

# MATH205: Probability

## Tentative Syllabus

**TEXTBOOK:** Introduction to Probability by **Srinivas R. Chakravarthy**  
Class Lecture Notes, Kettering University.

**SOFTWARE:** MINITAB, Release 11/12, Applied Mathematics Lab

Topic	Section No(s)	Homework Problems (to be assigned in the class)
What is probability? History of probability	1.1-1.2	
Applications of probability	1.3	
Basic concepts	2.1	
Review of Set theory	2.2	
Three definitions of probability	2.3	
Basic counting principles	2.4	
The Law of Large numbers	2.5	
INTRODUCTION TO MINITAB; Probability Simulation	Supplement	
conditional probability	3.1	
Bayes' rule and its applications	3.2	
Definitions and properties of independence	3.3	
Concept of mutual independence	3.4	
Random variables: Examples and classifications	4.1-4.2	
Probability functions: PMF, PDF, CDF	4.3	
Expected value of a random variable	5.1	
Variance and Standard deviation of a random variable	5.2	
Chebyshev's inequality	5.3	
Moments and other measures of a random variable	5.4	
Uniform distribution	6.1	
Binomial distribution	6.2	
Hypergeometric distribution	6.3	
Poisson distribution	6.4	
Geometric distribution	6.5	
Pascal (or Negative) binomial distribution	6.6	
Uniform distribution	7.1	
Normal or Gaussian distribution	7.2	
Normal approximations	7.2	
Exponential distribution	7.3	

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Rayleigh distribution	7.4	
Bivariate random variables Joint probability functions	8.1-8.2	
Marginal probability functions	8.3	
Conditional probability functions	8.4	
Independent random variables	8.5	
Measures of bivariate random variables	8.6	
Bivariate normal distribution	8.7	
n-Dimensional random variables	8.8	
Central limit theorem	8.9	
Functions of one random variable	9.1-9.2	