Tennessee Technological University
Mathematics Department

MATH 1530: Introductory Statistics

I. COURSE DESCRIPTION FROM CATALOG:

distributions, histograms, and frequency polygons. Probability relating to elementary sample spaces, events, conditional probability, discrete and continuous type random variables, mathematical expectation, and normal probability. Inferential statistics relating to the confidence intervals and hypothesis tests related to the mean and proportion. Lec. 3. Cr. 3.

II. PREREQUISITE(S):

Two years of high school algebra and one year of high school geometry.

III. COURSE OBJECTIVE(S):

To introduce the student to some of the foundations of probability and statistics like probability distributions, mathematical expectation and hypothesis testing. Also, it is a desire of this course to equip the student with the knowledge and background to understand hypothesis testing as related to the mean and proportion for future use in any research on the part of the student.

The goal of the general education mathematics requirement is to enhance students' abilities to utilize mathematics. Students will demonstrate

1. the ability to use mathematics to solve problems.
2. the ability to create or analyze graphs (or other mathematical representations of data/relationships).
3. proficiency in mathematical computations/algorithms.
4. understanding of mathematical concepts.

IV. STUDENT LEARNING OUTCOMES:

Upon successful completion of this course a student will: know the fundamentals of probability and be able to perform simple probability calculations; be able to calculate descriptive statistical information about a set of given data; be able to produce a visual summary of a set of given data; be able to describe the distribution of a set of given data;

- Measure of Central Tendency
- Measures of Variation
- Measures of Position
- Exploratory Data Analysis

Association
- Response and Explanatory Variables
- Association Between Qualitative Variables
- Association Between Qualitative Variables

Probability
- Sample Spaces and Probability
- The Additions Rules for Probability
- The Multiplication Rule and Conditional Probability

Probability Distributions
- Discrete Probability Distributions
- Mean, Variance, and Expectation
- The Binomial Distribution
- The Normal Distribution

Sampling Distributions
- Sampling Distribution of a Sample Proportion
- Sampling Distribution of a Sample Mean
- The Central Limit Theorem

Confidence Intervals and Sample Size
- Confidence Intervals for the Mean (SD known and n>30) and Sample Size
- Confidence Intervals for the Mean (SD unknown and n<30)
- Confidence Intervals and Sample Size for Proportions

Hypothesis Testing
- Steps in Hypothesis Test
- Hypothesis Test for the Population Proportion
- Hypothesis Test for the Population Mean (SD known and n>30)
- Hypothesis Test for the Population Mean (SD unknown and n<30)

VI. ADDITIONAL INFORMATION:

Basically lecture with possibly minor computer lab demonstrations included.

VII. POSSIBLE TEXTS AND REFERENCES:

(Open Educational Resources
Introductory Statistics, https://openstax.org/details/books/introductory-statistics
OpenIntro Statistics, https://www.openintro.org/book/os/

VIII. 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