

EE1080/AI1110/EE2102 Probability and Random Processes

Batch 1

Updated: 8 March, 2025

1 Course Platform

We will use google classroom to post homework problems, lecture notes, announcements and discussions. You can enroll using the join code: **a3abvwg**

2 Time and Venue

The classes will be held every Mon: 12-1pm, Tues: 9-10am and Fri: 11am-12pm at LHC-12

3 Course Overview

1. Basics of Probability
 - probability model, axioms of probability, conditional probability, basics of counting
2. Random Variables
 - discrete and continuous random variables, cdf, expectation, independence, conditional expectation etc
3. Concentration Inequalities and Limit Theorems
 - markov type inequalities, convergence of random variables and limit theorems.
4. Inference: estimation with least error with and without prior
5. Random Processes: Poisson process, Markov chains

4 Grading

1. Bi-Weekly Quizzes: 45%
 - worst two will be ignored, rest will be given equal weightage
 - Schedule:
 - Q1 Jan 20 (Monday), 6-7pm - LHC6
 - Q2 Feb 3 (Monday), 6-7pm - LHC5
 - Q3 Feb 17 (Monday), 6-7pm - LHC6
 - Q4 March 24 (Monday), 6-7pm - LHC6
 - Q5 April 7 (Monday), 6-7pm - LHC6
 - Q6 April 21 (Monday), 6-7pm - LHC6
2. Exams: 45%
 - There will be two exams, one mid semester and one towards the end.
 - Schedule:
 - E1: 5th March, 2-5pm, LHC5
 - E2: 2nd May, 10-1pm, LHC5
3. Programming Assignments: 10%
 - There will be two programming assignments. The deadlines will be 17th March and 28th April tentatively. You will given two weeks time for each assignment.
4. Homework: You will be provided practice sheets bi-weekly. They need not be submitted.

5 Expectation from the Student

- Students are expected to attend and participate in all the lectures, quizzes and exams
- Solve all the homework problems on your own
- Do not engage in any unfair academic practices.

6 References

- Introduction to Probability by Bertsekas, Tsitsiklis
- Probability, Random Variables and Stochastic Processes by Papoulis and Pillai
- Introduction to probability for data science by Stanley H. Chan
- First course on probability by Sheldon M. Ross
- List will be updated as the course progresses

7 Teaching Team

- Instructor: Myna Vajha
- TAs:
 - MTech EE, CS: Abhiram P, Aditya Kumar, Reetanshu Verma, Saketh Joshi, Shete Atul Suresh, Vaishnavi Tripathi, Vineeth Singh, Yerra Vivek Sai, Supriya Rawat
 - BTech AI, EE: Dhadheechi Ravva, Dhanush V Nayak, Deekshith Patel, Pawan Surya, Suchit Srivastava, Vemula Siddhartha