

# CSE 400 — Lecture 3 Scribe

Fundamentals of Probability in Computing

January 13, 2026

## 1 Lecture Metadata and Context

- Course Code: CSE400
- Course Title: Fundamentals of Probability in Computing
- Lecture Number: Lecture 3
- Lecture Title: Introduction to Probability Theory
- Instructor: Dr. Dhaval Patel

## 2 Motivational and Pedagogical Framing

### 2.1 Growth Mindset Emphasis

#### Growth Mindset Statements

- 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

## 3 Lecture Outline

### 3.1 General Course Information

Topics listed:

- Team
- Active Learning Platform: Campuswire

- Schedule
- Grading

### 3.2 Why Should We Learn CSE400?

Example: Daily life conversations.

### 3.3 Engineering Applications

- Speech Recognition
- Radar Systems
- Communication Networks

## 4 Course Team Structure

### 4.1 Instructor Information

- Name: Dr. Dhaval Patel
- 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

### 4.2 Teaching Assistants and Team Members

Team members are listed with name, degree program and year, research or project focus, and institutional email.

## 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**

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

## **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

## **7 Communication with Instructor**

- 24×7 discussion via Campuswire
- Public questions encouraged
- Direct messages for private discussions
- External opportunities: UGRP-8 (2026), offline projects, counseling, informal discussions

## **8 Important Notes**

LaTeX tutorial and assignment submission guidelines are explicitly mentioned.

## **9 Project and Evaluation Structure**

### **9.1 Project Weightage**

Project Kickoff: 30%

## 9.2 Milestones (M1–M6)

1. Concept evolution maps
2. Mathematical modeling (RV, PMF/PDF, CDF, joint distributions)
3. Coding: simulation and computation
4. Inference and randomized algorithms
5. Randomized algorithms comparison
6. Deriving bounds and analysis

## 10 Explicit Absence of Technical Probability Content

This lecture does not include definitions, axioms, proofs, random variables, PMFs, PDFs, CDFs, or worked numerical examples.

## 11 Summary of Lecture 3 Scope

Lecture 3 is administrative and motivational. No examinable probability theory is introduced.