

# Multivariate Statistical Analysis

2018 Spring

School of Industrial Management Engineering, Korea University

## 1. Course Description

- This module aims to provide students with the theoretical and practical knowledge and skills to obtain, modify, and analyze a large amount of data from various sources.
- Topics covered in this module include basic association rules, supervised learning algorithms (classification & regression) such as k-nearest neighbor, decision tree, artificial neural networks, and unsupervised learning algorithms (clustering) such as K-Means clustering and hierarchical clustering.
- This module comprises lectures and lab exercises with R to develop the practical skills.

## 2. Lecturer

- Pilsung Kang, Innovation Hall 801A, 02-3290-3383, [pilsung\\_kang@korea.ac.kr](mailto:pilsung_kang@korea.ac.kr)
- Course homepage: <https://github.com/pilsung-kang/multivariate-data-analysis>

## 3. Time, Place, and Textbook

- Time: Tue 14: 00~15:15 (75 min.), Thu 14:00~15:15 (75 min.)
- Place:
  1. New Engineering Hall 224 (산업경영공학부 전산실)
- Textbook: No single textbook is required. Lecture slides and associated materials (R script, data sets, etc.) will be provided through the blackboard and course homepage.

## 4. Lecture Module

- 3~4 lecture units consists one module
- 1~2 unit: classroom lecture(s)
- 1 unit: R exercise
- 1 unit: Q & A session
- Attendance is not checked for the third unit

## 5. Introduce Yourself

- ✓ Submit your self-introduction slide (max. 5 pages) to the lecturer via E-mail by the end of the 2nd week.
- ✓ Required information: Name, department, e-mail, cell phone number, recent photo(s)

## 6. Assessments

- 1 final exam (40%): 3 pages of cheating papers are allowed
- 6 Data analysis assignments (60%)

## 7. Schedule

Date	Topics
Mar. 06/08	Orientation
Mar. 13	Association Rule Mining: Classroom lecture
Mar. 15	Association Rule Mining: R exercise
Mar. 20	Association Rule Mining: Q & A session
Mar. 22	Clustering: Classroom lecture 1
Mar. 27	Clustering: Classroom lecture 2
Mar. 29	Clustering: R exercise
Apr. 3	Clustering: Q & A session
Apr. 5	No class (IE conference)
Apr. 10	Multiple Linear Regression: Classroom lecture
Apr. 12	Multiple Linear Regression: R exercise
Apr. 17	Multiple Linear Regression: Q & A session
Apr. 19	Logistic Regression: Classroom lecture
Apr. 24	No class (Midterm preparation)
Apr. 26	Logistic Regression: R exercise
May. 01	Logistic Regression: Q & A session
May. 03	Dimensionality reduction: Classroom lecture
May. 08	Dimensionality reduction: R exercise
May. 10	Dimensionality reduction: Q & A session
May. 15	Decision Tree: Classroom lecture
May. 17	Decision Tree: R exercise
May. 22	Decision Tree: Q & A session
May. 24	Artificial Neural Network: Classroom lecture 1
May. 29	Artificial Neural Network: Classroom lecture 2
May. 31	Artificial Neural Network: R exercise
Jun. 05	No class (National holiday)
Jun. 07	Artificial Neural Network: Q & A session
Jun. 12	Q & A session for the final exam
Jun. 14	Final Exam