IEOR 165 – Engineering Statistics, QC, and Forecasting
Spring 2019

Instructor: Anil Aswani
4119 Etcheverry
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GSI: Matt Olfat
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Lectures: TuTh 1230-200P, 105 North Gate

Discussions: Section 1: W 4-5P, 3108 Etcheverry
Section 2: F 4-5P, 3106 Etcheverry

Website: http://ieor.berkeley.edu/~ieor165/

Optional Textbook: Introduction to Probability and Statistics for Engineers and Scientists, by Sheldon Ross

Prerequisites: IEOR 172 or STAT 134 or an equivalent course in probability theory

Grading: Project (20%); homeworks (20%); midterm (20%); final exam (40%)

Midterm: Tuesday, Mar 19, 2019 1230-200P

Final Exam: Thursday, May 16, 2019 3-6P

Description: This course will introduce students to basic statistical techniques such as parameter estimation, hypothesis testing, regression analysis, analysis of variance. Applications in forecasting and quality control.

Outline: Specific topics that will be covered include:
• Regression – Basic optimization; maximum likelihood estimation; least squares regression; high-dimensional regression; support vector machines (SVM’s) (about 6 weeks)

• Forecasting – ARAR algorithm; Holt-Winters algorithm; Holt-Winters seasonal algorithm (about 1 week)

• Hypothesis Testing – Review of probability; $t$-test; confidence intervals; Mann-Whitney $U$ test; multiple testing; ANOVA; Kruskall-Wallis test; likelihood ratio tests; quality control (about 6 weeks)