

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري لنظرية الاحتمالية

	Material Covered
Week	Syllabus
1	Combinatorial Analysis, The Basic Principle of Counting, Permutations, Combinations, Multinomial Coefficients
2	Axioms of Probability, Sample Space and Events, Axioms of Probability , Some Simple Propositions, Sample Spaces Having Equally, Probability as a Continuous Set, Probability as a Measure of Belief
3	Conditional Probability and Independence, Conditional Probabilities, Bayes's Formula, Independent Events, $P(\cdot F)$ Is a Probability .
4	Random Variables, Random Variables, Discrete Random Variables, Expected Value, Expectation of a Function of a Random Variable. Variance 4.6 The Bernoulli and Binomial Random Variables, Properties of Binomial Random Variables, Computing the Binomial Distribution Function, The Poisson Random Variable, Computing the Poisson Distribution Function, The Geometric Random Variable, The Negative Binomial Random Variable, The Hypergeometric Random Variable, The Zeta (or Zipf) Distribution, Expected Value of Sums of Random Variables, Properties of the Cumulative Distribution Function
5	<u>Midterm</u>
6	Continuous Random Variables, Expectation and Variance of Continuous Random Variables, The Uniform Random Variable, Normal Random Variables, The Normal Approximation to the Binomial Distribution, Exponential Random Variables, Hazard Rate Functions, Other Continuous Distributions, The Gamma Distribution, The Beta Distribution
7	Limit Theorems, Chebyshev's Inequality and the Weak Law of Large Numbers, The Central Limit Theorem, The Strong Law of Large Numbers, Other Inequalities, Bounding the Error Probability When Approximating a Sum of Independent Bernoulli Random Variables by a Poisson Random Variable
8	The Poisson Process, Markov Chains, Surprise, Uncertainty, and Entropy, Coding Theory and Entropy,
9	General Techniques for Simulating Continuous Random Variables, The Inverse Transformation Method, The Rejection Method, Simulating from Discrete, Distributions, Variance Reduction Techniques, Use of Antithetic Variables Variance Reduction by Conditioning, Control Variates
10	Combinatorial Analysis, The Basic Principle of Counting, Permutations, Combinations, Multinomial Coefficients
11	Axioms of Probability, Sample Space and Events, Axioms of Probability , Some Simple Propositions, Sample Spaces Having Equally, Probability as a Continuous Set, Probability as a Measure of Belief
12	Conditional Probability and Independence, Conditional Probabilities, Bayes's Formula, Independent Events, $P(\cdot F)$ Is a Probability .
13	Random Variables, Random Variables, Discrete Random Variables, Expected Value, Expectation of a Function of a Random Variable. Variance 4.6 The Bernoulli and Binomial Random Variables, Properties of Binomial Random Variables, Computing the Binomial Distribution Function, The Poisson Random Variable, Computing the Poisson Distribution Function, The Geometric Random Variable, The Negative Binomial Random Variable, The Hypergeometric Random Variable, The Zeta (or Zipf) Distribution, Expected Value of Sums of Random Variables, Properties of the Cumulative Distribution Function

14	<u>Midterm</u>
15	Continuous Random Variables, Expectation and Variance of Continuous Random Variables, The Uniform Random Variable, Normal Random Variables, The Normal Approximation to the Binomial Distribution, Exponential Random Variables, Hazard Rate Functions, Other Continuous Distributions, The Gamma Distribution, The Beta Distribution