ISyE 6414 (Section A) – Statistical Modeling and Regression

1. Instructor: Dr. Jye-Chyi (JC) Lu
2. Class time and Location: 12:00 – 13:15 pm, TR, at MRDC#2404
3. Reference/Textbook: J. J. Faraway, *Linear Models With R* (2nd edition)(1st edition is okay, but lecture notes will refer to the 2nd edition).
4. Office Hours and Location: 10:30 – 12:30 am TR at Groseclose #312
5. Email: jclu@isye.gatech.edu (I will be the main contact for this course)
6. Class web page: We will use GT's T-squares for class materials
7. Teaching Assistant: TBA
8. Course Topics: Simple Linear Regression, Multiple Regression, Nonlinear Regression, Generalized Linear Models (GLM), Design of Experiment (DOE), Analysis of Variance (ANOVA) and EWMA.
9. Software Application Projects: Students will use software such as R, Excel, Minitab, SAS, SAS - JMP, Matlab and other publically available statistical packages to conduct a few hands-on data analysis projects on (a) model fitting, (b) variable selection, (c) EWMA.
10. Enrichment Topics: Since the students are coming from various ISyE and GT programs, their needs for this course are different. Students who focus on supply chain management and logistics might need more information about EWMA and time-series (see ISyE 6402 course for details). Students in the manufacturing field need deeper DOE (see ISyE 6405, 6413 for details). For Ph.D. students focusing on research there are ISyE 7401 (advanced statistical modeling) and ISyE 7406 (data mining and statistical learning) courses.For MS or Ph.D.-statistics students deeper understanding of statistical methods and theory is needed. This class will design *enrichment projects* for students to review and summarize key concepts in their selected topics for getting some exposure of these important subjects.
11. Grade Distribution:
    a) Simple and Multiple Linear Regressions, Nonlinear Regression, GLM (Exam #1 – 25%)
    b) Multiple Regression and EWMA Forecasting (*two* Computer Projects – 10%)
    c) DOE and DOE-Analytics (RSM and RPD) (Exam #2 – 21%)
    d) ANOVA, Nonparametric Regression, Spline and EWMA (Exam #3 – 25%).
    e) Enrichment Project (*three* Team Reading Project – 15%)
    f) Attendance and Survey: 3% (6 attendance will be checked *randomly*; students are allowed up to 2 missing attendance). 1% will be allocated to instructional survey.

    Remark: To lessen student's workload, there are past exam problems and project reports posted in the T-square. They shall be used as reference only, i.e., students are supposed to present their only study results.