Tennessee Technological University
Mathematics Department

MATH 3070: Statistical Methods I

I. COURSE DESCRIPTION FROM CATALOG:

Introduction to parametric statistical methods with some non-parametric alternatives, sampling, probability, Type I and Type II Error, sample size estimation, confidence interval estimation, and test hypotheses using normal, Student's t, Snedecor's F, Chi-Square, and the binomial distributions linear regression, analysis of variance, and data analysis utilizing statistical software. Lec. 3-3. Cr. 3-3.

II. PREREQUISITE(S):

It is recommended that students complete MATH 1130 with a C or better before taking MATH 3070.

III. COURSE OBJECTIVES(S):

Ability to apply basic statistical methodology for data analysis that is applicable in a variety of scientific disciplines. Ability to use computer programs to summarize and present data for statistical analysis.

IV. STUDENT LEARNING OUTCOMES:

Upon successful completion of the course the student will identify variable types and implement appropriate numerical and graphical descriptions using software; compute probabilities using the normal distribution; compute and interpret t-based confidence intervals for a single mean, the difference between two means, and the mean stemming from paired data; perform and interpret a p-value hypothesis test for one and two sample means; and apply basic probability rules that use independence conditioning and Bayes' Theorem.

V. TOPICS TO BE COVERED:

1. Introduction to Statistics
2. Summarizing and Graphing Data
3. Statistics for Describing, Exploring, and Comparing Data
4. Probability
5. Probability Distributions
6. Normal Probability Distributions
7. Estimates and Sample Sizes
8. Hypothesis Testing
9. Inferences from Two Samples

VI. ADDITIONAL INFORMATION:

VII. POSSIBLE TEXTS AND REFERENCES:

Introduction to Statistical Data Analysis for the Life Sciences 2nd ed. by Ekstrom and Sorensen, CRC Press, ISBN 9781482238938.

OpenIntro Statistics by Dietz, Barr, and Cetinkaya-Rundel. We will use the second edition which is freely distributed online and can be found at http://www.openintro.org/stat/textbook.php

VIII. ANY TECHNOLOGY THAT MAY BE USED:

R and R Studio which can be run on a Windows, Mac, or Linux platform.

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.