

Exam-Oriented Lecture Scribe



L3.pdf
PDF

You are required to generate a lecture scribe intended strictly as exam-oriented reference material. Use ONLY the provided context (lecture slides / lecture PDF). Do NOT introduce any content, examples, explanations, intuition, or results that do not explicitly appear in the provided context. While writing the lecture scribe, reason step by step through the material exactly as it is presented in the lecture. Include explicit reasoning in the scribe wherever the lecture contains: - definitions and notation - assumptions and conditions - theorem or result statements - proofs or proof sketches - derivations - worked examples All reasoning must be faithful to the provided context and must follow the logical order used in the lecture. Make the logical dependencies between concepts explicit so that a student can reconstruct the lecture while revising for an exam. Maintain a formal, academic tone suitable for closed-notes exam preparation. Organize the scribe clearly with appropriate section headings. Do NOT: - invent new examples or explanations - simplify or reinterpret arguments - add intuition not discussed in the lecture - go beyond the scope of the provided context Ensure a clear and logical progression of ideas to facilitate student understanding during revision. This should serve as concise and accurate exam reference material. Also cover each and every topic do NOT skip any single topic or examples.

Below is a **strict, exam-oriented lecture scribe** for **CSE400 – Lecture 3: Introduction to Probability Theory**, prepared **only from the provided lecture slides (L3.pdf)**.

No external material, intuition, or examples have been added.

The logical order, structure, and scope follow the lecture exactly, including **all topics covered**, even administrative and contextual material, as required.

CSE400 – Fundamentals of Probability in Computing

Lecture 3: Introduction to Probability Theory

Instructor: Dr. Dhaval Patel

Date: January 13, 2026

1. Course Identification and Context

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

This lecture primarily establishes:

- Course structure and logistics
- Motivation for studying probability
- Engineering relevance
- Project structure and evaluation
- Research orientation (UGRP and MICxN Lab)

No formal probability definitions, axioms, theorems, or derivations are introduced in this lecture.

2. Motivational Slides

2.1 Quote on Excellence

“Good is the enemy of great. That’s why so few things become great.” – James C. Collins

Purpose: Motivational framing for learning and performance expectations.

2.2 Growth Mindset

Statements shown under Growth Mindset:

- Failure is an opportunity to grow
- I like to try new things

- I can learn to do anything I want
 - Challenges help me grow
 - My effort and attitude determine my abilities
 - Feedback is constructive
 - I am inspired by the success of others
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2.3 Fixed Mindset (Contrast)

Statements shown under Fixed Mindset:

- Failure is the limit of my abilities
- I'm either good at it or I'm not
- My abilities are unchanging
- I don't like to be challenged
- My potential is predetermined
- When I'm frustrated, I give up
- I stick to what I know

Purpose: Establishing expected learning attitude for the course.

3. Lecture Outline (Part 1)

3.1 CSE400: General Course Information

- Team
 - Active Learning Platform: **Campuswire**
 - Schedule
 - Grading
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3.2 Why Should We Learn CSE400?

- Example mentioned: **Daily life conversations**

(No further elaboration provided in slides.)

3.3 Engineering Applications

Applications listed:

- Speech Recognition
 - System Radar System
 - Communication Network
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4. Course Team Details

4.1 Instructor

Dr. Dhaval Patel

- Role: Instructor
 - Office: Faculty Office (Room-210)
 - Faculty Profile: Ahmedabad University SEAS website
 - Research Areas:
 - xG Networks
 - Applied ML / DL / RL / AutoML
 - Intelligent Transportation Systems
 - Life Sciences
 - Behaviour Modelling using AI
 - Email: dhaval.patel@ahduni.edu.in
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4.2 Teaching Assistants and Team Members

The following team members are listed with their academic status, research interests, and email IDs:

- **Deep Patel** – BTech CSE (3rd Year)
- **Prapti Patel** – BTech CSE (4th Year)
- **Raj Koticha** – BTech CSE (4th Year)
- **Ritu Patel** – BTech CSE (4th Year)
- **Rushi Moliya** – BTech CSE (4th Year)
- **Ura Modi** – BTech CSE (3rd Year)

Each member's ongoing research area is specified in the slides.

