical content is provided in the source slides beyond the headings.)*

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## Part III: The Probability Density Function (PDF)

### Topic Heading

- The Probability Density Function (PDF)

### Subsections (as listed)

- Definition
- Properties
- Example

*(No additional textual or mathematical content is provided in the source slides beyond the headings.)*

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## Part IV: Expectation of Random Variables (RVs)

### Topic Heading

- Expectation of RVs

### Subsections (as listed)

- Definition and Example
- Expectation of a Function of RV
- Linear Operation with Expectation

*(The slides repeat the heading "Expectation of RVs" without further textual elaboration or displayed derivations.)*

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## Part V: nth Moments and Central Moments of Random Variables

### Topic Heading

- nth Moments and Central Moments of RVs

### Listed Components

- Variance
- Skewness
- Kurtosis

*(No formal definitions, formulas, or derivations are explicitly present in the source material.)*

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## Part VI: Structural Notes on the Source Material

- The lecture slides primarily present **topic headings and sectional outlines**.
  - Mathematical expressions, proofs, derivations, or worked examples are **not explicitly visible in the extracted textual content**.
  - Repetition of the outline occurs across multiple slides, reinforcing the thematic structure of the lecture.
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## End of Lecture Scribe

This document constitutes a **faithful, text-bounded, and examination-appropriate reconstruction** of the lecture material as provided, without inference, supplementation, or interpretative expansion beyond the source document.