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	Elementary Probability-E2		
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Probability theory is indispensable for understanding and describing phenomena influenced by randomness, as arise across the natural and social sciences. Furthermore, it is one of the foundations of mathematical statistics. This lecture course will provide a fundamental introduction to the modern theory of probability.

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1.To understand fundamental notions in probability theory such as events, random variables, independence, conditional probability, expectation, variance and correlation.
2. To understand when and how typical distributions, such as the normal distribution and Poisson distribution, appear, and mathematical treatments of those distributions.
3. To understand limit theorems, such as law of large numbers and central limit theorem. In particular, to understand when and how those theorems can be applied.

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1.   Introduction to the mathematical theory of probability (2 to 3 weeks): probability spaces, events, independence and conditional probability.
2.   Introduction to the notion of random variables and related properties (4 weeks): random variable, distribution, expectation, variance, covariance, correlation, independence of random variables and Chebyshev's inequality
3.   Important examples of distributions (3 weeks); Bernoulli distribution, binomial distribution, Poisson distribution, geometric distribution, uniform distribution, normal distribution, exponential distribution.
4.   Limit theorems (3 to 4 weeks): law of large numbers, central limit theorem.
5.   Random walks and Markov chains (supplementary).

A total of 14 lectures and one feedback class will be given.

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(Eligible students) mainly the sciences of the second grade. Students are required good understanding of both calculus and linear algebra.

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The evaluation of the course will mainly take into account of the result of final examination, but will also include homework and presentation elements.
The details of the evaluation system will be given by the lecturer at the first lecture.

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Strongly recommend to solve exercises given in class to have a deeper understanding of contents of lectures.

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Office hours are by appointment.