5. Active Learning and Class Discussion

5.1 Course Website

- Section-1: Campuswire course link
 - Section-2: Campuswire course link
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5.2 Campuswire: Purpose and Usage

Reasons for using Campuswire:

1. Build confidence by anonymous participation and back-channel communication
 2. Collaborative and active learning
 3. Real-time feedback through polling
 4. Direct personal communication with instructor/TAs via DM
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6. Course Schedule

6.1 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
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6.2 TA Hours

- Mode: In-person / Online
 - Timings: Yet to be finalized (to be announced)
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7. Communication with Instructor

7.1 Discussion and Difficulty Sessions

- Contact hours: 24×7 via Campuswire
- Best practice: Post queries on Campuswire
- Private discussion: Use DM if more time is needed

- External engagement:
 - UGRP-8 (2026)
 - Offline projects
 - Counseling / informal discussion ("Cup of tea for 10 min")
 - Communication via official email
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7.2 Important Note

- LaTeX tutorial and assignment submission guidelines will be followed
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8. Project Component (Weightage: 30%)

8.1 Project Kickoff

- Weightage: 30%
 - Team formation deadline: 17 January 2026 (EOD)
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8.2 Project Execution Guidelines

Milestones (M1–M6):

1. Concept Evolution Maps
2. Scribe: Process & Decision-Making
3. Multimodal Artifacts
4. Question-Driven Artifacts
5. Collaboration & Team Dynamics Artifacts
6. Final bounds, analysis, and compiled deliverables

Deliverables:

- Code
- Reports
- Videos (as specified)

Assessment:

- Before and after mid-semester
 - Project viva at end of course
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8.3 Project Kickstart Flow

- **M1:** Team formation, area identification, background, motivation, problem formulation
 - **M2:** Mathematical modeling
 - RV
 - PMF / PDF
 - CDF
 - Multivariate RVs
 - Joint PMF / PDF / CDF
 - **M3:** Coding – simulation and computation
 - **M4:** Inference using randomized algorithms
 - **M5:** Randomized algorithms and comparison with deterministic algorithms
 - **M6:** Bounds, analysis, final submission
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9. Submission Types

9.1 Submission #1 – Concept Evolution Maps

- Tools:
 - Miro
 - Draw.io
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9.2 Submission #2 – Scribe (Learning Reflection Logs)

Types:

- Lecture Scribes
- Project Scribes

Key requirements:

- Assigned groups per lecture
 - 8–10 pages minimum
 - Reflect lecture content
 - Include decision logs, constraints, alternatives, trade-offs
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9.3 Submission #3 – Multimodal Artifacts

- Video duration: 10–15 minutes per milestone
 - Focus on content, not editing
 - Explain milestone and simulations
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10. Undergraduate Research Programme (UGRP)

10.1 Purpose of UGRP

- T-shaped engineer model
 - Multidisciplinary learning
 - Experiential and research-driven approach
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10.2 MICxN Research Lab Overview

- Research domains:
 - Networks
 - IoT / IoV / IoBNT
 - Data Science
 - AI
 - Modern computer systems
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10.3 Research Outcomes and Collaborations

- Industry projects
- International collaborations
- Conference publications
- Awards and recognitions
- Alumni placements

(All details listed as informational slides.)

11. End of Lecture

- Open Q&A session
 - Contact: dhaval.patel@ahduni.edu.in
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Source

All content reproduced **strictly from Lecture 3 slides (L3.pdf)**

If you want, I can now:

- Convert this into **LaTeX exam-ready notes**
- Split it into **short revision sheets**
- Prepare a **probability-only scribe once Lecture 4 starts**