ISYE 2028 – Basic Statistical Methods

Class Time and Location:  TBA
Instructor:  Dr. Jye-Chyi (JC) Lu
Email: jclu@isye.gatech.edu
Instructor Office Hours:  TBA

Note:  Any statistics book is fine for this class.  We use many notes posted in T-square.

Prerequisite: ISYE 2027 (Note that students at GT-Lorraine can take both ISyE 2028 and 3039 together).

Course Description

Point and interval estimation of systems parameters, statistical decision making about differences in system parameters, analysis and modeling of relationships between variables.

The course will be instructed under the following three components.

1. Regression, Variable Selection and Model Building,
2. Design of Experiment, and ANOVA, and
3. Basic Statistical Inference (Estimation and Hypothesis Testing)

The course will cover the following broad topics:

(1) Descriptive Techniques - Graphical Methods: Scatter-plots, Histograms, Stem and Leaf Plots, Box Plots
(2) Descriptive Techniques - Statistical Methods: Mean, Mode, Variance, Range, Quartiles, IQR, Standard Deviation
(3) The Population and The Sample (Observations and Sampling): Sampling Distributions, Simple Random Sampling
(4) Modeling: Probability Distributions, Bayes' theory, Simulation.
(5) Random Variables: Bernoulli, Binomial, Poisson, Normal
(6) Estimation and Inference: Sample Estimates, Hypothesis Testing, Confidence Intervals.
(7) The Linear Model: Correlation, Regression, Variable Selection, Modeling Building
(8) Analysis of Variance (ANOVA) and Design of Experiment

Software

Our UG computer lab has Minitab, which is as easy as Excel to use.  Free statistical software package R will be used.  It can be downloaded at http://cran.r-project.org/

Grade Distribution (might be adjusted):

Exam #1 (25%), Exam #2 (25%) and Exam #3 (27%),  Computer Project (15%),  Attendance (4% - attendance check for every lecture – students are allowed to miss up to 3 attendance),  In-class Exercise (3%), Instructional Survey (1%)