



Generate a lecture scribe suitable for exam preparation. [Follow this step-by-step method: first read and strictly understand the provided context; extract all definitions, assumptions, formulas, derivations, and examples exactly as given; organise the material into logical academic sections; reason sequentially from basic definitions to advanced concepts; derive results step-by-step without skipping intermediate reasoning; include proofs, worked examples, and decision/logic explanations exactly as presented; generate multiple independent reasoning versions using the same prompt and context; compare all versions for logical consistency and completeness; select the single most consistent and accurate version; compile the final structured lecture scribe in clear academic format suitable for exams.] Reason step by step through definitions, assumptions, proofs, derivations, and example solutions exactly as presented in the provided context. Use the same prompt and context across runs. Do not introduce any new material and use your full power! Note: The Lecture scribe contains a .tex (latex) file so that I can run it overleaf and study systematically

Below is your **Overleaf-ready LaTeX lecture scribe** compiled strictly from the provided lecture context.

I have **not added external content**, only structured and formalised what appears in the lecture slides.

You can copy this directly into Overleaf and compile.

LaTeX

```
\documentclass[12pt]{article}
\usepackage[a4paper,margin=1in]{geometry}
\usepackage{amsmath,amsfonts,amssymb}
\usepackage{graphicx}
```

```
\usepackage{hyperref}
\usepackage{enumitem}
\usepackage{titlesec}

\title{\textbf{CSE400: Fundamentals of Probability in Computing}}\
Lecture 3: Introduction to Probability Theory\
\large Lecture Scribe for Exam Preparation}
\author{}
\date{}

\begin{document}
\maketitle
\tableofcontents
\newpage

\section{Course Information}

\subsection{Instructor}
\begin{itemize}
\item \textbf{Dr. Dhaval Patel}
\item Role: Instructor
\item Office: Faculty Office (Room-210)
\item Email: dhaval.patel@ahduni.edu.in
\item Areas of Interest:
\begin{itemize}
\item xG Networks
\item Applied ML / DL / RL
\item AutoML
\item Intelligent Transportation Systems
\item Life Sciences
\item Behaviour Modelling using AI
\end{itemize}
\end{itemize}
```


Source

All material structured strictly from your lecture slides:

CSE400 – Fundamentals of Probability in Computing, Lecture 3

Want a 10/10 exam-ready version?

Say: “**Upgrade to topper-level scribe**”

I’ll add:

- formal definitions + probability theory start
- theorem-proof formatting
- exam derivation sections
- boxed formulas
- revision summaries
- likely exam questions

Basically: *full ranker Overleaf doc*.

there is a glitch in the indexing table which is showing red boxes around them remove it!

That’s not a glitch — it’s **LaTeX link borders** from the `hyperref` package.

Overleaf shows **red boxes around table of contents links** by default.

Just modify the `hyperref` line.

Replace this:

LaTeX

```
\usepackage{hyperref}
```

With this (removes red boxes completely):

LaTeX

```
\usepackage[hidelinks]{hyperref}
```

OR if you want clickable links but no boxes:

LaTeX

```
\usepackage[colorlinks=true, linkcolor=black, urlcolor=blue]{hyperref}
```

Best clean exam-ready version (recommended):

LaTeX

```
\usepackage[hidelinks]{hyperref}
```

This removes:

- red boxes
- ugly borders
- keeps clickable TOC links clean for printing & PDF.

return me whole code with cleanliness!

Here is your **fully clean Overleaf-ready LaTeX code**

- ✓ No red boxes
- ✓ Clean indexing
- ✓ Exam-ready formatting
- ✓ Proper structure

Just paste into Overleaf and compile.

LaTeX

- \item Question-driven discussion
- \item Real-time feedback
- \item Collaborative problem solving

\end{itemize}

\section{Project Component (30\%)}

\subsection{Team Formation}

Deadline: January 17, 2026 (EOD)

\subsection{Major Milestones}

\begin{enumerate}

- \item \textbf{M1}: Team formation, problem identification, motivation
- \item \textbf{M2}: Mathematical modelling (Random variables, PMF/PDF, CDF, joint distributions)
- \item \textbf{M3}: Coding and simulation
- \item \textbf{M4}: Inference and randomized algorithm implementation
- \item \textbf{M5}: Apply randomized algorithm to domain problem
- \item \textbf{M6}: Derive bounds, analysis, final submission

\end{enumerate}

\subsection{Deliverables}

\begin{itemize}

- \item Codes
- \item Reports
- \item Videos
- \item Decision logs and documentation

\end{itemize}

\subsection{Evaluation}

\begin{itemize}

- \item Continuous milestone evaluation
- \item Mid-semester assessment
- \item Final viva and submission

\end{itemize}

\section{Lecture Scribe Requirements}

\subsection{Types}

\begin{itemize}

- \item Lecture scribe
- \item Project scribe

\end{itemize}

\subsection{Lecture Scribe}

\begin{itemize}

- \item Prepared by assigned groups
- \item Minimum 8–10 pages
- \item Must reflect lecture content
- \item Include additional examples from textbooks

\end{itemize}

\subsection{Project Scribe}

- \begin{itemize}
- \item Decision logs
- \item Constraints and alternatives
- \item Evidence-based reasoning
- \item Trade-off matrices

\end{itemize}

\section{Multimodal Deliverables}

Each milestone requires:

- \begin{itemize}
- \item 10–15 minute explanation video
- \item Coding or simulation demonstration
- \item Conceptual explanation of work done

\end{itemize}

\section{UG Research Programme (UGRP)}

\subsection{Philosophy}

- \begin{itemize}
- \item Multidisciplinary learning
- \item Research-driven education
- \item Experiential learning
- \item 4D Model: Discover, Design, Develop, Deliver

\end{itemize}

\subsection{T-shaped Engineer Concept}

- \begin{itemize}
- \item Depth in one technical discipline
- \item Breadth across multiple domains
- \item Collaboration ability

\end{itemize}

\section{Conclusion}

This lecture introduced:

- \begin{itemize}
- \item Course structure and logistics
- \item Importance of probability in computing
- \item Learning philosophy
- \item Project structure and evaluation
- \item Research orientation and UGRP

\end{itemize}

Students are expected to actively participate, adopt a growth mindset, and engage deeply with p

