General Information on the Course MA 590
Semester: January–May, 2023

1 Welcome Note

Welcome to the course Probability Theory (MA 590). The link of the course webpage is given below. You can find course materials by visiting the course webpage.

https://ayonganguly.github.io/ma590.html

2 Examinations and Grading Policy

There will be six quizzes, one mid-semester and one end-semester examinations throughout the semester. The weightage of several examinations are given in the following table. The schedule of the examinations are also mentioned in the table. Finally, the letter grades will be awarded based on total marks obtained after the completion of the semester following a relative grading scheme.

Item	Weight	Date	Time
Quiz I		Jan 18, 2023	9:00 – 9:30 hours
Quiz II	Best 4 out of 6 quizzes will be	Feb 01, 2023	9:00 – 9:30 hours
Quiz III	considered for grade calculation.	Feb 15, 2023	9:00 – 9:30 hours
Quiz IV	The weitage of each of four	Mar 29, 2023	9:00 – 9:30 hours
Quiz V	considered quizzes is 7.5%.	Apr 12, 2023	9:00 – 9:30 hours
Quiz VI		Apr 26, 2023	9:00 – 9:30 hours
Mid-semester	30%	Feb 26, 2023	9:00 – 11:00 hours
End-semester	40%	May 06, 2023	9:00 – 12:00 hours

3 Syllabus

Axiomatic definition of probability, probability spaces, probability measures on countable and uncountable spaces, conditional probability, independence; Random variables, distribution functions, probability mass and density functions, functions of random variables, standard univariate discrete and continuous distributions and their properties; Mathematical expectations, moments, moment generating functions, characteristic functions, inequalities; Random vectors, joint, marginal and conditional distributions, conditional expectations, independence, covariance, correlation, standard multivariate distributions, functions of random vectors; Modes of convergence of sequences of random variables, weak and strong laws of large numbers, central limit theorems; Introduction to stochastic processes, definitions and examples.

4 Reading Materials

- Text Books: Sheldon M. Ross, Introduction to Probability Models, *Elsevier*.

5 Resource Persons

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