326.520A: Applied Statistics

Spring 2019

January 16, 2019

Instructor   Sungkyu Jung
Department of Statistics, Seoul National University
Email: `sungkyu@snu.ac.kr`   Office: Building 25, Room 436   Phone: 880-6578
Website: `http://stat.snu.ac.kr/sjung/`
Office Hours: *By appointment. You can always talk to me after class.*

TA   Seowon Choi
Email: `chsw1@snu.ac.kr`
Office Hours: TBA.

Course description: The course covers a solid theoretical background for the linear models. We will closely follow the textbook but not limited to the content of the textbook. Lecture notes will be also provided. Some application homework using R will be expected.

Textbook:

- Linear models in Statistics by Alvin Rencher and Bruce Schaalje, Wiley, 2008.

Course website: eTL at `http://etl.snu.ac.kr/`

Course Requirements and Grading:

- Homework 25% –Infrequent collection. Grading scale TBD.

- Midterm exam 30%

- Final exam 40%

- Attendance and class participation 5%

Tentative course outline:

- Introduction

- Review of Matrix algebra (Chapter 2)

- Distribution of quadratic forms (Chapter 5)

- Simple linear regression (Chapter 6)

- Multiple regression: Estimation (Chapter 7)

- Multiple regression: Hypothesis testing and interval estimation (Chapter 8)

- Model selection and diagnostics (Chapter 9)

- ANOVA (Chapter 12)

- Robust regression, Biased regression

- Computational algorithms: MM algorithm, EM algorithm

- Generalized Linear Models

- Mixed effects models, Generalized linear mixed effect models

Remark   The instructor reserves the right to make any changes he deems academically advisable.