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| Semester | AUG 2022 |
| Open to semester | 3 |
| Course code | **MT2113** |
| Course title | **Introduction to Probability** |
| Credits | 3 / |
| Course Coordinator & participating faculty (if any) | Anup Biswas*, Mainak Poddar |
| Nature of Course | Lectures and Tutorials |
| Pre-requisites | Calculus I and II |
| 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) |
| Evaluation /assessment | End-Sem Examination-40% <br> Mid-Sem Examination-40% <br> Others-Quiz and Assignments 20%% |
| Suggested readings (with full list of authors, publisher, year, edn etc.) | 1. A First Course in Probability: S. Ross (2012) Pearson <br> 2. Introduction to Probability and Statistics: V.Rohtagi and A.K. Saleh (2000) Wiley-Interscience <br> 3. Probability and Statistical Inference: Hogg,Tanis and Rao (2007) Pearson Education <br> 4. Introduction to Probability: J.Blitzstein and J. Hwang , CRC press |