Tennessee Technological University
Mathematics Department

MATH 3470: Introductory Probability and Statistics

I. COURSE DESCRIPTION FROM CATALOG:

Probability, random variables, discrete and continuous distributions and their simulation, elementary sampling theory, and estimation with an overall emphasis on simulation of random processes (Not allowed as a mathematics sequence; no credit allowed for mathematics and computer science majors after having taken MATH 4480.)
Lec. 3 Cr. 3.

II. PREREQUISITE(S):

C or better in MATH 1920.

III. COURSE OBJECTIVES(S):

To introduce students to the concepts of calculus based probability and statistics with applications in engineering and other applied sciences.

IV. STUDENT LEARNING OUTCOMES:

Upon successful completion of the course students will be able to apply the basic techniques of descriptive statistics, including creating and interpreting histograms, the five-number summary, and z-scores; be able to interpret and compute probabilities of simple events related to an experiment involving a univariate random variable and apply the concepts of conditional probability and independence; know the central limit theorem and be able to apply it to real-life situations; and be able to make statistical inferences for the mean(s), proportion(s), and variance(s).

V. TOPICS TO BE COVERED:

A. INTRODUCTION TO STATISTICS AND DATA ANALYSIS
B. PROBABILITY
C. RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS
D. MATHEMATICAL EXPECTATION
E. SOME DISCRETE PROBABILITY DISTRIBUTIONS
F. SOME CONTINUOUS PROBABILITY DISTRIBUTIONS
G. FUNCTIONS OF RANDOM VARIABLES
H. FUNDAMENTAL SAMPLING DISTRIBUTIONS AND DATA DESCRIPTION
I. ONE- AND TWO-SAMPLE ESTIMATION PROBLEMS
J. ONE- AND TWO-SAMPLE TESTS OF HYPOTHESES
K. SIMPLE LINEAR REGRESSION AND CORRELATION

VI. ADDITIONAL INFORMATION:

VII. POSSIBLE TEXTS AND REFERENCES:

Probability and Statistics for Engineers and Scientists, by R. E. Walpole, Raymond H Myers, Sharon L Myers and Keying Ye, 9th edition.

VIII. ANY TECHNOLOGY THAT MAY BE USED:

Calculator, R with Rstudio GUI

IX. STUDENT ACADEMIC MISCONDUCT POLICY:

Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at Policy Central.

X. DISABILITY ACCOMMODATION:

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at Policy Central.