IEOR 165 – Engineering Statistics, QC, and Forecasting
Spring 2018

Instructor: Anil Aswani
4119 Etcheverry
Office hours – Tu 230-330P, Th 11-12P
aaswani@berkeley.edu

GSI: Pedro Hespanhol
4176A Etcheverry
Office hours – TuTh 3-4P
pedrohespanhol@berkeley.edu

Lectures: TuTh 1230-200P, 159 Mulford Hall

Discussions: Section 1: W 4-5P, 141 McCone
Section 2: F 4-5P, 310 Hearst Mining

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 20, 2018 1230-200P

Final Exam: Thursday, May 10, 2018 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)