

**SOUTHERN UNIVERSITY AND A&M COLLEGE  
DEPARTMENT OF MATHEMATICS**

**MATH 276  
STATISTICS FOR THE MATHEMATICAL SCIENCES  
OR ENGINEERING MAJORS**

**COURSE DESCRIPTION:** An introduction to the basic concepts of statistics with emphasis placed on descriptive statistical analysis, probability, discrete random variables, continuous random variables, and sampling distributions.

**Instructor's Emphasis:** The instructor will emphasize problem solving, critical thinking and communicating both orally and in writing. Emphasis will also be placed on the understanding of ideas. The meaning of concepts will be viewed in verbal, graphical and numerical terms. This course will provide the students with the essential concepts and skills in statistics and probability to enable them to read and understand research reports; it will serve as a springboard for further studies in statistics and probability

**Intended audience:** This is a first course in statistics for students in the mathematical and computer sciences, engineering, and those who are prospective teachers of mathematics.

**Course Credit:** 3 hours

**Pre-requisite:** Completion of Math 265 with a grade of C or better

Text: Mathematical Statistics with Applications. Wackerly, Mendenhall and Scheaffer 6<sup>th</sup> edition

**General Goals:**

1. To provide the students with a clear understanding of what real life-situation problems statistics is concerned about
2. To provide the students the skills to formulate and solve problems involving uncertainty by using probability models

**Learning Outcomes:** Upon successful completion of the course, the student will be able to:

- (a) Illustrate the concept of population, sample, randomness by giving examples of real life problems statistics is used to solve
- (b) Demonstrate skill in Data analysis by applying graphical tools and summary statistics for a data set and by computing measures of central location and distribution spread;
- (c) Exhibit a clear understanding of the basics of probability theory by identifying the sample space of a random process, its events as subsets of the

sample space, the probability of events a set function, the properties of the probability function and its application to the computation of probabilities of events; independence of events

- (d) Identify random variables and its associated probability distribution, its mean and variance, its moments and moment generating functions; independent random variables
- (e) Demonstrate skill to solve some scientific problems by adopting a suitable Probability distributions -either discrete or continuous to model the random process being studied;
- (f) Illustrate knowledge of widely used discrete probability distributions such as the Uniform discrete, Binomial, Geometric, Hyper geometric, Poisson distribution by computing the associated probabilities under the distribution, also by identifying their parameters and their profiles.
- (g) Recognize the different continuous probability distributions such as the Rectangular-Uniform distribution, the Gamma, Beta, the Exponential distributions, and the ubiquitous Normal or Gaussian distribution
- (h) Recognize the central role of the Normal distribution in probability and statistics—both in theory and applications—due to the Central Limit Theorem by performing probability computations of the average of a random sample from a distribution
- (i) Exhibit an understanding of the concept of sampling distribution of most commonly used summary statistics such as the sample average and sample variance by using their distribution in statistical inference problems

**Calculator Requirement:** A scientific graphing calculator will be a useful though not an indispensable tool in the course. Any calculator with capabilities comparable to those of TI- 83 will do. You may use anyone of these calculators in class work, tests, etc., and its user's manual, wherever and whenever appropriate.

**Attendance Policy:** Regular attendance in a math class is a necessary ingredient for the successful completion of the course. Credit for attendance will be reflected in the points earned from seatwork.

**On Academic Honesty and Integrity:** As spelled out in the Students' Handbook strict adherence to honesty and integrity in work submitted for credit is expected from every student enrolled in this course.

**Disability Statement:** Students that are considered as having a disability are to provide the professor with a letter from the Department of Special Education stating the appropriate accommodations required of this course. If you have a documented disability, then please discuss it with personnel at 771-3950 in Room 125 of Blanks Hall.

**Suggested or Required Reading:** See professor.

**Grading Policy:** See professor.