Probability and Probability Distributions I

Upon completion of the course Probability and Probability Distributions I, students will be able to:

1. Define probability in the context of random experiments, sample space, and events using classical, statistical, and axiomatic approaches.
2. Apply the rules of probability to determine the probability of at least one event out of n events, as well as the probabilities of at least m and exactly m out of n events.
3. Understand and apply the concept of conditional probability, theorems of compound probability, total probability, Bayes theorem, and independence of events.
4. Describe the concept of univariate probability distributions, including random variables, probability distribution functions, cumulative distribution functions, moments, quantiles, measures of central tendency, dispersion, skewness, and kurtosis.
5. Analyze bivariate probability distributions, including discrete and continuous joint distributions, probability mass and density functions, cumulative distribution functions, marginal and conditional distributions, independence, correlation, and linear regression.

These outcomes encompass knowledge, comprehension, application, analysis, and evaluation levels of Bloom's taxonomy to ensure a thorough understanding and practical application of probability and probability distributions concepts.

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