



generate a lecture scribe suitable for exam preparation. While writing this, reason step by step through definitions, assumptions,, proofs, derivations and example solutions exactly as seen in the pdf. The instructions must follow exactly the logical flow used in the lecture material. Make every explicit so that we can clearly follow these during revision. Explain all the definitions and assumptions explicitly. Give step-by-step proofs, derivations and example solutions exactly as done in the ppt provided. Do not add new explanations, interpretations, examples, shortcuts and alternative methods. Maintain a formal, academic tone suitable for exam revision. Do not introduce any material that is not present in the given lecture ppts. Do not provide multiple explanations. Also do not summarize by skipping reasoning steps and also do not include personal comments or external knowledge.

Cse400 Lecture 3 Scribe – Introduction To Probability Theory

CSE400 – Fundamentals of Probability in Computing

Lecture 3: Introduction to Probability Theory

Instructor: Dr. Dhaval Patel, PhD

Course: CSE400 – Fundamentals of Probability in Computing

Institution: SEAS, Ahmedabad University, Ahmedabad, Gujarat, India

Date: January 13, 2026

1. Lecture Context and Purpose

This lecture is part of the CSE400 course titled *Fundamentals of Probability in Computing*. The lecture formally introduces the course structure, motivation, and administrative framework before proceeding to probability theory in subsequent lectures. The logical flow strictly follows the lecture slides.

2. Course Identification

- Course Code: **CSE400**
 - Course Title: **Fundamentals of Probability in Computing**
 - Lecture Number: **Lecture 3**
 - Lecture Title: **Introduction to Probability Theory**
-

3. Instructor Information

- **Name:** Dr. Dhaval Patel, PhD
 - **Role:** Instructor
 - **Office:** Faculty Office, Room 210
 - **Faculty Profile:** SEAS, Ahmedabad University
 - **Email:** dhaval.patel@ahduni.edu.in
 - **Areas of Interest:**
 - xG Networks
 - Applied ML / DL / RL / AutoML
 - Intelligent Transportation Systems
 - Life Sciences
 - Behaviour Modelling using AI
-

4. Course Team Structure

The course is supported by a team consisting of senior and junior undergraduate teaching assistants.

4.1 Teaching Assistants

- **Deep Patel**
 - BTech CSE (3rd Year)
 - Research Area: Reinforcement Learning and Pinching Antenna Systems
 - Email: deep.p4@ahduni.edu.in
- **Prapti Patel**
 - BTech CSE (4th Year)
 - Research Areas:
 - Smart sensing frameworks using Kolmogorov–Arnold Networks for 5G
 - Fourier analysis-based sensing for 5G and beyond
 - Email: prapti.p@ahduni.edu.in
- **Raj Koticha**
 - BTech CSE (4th Year)
 - Research Area: Multi-agent reinforcement learning for resource management in NR-V2X platooning
 - Email: raj.k1@ahduni.edu.in
- **Ritu Patel**
 - BTech CSE (4th Year)
 - Research Area: Intelligent Transportation Systems
 - Email: rituben.p@ahduni.edu.in
- **Rushi Moliya**
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- Multi-UAV energy-efficient sensing
 - Email: rushi.m@ahduni.edu.in
 - **Ura Modi**
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 - Email: ura.m@ahduni.edu.in
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5. Learning Philosophy

5.1 Growth Mindset

The lecture emphasizes the importance of adopting a **growth mindset**, characterized by:

- Viewing failure as an opportunity to grow
- Willingness to try new things
- Belief that abilities can be developed through effort
- Treating feedback as constructive

5.2 Fixed Mindset (Contrast)

In contrast, a fixed mindset includes:

- Viewing failure as a limitation of ability
 - Avoidance of challenges
 - Belief that abilities are static
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6. Course Motivation

6.1 Why Study CSE400?

The motivation for learning probability is introduced using:

- **Daily life conversations** as intuitive examples of probabilistic reasoning

6.2 Engineering Applications

Probability theory is motivated through applications in:

- Speech Recognition
 - Radar Systems
 - Communication Networks
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7. Active Learning Platform

7.1 Campuswire

Campuswire is used as the primary active learning and communication platform.

Purposes:

- Anonymous participation
- Back-channel communication during lectures
- Collaborative problem solving
- Real-time feedback through polling
- Direct messaging with instructor and TAs

Course Sections:

- Section 1: Campuswire link provided in slides
 - Section 2: Campuswire link provided in slides
-

8. Lecture Schedule

8.1 Lecture Sessions

- Section 1:
 - Time: 9:30 AM – 11:00 AM
 - Days: Tuesday, Thursday

- Venue: GICT Room 136
- **Section 2:**
 - Time: 1:00 PM – 2:30 PM
 - Days: Tuesday, Thursday
 - Venue: GICT Room 137

8.2 TA Hours

- Mode: In-person / Online
 - Timings: To be announced
-

9. Instructor Interaction Guidelines

- Queries should be posted on Campuswire
 - Contact hours available 24×7 through Campuswire
 - Direct messages allowed for private discussions
 - External engagement opportunities include UGRP-8 (2026)
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10. Assessment Overview

10.1 Project Component

- **Weightage:** 30%

10.2 Project Milestones

- M1: Team formation and problem formulation
- M2: Mathematical modeling
- M3: Coding and simulation
- M4: Inference and randomized algorithms
- M5: Algorithm application and comparison
- M6: Bounds derivation and final analysis

11. Scribe Requirement

Lecture scribes are a formal course requirement.

- Two groups per lecture will prepare a scribe
- Minimum length: 8–10 pages
- Content must strictly reflect lecture material

12. End of Lecture

The lecture concludes with an open Q&A session.

Contact: dhaval.patel@ahduni.edu.in







I've generated a **formal, exam-oriented lecture scribe** in the canvas that **strictly follows the exact slide order and content of Lecture 3**, without adding *any* external theory, interpretations, shortcuts, or extra explanations.

Everything is written step by step, explicit, and aligned with how the PPT progresses, exactly as you asked.

⚠ **Important clarity (very relevant for next steps):**

This particular PDF (Lecture 3) is **mostly administrative and motivational**. It does **not yet contain probability definitions, axioms, proofs, derivations, or numerical examples**. So the scribe correctly reflects that reality and does **not invent** probability theory content that appears in later lectures.

What I did (and did not do)

-  Followed slide-by-slide logical flow
-  Kept everything explicit and formal
-  Used only material present in the PPT
-  Did NOT add probability theory that is not yet introduced
-  Did NOT summarize or compress reasoning
-  Did NOT add personal comments or external knowledge

Next step (recommended)

If you want the **actual probability theory scribe** with:

- definitions
- axioms
- propositions
- proofs
- derivations
- worked examples

👉 Upload **Lecture 4 (or whichever lecture introduces probability formally)** and say:

“Continue in the same strict scribe style.”

I’ll then produce a **true exam-ready probability scribe** exactly matching your professor’s flow and notation.

give this same slide but not in a canvas
dont change the content keep it same

Below is **the exact same content, unchanged**, reproduced verbatim in chat (not in canvas).

No wording, structure, or content has been modified.

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