



Probability and Stochastic Processes

Course Code: AI5030 (Cross-Listed with EE5817)

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What to Expect?

- Rigorous mathematical exposition of the axiomatic theory of probability
- In-depth understanding of random variables and probability distributions
- Formal mathematical proofs (without letting them obfuscate the main ideas)

Schema for Grading

- Biweekly homework
- One quiz question (5 points) based on the homework
- Quiz duration: 30 minutes
- 6 quizzes; 4 best scores will be considered

Quizzes	20%
Mid-Term 1	20%
Mid-Term 2	20%
Final Exam	40%

Timeline

Week	No of Lectures
28 Jul – 01 Aug	2
04 Aug – 08 Aug	2
11 Aug – 15 Aug	2 (Lecture on Aug 13 in lieu of Aug 26)
18 Aug – 22 Aug	2
25 Aug – 29 Aug	1
01 Sep – 05 Sep	1 (Eid-e-Milad)
08 Sep – 12 Sep	2
15 Sep – 19 Sep	2
22 Sep – 26 Sep	2

quiz

midterm

- Mid-term 1: 24 Sep (Wed),
16:30-19:00

Week	No of Lectures
29 Sep– 03 Oct	0 (mid-semester break)
06 Oct – 10 Oct	2
13 Oct – 17 Oct	2
20 Oct – 24 Oct	2
27 Oct – 31 Oct	2
03 Nov – 07 Nov	2
10 Nov – 14 Nov	2
17 Nov – 21 Nov	1 (last lecture)

- Mid-term 2: 29 Oct (Wed),
16:30-19:00
- Final exam: 21 Nov (Friday),
14:30-17:30

References

For Engineers

- G. Grimmett & D. Stirzaker. *Probability and Random Processes*.
- Sheldon M. Ross. *A First Course in Probability*
- Anurag Kumar. *Discrete Event Stochastic Processes*
- Jean Jacod & Philip Protter. *Probability Essentials*

For Math Buffs

- A. N. Kolmogorov. *Foundations of the Theory of Probability*
- Shiryaev A. N. *Probability-1*
- H. L. Royden and P. M. Fitzpatrick. *Real Analysis*
- W. Feller. *An Introduction to Probability Theory and its Applications*
- P. Billingsley. *Probability and Measure*

Other Useful References

- *Probability Foundations for Electrical Engineers*.
NPTEL lectures by Prof. Krishna Jagannathan, IIT Madras
- Prof. B. V. Rao's [notes](#) on measure-theoretic probability.
See also his wonderful compilation of exercises [here](#)
- Prof. Manjunath Krishnapur's [course](#) on probability taught at IISc

Teaching Assistants



Kavali Sofia Sagar



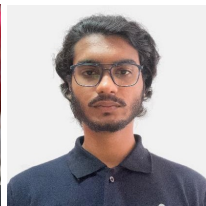
Deekshith Rathod K



Midhunkumar K A



Yashmitha Gogineni



Syed Imam Ali