Mathematical Statistics

This Book is the second edition that intended to be textbook studied for undergraduate/ postgraduate course in mathematical statistics.

In order to achieve the goals of the book, it is divided into the following chapters. Chapter One introduces events and probability review. Chapter Two devotes to random variables in their two types: discrete and continuous with definitions of probability mass function, probability density function and cumulative distribution function as well. Chapter Three discusses mathematical expectation with its special types such as: moments, moment generating function and other related topics. Chapter Four deals with some special discrete distributions: (Discrete Uniform, Bernoulli, Binomial, Poisson, Geometric, Negative Binomial and Hypergeometric) with their mathematical formulas of p.m.f., C.D.F. and m.g.f. Chapter Five deals with some special continuous distributions: (Uniform, Normal, Exponential, Gamma and Beta) with their mathematical formulas of p.m.f., C.D.F. and m.g.f. Many solved examples are intended in this book (obtaining mean and variance of distributions by m.g.f.). Chapter Six introduces univariate discrete and continuous transformations, i.e., one dimensional variables and their yielding probability distributions. Chapter Seven devotes to truncation of distributions from left, right or both sides, beside the probability distribution of order statistics. Chapter Eight discusses mathematical features of joint, marginal and conditional distributions, as well as independency via covariance and correlation of bivariate distributions. Chapter Nine deals with some special topics such as getting distribution for some transformation from multidimensional random variables by using moment generating function (m.g.f.) and cumulative distribution function (C.D.F.)

Many solved examples (about 100) are intended in this book, in addition to a variety of unsolved relied problems (about 150) at the end of each chapter to enrich the statistical knowledge of our readers.

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