Course No.	Course Title	Theory	Practice	Credit	Prerequisite(s)
Stat 442	Programming & Simulation	2	2	3	Stat 403

Objectives

This course requires that you have some knowledge of statistical methods of estimation and hypothesis testing from a previous statistics class (STAT 302, STAT 403). This is not really an advanced programming class but merely an introduction to a very useful statistical package and uses it to perform some simulation tasks. The objectives of this course are to use the simulation technique as a tool to explain and verify most of the theorems that were studied by students during their theory and method courses.

Course Description:

- Introduction to statistical programming.
- Introduction to data analysis.
- Introduction to data manipulation.
- Introduction to simulation.
- Simulating one sample with different distributions.
- Simulating more than one sample with different distributions.
- Simulating the relationships among some of the distributions.
- Simulating the Central Limit Theorem.
- Simulating T-Test for two samples with and without satisfying the assumptions.
- Simulating One-Way ANOVA model with and without satisfying the model assumptions.
- Simulating Simple Linear Regression model with and without satisfying the model assumptions.

Main text books : (book can be chosen among these books according to statistical program that will be used**)**

1. Xitao Fan, Akos Felsovalyi, Stephen A. Sivo, and Sean C. Keenan (2007). SAS for Monte Carlo Studies: A Guide for Quantitative Researchers, SAS Institute Inc., Cary M, NC, USA.

2. Rebecca J. Elliott (2007). Learning SAS in the Computer Lab, SAS Institute Inc., Cary M, NC, USA.

3. Applied Statistics and the SAS Programming Language

4. Martinez, W. and Martinez, A. (2002). Computational Statistics Handbook with MATLAB, Chapman & Hall.

5. Verzani, J. "Using R for Introductory Statistics", Chapman & Hall/CRC; 1st ed.