

**PROBABILITY (MATH 4810/5210)**  
A STUDY GUIDE FOR EXAM 2

1. Discrete distributions: uniform, geometric, negative binomial, Poisson, hypergeometric
2. Continuous distributions: uniform, exponential, gamma, normal, Cauchy.
3. Distributions of functions of random variables.
4. Expected value and its properties. Expectations of functions of random variables. Expectations of products of random variables.
5. Variance, its properties, standard deviation, variance of a sum of independent random variables.
6. Expectation and variance for the important distributions.
7. Chebyshev inequality
8. Law of large numbers