Advanced Regression Analysis, Spring 2021

Instructor: Eun Ryung Lee, DASAN 412, 760-0492, erlee@skku.edu

Course Goals: The goal of this course is to overview basic techniques for regression analysis and related several topics. It includes to give how some theoretical properties of the resulting estimator can be derived.

Text: *Introduction to Linear Regression Analysis*, Fifth eidition, by Mongomery, Pack & Vining

Prerequisites: Introduction to mathematical statistics/statistical inference, Introduction to regression analysis, matrix algebra

Homework: To be assigned periodically via the i-campus. Students do not have to submit their solutions but there will be a few quizzes made up out of the homework problems.

Quizzes: quizzes are scheduled (dates will be announced later). One lowest score will be dropped.

Exams: One midterm exam (will be announced later) and one final exam (scheduled on 06/01, Tue)

Course grade: Midterm (40%), Final (45%), Quizzes/Attendance/Attitude (15%)

* The basic attendance policy for the course follows the university regulation. For example, students who are absent from class 4 or more times will be assigned a grade of "F".

Office hours: will be announced later via the i-campus

Course Topics:

-Review of simple linear regression, matrix algebra and multivariate normal distribution

-Multiple linear regression

-Model adequacy Checking

-Transformation

-Regression diagnostic,

-Indicator Variables

-Multicollinearity

-Variable selection and model building

If time is allowed

-Polynomial regression models

-Nonlinear regression

-Generalized linear regression

-Quantile linear regression

-Penalized linear regression (LASSO,...)