Syllabus of Fall Semester, 2018

Course Title	MULTIVARIATE STATISTICS(II)	Course Code	ST27518	Section	032
Department	Statistics	Level	3	Credit - Theory - Practice	3.0 - 3.0 - 0.0
Class Hours & Classroom	Tue. 10:30(75) 313-104,Thu. 10:30(75) 313-104				
Lecturer	CHOI,YONG-SEOK	Office	R 208	Office Hours	2:00-3:00 PM, TUE
		Telephone		E-mail	
Methodology of Instruction	With practice times, we will be experienced in results' interpretations and visualizations of multivariate data analysis using the R.				
Evaluation and Grading	Total Score = Attendance(10%) + Reports(10%) + Exam(50%) + Term Project(30%) * Students with disabilities can request an extension of the exam hour, and they can take exams by getting writing assistance or by using a computer.				
Prerequisites	- Matrix Algebra (I), (II) - R				
Course Objectives	In Multivariate Statistics (II), our aim is to study some statistical analysis techniques (Discrimination and Classification Analysis(DCA), Multidimensional Scaling(MDS), Correspondence Analysis(CRA), Biplots), In particular, MDS, CRA and Biplost are very useful multivariate visualization techniques which can be applied in Big Data and Data Mining. Moreover in this lecture, we have a good chance to learn R-codes for programing some algorithms related with DCA, MDS, CRA and Biplots.				

Course Description	6.1 Introduction
	    6.2 DCA with two clusters
	    6.3 DCA with two clusters following multivariate normality
	    6.4 DCA with several clusters
	    6.5 DCA with several clusters following multivariate normality
	    6.6 Evaluating classification function
	    6.7 Fisher's Linear DCA of several populations
	    6.11 R for DCA: Practice Time
	
	Lecture 7. Multidimensional Scaling(MDS)
	    7.1 Introduction
	    7.2 Metric MDS
	    7.3 Non-metric MDS
	    7.6 R for MDS: Practice Time
	
	Lecture 8. Correspondence Analysis(CRA)
	    8.1 Introduction
	    8.2 Simple CRA
	    8.3 Independence and homogeneity in CRA
	    8.4 Multiple CRA
	    8.5 MCRA of classification variables data
	    8.6 R for CRA: Practice Time
	
	* Students with disabilities can negotiate with the Disabled Student's Academic Support Center regarding course materials and assignments.				

Textbooks and References					
Required Textbooks	Choi, Y.S.(2018). Multivariate Data Analysis with R, Kyungmoon, Seoul (in Korean).				
References	[1] Anderson, T.W.(1984). An Introduction to Multivariate Statistical Analysis (2nd ed.), John Wiley, New York. [2] Chatfield, C. and Collins, A. J. (1980). Introducton to Multivariate Analysis, Chapman and Hall, London. [3] Choi, Y.S. and Shin, S.M.(2013). Understanding of Biplot Analysis using R, Free Academy, Seoul. [4] Choi, Y.S.(2014). Understanding Statistics with R, Kyobo, Seoul.				

[5] Choi, Y.S.(2014). Walk in Multidimensional Scaling, Free Academy, Seoul.
[6] Dillon, W. R. and M. Goldstein (1984). Multivariate Analysis -Methods and Applications-, John Wiley & Sons, New York.
[7] Jobson, J. D. (1992). Applied Multivariate Data Analysis, Springer-Verlag, New York.
[8] Johnson, R. A. and Wichern, D. W. (2002). Applied Multivariate Statistical Analysis, 5th Edition, Prentice Hall Inc, London.
[9] Rencher, A. V. (1995). Methods of Multivariate Aanlysis. John Wiley & Sons, Inc., New York.
[10] Srivastava, M.S. (2002). Methods of Multivariate Statistics, Wiley-Interscience, John Wiley & Sons, Inc., USA.

Weekly Schedule of Classes

Week No.	Course Material	Assignments and Other Notes

Week 1	[Orientation and Education on Academic Misbehavior(e.g. Cheating, Plagiarism) and Safety Education on Experiment and Practice] Lecture 6. Discrimination and Classification Analysis(DCA)
	    6.1 Introduction
	    6.2 DCA with two clusters
		Home work shall be given in practice time .

Week 2	6.3 DCA with two clusters following multivariate normality	
Week 3	6.3 DCA with two clusters following multivariate normality	
Week 4	6.4 DCA with several clusters	
Week 5	6.4 DCA with severalclusters following multivariate normality	
Week 6	6.5 Evaluating classification function	
Week 7	6.11 R for DCA: Practice Time	
Week 8	Lecture 7. Multidimensional Scaling(MDS) 7.1 Introduction	
Week 9	7.2 Metric MDS	
Week10	7.3 Non-metric MDS 7.6 R for MDS: Practice Time	

Week11	Lecture 8. Correspondence Analysis(CRA)
	    8.1 Introduction
	    8.2 Simple CRA	

Week12	8.3 Independence and homogeneity in CRA	
Week13	8.4 Multiple CRA	
Week14	8.5 MCRA of classification variables data	
Week15	8.6 R for CRA: Practice Time	
Week16	Term Projects	Submit your projects
Attachment		