

Semester	AUG 2023
Open to semester	3
Course code	<b>MT2113</b>
Course title	<b>Introduction to Probability</b>
Credits	3 /
Course Coordinator & participating faculty (if any)	Moumanti Podder, Kaneenika Sinha
Nature of Course	Lectures and Tutorials
Pre-requisites	No pre-requisites stipulated by the institute.
Objectives (goals, type of students for whom useful, outcome etc)	This course provides an introduction to probability and statistics with applications. Topics included are basic probability models; random variables; discrete and continuous probability distributions.
Course contents (details of topics /sections with no. of lectures for each)	Random experiments, events, axiomatic definition of probability, equally likely outcomes, conditional probability, independence, Bayes theorem, random variables, Cumulative distribution function, some standard discrete and continuous variables, mathematical expectation, variance, moments, moment generating function, Chebyshev's inequality, functions of a random variable, their distributions and moments, joint, marginal and conditional distributions, independence of random variables, Law of large numbers, Central Limit Theorem, sampling distributions. Conditional expectation, Random walk, Markov chains, Introduction to chi square and T distributions (as sampling distributions derived from normal iid). Whether we can cover all these topics will depend on how much time we have.
Evaluation /assessment	End-Sem Examination-30% Mid-Sem Examination-30% Others-Continuous assessment: 40% %
Suggested readings (with full list of authors, publisher, year, edn etc.)	1) A First Course in Probability: S. Ross (2012) Pearson. 2) A Course in Probability Theory, Kai Lai Chung. 3) Probability and Statistics with examples using R, Siva Athreya, Deepayan Sarkar and Steve Tanner.