Tennessee Technological University
Mathematics Department

MATH 6070-6080: Applied Linear Statistical Methods I-II

I. COURSE DESCRIPTION FROM CATALOG:

Regression analysis in the context of classical linear, nonlinear, generalized linear, and time series models. Lec. 3-3. Cr. 3-3.

II. PREREQUISITE(S):

MATH 6070: Consent of instructor.
MATH 6080: B or better in MATH 6070 or consent of instructor

III. COURSE OBJECTIVE(S):

6070

1. To introduce the theory of modern regression analysis
2. To incorporate statistical techniques in the analysis of real world data
3. To acquaint students with statistical computing packages

6080

1. To generalize the normal error multiple regression model to data that are distributed as binary, Poisson, or other possible parametric setting, in addition to covering nonlinear models and regression models with dependent errors such as those covered in time series analysis
2. To incorporate statistical techniques in the analysis of real world data
3. To acquaint students with statistical computing packages

IV. STUDENT LEARNING OUTCOMES:

Students in this course will

1. Obtain the necessary background material in this calculus-based linear statistical models course to prepare them to properly use the regression in their major.
2. Learn the critical thinking skills necessary for the application of regression and the diagnostics involved.
3. Have a better appreciation of statistics as a field of study and the people who helped create that field.
4. Acquire self-learning skills by the virtue of the course material and the need for in-depth research to answer many of the problems.

V. TOPICS TO BE COVERED:

We will cover single and multivariate models assuming normality and independence in the error terms. Topics related to these models include estimation and prediction, diagnostics and remedial measures, model selection and validation. These topics will lay the ground work for additional linear models in future courses where the normality and independence assumptions may not be valid (i.e. logistic regression, time series, generalized linear models, etc.).

VI. POSSIBLE TEXTS AND REFERENCES:

Applied Linear Statistical Models, by Neter, Kutner, Nachtsheim, and Wasserman, 5th edition, Irwin

VII. ADDITIONAL INFORMATION:

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 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.

XI. DISABILITY ACCOMMODATION

Students with a disability requiring accommodations should contact the Accessible Education Center (AEC). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The AEC is located in the Roaden University Center, Room 112; phone 931-372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at Policy Central.