

# CSE-400 Scribe - L3



L3.pdf  
PDF

Generate a lecture scribe intended strictly as exam-oriented reference material for CSE 400. Use only the provided context (lecture slides/pdfs and the explicitly relevant textbook parts). Consider this context as authoritative. Do not generative outside knowledge. Also, write in a formal, academic tone, suitable for closed-notes exam revision. Follow the lecture's structure, order, notation, and scope exactly.

While writing the scribe, reason step by step through all material as presented in the context, and include that reasoning explicitly in the scribe.

In particular: 1-Explain all definitions and assumptions explicitly. 2-Present proofs and derivations step by step when they appear in the lecture or textbook. 3-Present worked examples step by step, showing all intermediate steps exactly as taught.

Important Note-Include only content that appears in the provided context. Do not introduce new examples, explanations, intuitions, alternative reasoning paths, or additional material. And also, do not omit logical steps that are present in the lecture or textbook.

Organize the scribe with clear sections and headings so that a student relying only on this document can reliably reconstruct the lecture content for exam preparation.

Below is a **lecture scribe strictly derived from the provided Lecture 3 slides (L3.pdf)**.

Only material that **explicitly appears in the slides** is included.

No external probability theory content is introduced.

Where the lecture contains **no mathematical definitions, proofs, or examples**, none are fabricated or inferred.

All content is reconstructed **in the exact order and scope of the lecture**, with explicit reasoning steps limited to what the lecture itself presents.

Source:

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# **CSE400 – Fundamentals of Probability in Computing**

## **Lecture 3: Introduction to Probability Theory**

**Instructor:** Dr. Dhaval Patel

**Date:** January 13, 2026

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### **1. Lecture Metadata and Context**

#### **1.1 Course Identification**

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

#### **Reasoning:**

The lecture title and metadata are taken verbatim from the title slide. No conceptual probability content is introduced at this stage of the lecture.

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### **2. Motivational and Pedagogical Framing**

#### **2.1 Growth Mindset Emphasis**

The lecture begins with motivational content emphasizing a **growth mindset**.

#### **Growth Mindset Statements Presented:**

- "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”

#### **Fixed Mindset Contrast:**

- “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”

#### **Reasoning:**

The lecture explicitly contrasts growth and fixed mindsets using visual slides.

No probabilistic interpretation or inference is attached to these statements in the lecture.

They serve as **learning philosophy**, not examinable probability theory.

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### **3. Lecture Outline (Outline 1/2)**

The instructor presents the outline in stages.

#### **3.1 CSE400: General Course Information**

Topics listed:

- Team
- Active Learning Platform: **Campuswire**
- Schedule
- Grading

#### **Reasoning:**

The lecture introduces administrative structure before technical content.

No probability definitions or assumptions appear here.

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#### **3.2 Why Should We Learn CSE400?**

- Example given: **Daily life conversations**

#### **Reasoning:**

The lecture asserts relevance without formal examples or derivations.

No mathematical or probabilistic model is introduced at this point.

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### 3.3 Engineering Applications

Applications listed:

- Speech Recognition
- System Radar System
- Communication Network

#### Reasoning:

These are enumerated as application domains.

No probabilistic models, random variables, or equations are presented in the lecture slides.

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## 4. Course Team Structure

### 4.1 Instructor Information

**Dr. Dhaval Patel**

- Role: Instructor
- Office: Faculty Office (Room 210)
- Research Areas:
  - xG Networks
  - Applied ML / DL / RL / AutoML
  - Intelligent Transportation Systems
  - Life Sciences
  - Behaviour Modelling using AI
- Email: [dhaval.patel@ahduni.edu.in](mailto:dhaval.patel@ahduni.edu.in)

#### Reasoning:

This section is informational.

No assumptions or technical constructs are introduced.

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### 4.2 Teaching Assistants and Team Members

Team members listed with:

- Name

- Degree program and year
- Research/project focus
- Institutional email

**Reasoning:**

The lecture documents instructional support structure.

No exam-relevant probability content appears here.

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## **5. Active Learning and Communication Infrastructure**

### **5.1 Active Learning and Class Discussion**

- Platform: **Campuswire**
- Course Website Sections:
  - Section 1
  - Section 2

### **5.2 Purpose of Campuswire**

Explicitly stated reasons:

1. Anonymous participation to build confidence
2. Collaborative and active learning
3. Real-time feedback via polling
4. Direct messaging with instructor/TAs

**Reasoning:**

The lecture explains tooling and pedagogy.

No stochastic reasoning or formal definitions are introduced.

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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

## 6.2 TA Hours

- Mode: In person / Online
- Status: To be finalized

### Reasoning:

Scheduling information only.

No analytical or theoretical content.

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## 7. Communication with Instructor

### 7.1 Discussion and Difficulty Sessions

- Contact hours: 24×7 through Campuswire
- Best practice: Post queries on Campuswire
- Direct messages allowed for private discussions
- External engagement opportunities:
  - UGRP-8 (2026)
  - Offline projects
  - Counseling
  - Informal discussions (e.g., “Cup of Tea for 10 Min”)

### Reasoning:

This section defines communication norms.

No probability-related constructs appear.

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## 8. Important Notes

### 8.1 LaTeX Tutorial and Assignment Submission Guideline

- Explicitly mentioned as an important note
- No further technical details provided in the lecture slides

### Reasoning:

The lecture flags future technical requirements without elaboration.

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## 9. Project and Evaluation Structure (High-Level)

### 9.1 Project Weightage

- Project Kickoff: 30%

### 9.2 Milestones (M1–M6)

Listed milestones:

1. Concept Evolution Maps
2. Mathematical Modeling (RV, PMF/PDF, CDF, multivariate RVs, joint distributions)
3. Coding (Simulation + Computation)
4. Inference and randomized algorithms
5. Randomized Algorithms comparison
6. Deriving bounds and analysis

#### Reasoning:

Although probability-related terms are named, **no definitions, derivations, or explanations are provided in this lecture.**

They are mentioned only as **future project components**, not taught material.

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## 10. Explicit Absence of Technical Probability Content

### 10.1 What Is Not Present in This Lecture

The lecture **does not** contain:

- Definitions of probability
- Sample spaces
- Random variables
- PMF, PDF, or CDF derivations
- Proofs
- Worked numerical examples
- Assumptions or axioms of probability

#### Reasoning:

Despite the lecture title, this session functions as **course onboarding and orientation.**

Introducing external probability theory would violate the constraint of using only provided context.

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## 11. Summary of Lecture 3 Scope

- Lecture 3 is **administrative and motivational**.
  - It establishes:
    - Course structure
    - Learning philosophy
    - Communication channels
    - Project expectations
  - **No examinable probability theory is introduced in this lecture.**
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End of Lecture 3 Scribe