KAIST Graduate School of Information & Media Management
IM 623 - Data Mining and Intelligent Marketing
Spring 2019

Class hours	Tuesday and Thursday 10:30 am – 11:50 am
Classroom	SUPEX 401
Instructor	Professor Keumseok Kang (강금석), Ph.D. Office : SUPEX 326 Email : keumkang@kaist.ac.kr Office Hours: By appointment
Teaching Assistant	Chihong Jeon(전치홍), Ph.D. student Office : SUPEX 293 Email : chihong.jeon@kaist.ac.kr Office Hours: 16:00-17:00 on Tuesday or by appointment
Prerequisites	None - Basic statistics concepts would be helpful.
Required Texts	Galit Shmueli, Peter C. Bruce, and Nitin R. Patel, *Data Mining for Business Analytics: Concepts, Techniques, and Applications with XLMiner*, 3th Edition, 2016, John Wiley & Sons, Inc.
Recommended References	· Ramesh Sharda, Dursun Delen, and Efraim Turban, *Business Intelligence, Analytics, and Data Science: A Managerial Perspective*, 4th Edition, 2018, Pearson. · Alex Berson, Stephen J. Smith, and Kurt Thearling, *Building Data Mining Applications for CRM*, 1999, McGraw-Hill. · Michael J.A. Berry and Gordon S. Linoff, *Data Mining Techniques: For Marketing, Sales, and Customer Relationship Management*, 2011, John Willey & Sons.
Course Software	Analytic Solver (formerly, XLMiner)

Course Objectives

We are in the era of big data. Large volume of data could reveal useful information about customers, products or other strategic aspects. This course aims to equip students with knowledge and skills to extract information and knowledge from vast amount of data and discover actionable insights. It emphasizes on the current issues, methodologies, practice, and emerging trends in data mining and business analytics. Students will learn state-of-art techniques and critical skills to address existing business problems in today's information-rich environments. Upon completing this course, students will build their analytical capabilities to use data for innovative business solutions.

Teaching Methodologies

The teaching methodology will include following.

- Lecture
- Demonstration
- Hands on in-class exercises
- Individual assignments
- Group project and presentation

Communicating with the instructor

All course related materials can be found in the course site, KLMS. The instructor and TA also use KAIST emails to communicate with the class. Students have to check their KAIST emails regularly, at least once a day.

Students are encouraged to use KAIST emails to communicate with the instructor or TA, too. Please use the prefix "[IM 623]" in the title of your email. Please expect at least 48 hours to get a response from the instructor or TA.

Rules, Policies, and Academic Misconduct

Assignments from the text and other resources are listed below for each class session. Students are expected to pace their learning according to the posted course assignments.

It is expected that interactive learning and teaching will enrich the learning experience of all students, and that each student will work in partnership with the instructor to create a positive learning experience for all. Student engagement is a necessary condition for an effective learning experience, and includes contributions to debate and discussion (if any), positive interactive learning with others, and an enthusiastic attitude towards inquiry. Everyone is expected to be a positive contributor to the class learning community, and students are expected to share the responsibility of teaching each other.

<u>Statement of Understanding between Instructor and Student</u>

Every student must respect the right of all to have an equitable opportunity to learn and honestly demonstrate the quality of their learning. Therefore, all students must adhere to a standard of academic conduct, demonstrating respect for themselves, their fellow students,

and the educational mission of the University. As a student in the College of Business taking this class:

- I will not represent someone else's work as my own
- I will not cheat, nor will I aid in another's cheating
- I will be honest in my academic endeavors
- I understand that if I am found responsible for academic misconduct, I will be subject to the academic misconduct procedures and sanctions as outlined in the University's policy and regulation

Failure to adhere to the guidelines stated above may result in either expulsion or suspension.

NOTE: Intensive auditing of the course will be conducted to prevent academic misconduct.

Grading Policy

Final grades will be assigned based on following table. However, the instructor holds the right to assign any grade the instructor thinks appropriate based on student's overall performance, attitude, behavior and attendance in the class.

Letter Grade	Range
A+	94 <
A	90 – 94
A-	85 – 89
B+	80 – 84
B	75 - 79
B-	70 – 74
C+	60 – 69
C	50 – 59
D	40 – 49
F	< 40

Assessment Tasks/Activities

<u>Lab Hands-on Assignments (40%)</u>

Hands-on activities using a data-mining tool (i.e., Analytic Solver). Each assignment will have

the same weight. Pay attention to due dates. Late assignments will not be accepted. There are tentatively 11 hands-on assignments. Each assignment will have the same weight. However, the number of exercises and the contents of assignments are subject to change at the discretion of the instructor depending on the progress and the needs of class. Therefore, the credit of each assignment may be changed as the total number of assignments changes

Group Project (40%)

A group project, which includes a project report and a presentation, will be allocated to let students apply data mining concepts and techniques to solve business problems (e.g., marketing).

Examination (20%)

A written examination to assess students' competence of the taught subjects. There will be one mid-term exam.

Note that in normal circumstances, no makeup examination/assignment will be provided to any student. If an examination is missed, under special circumstances the instructor may choose to extrapolate the student's achieved grade on similar other things to compute the student's total grade. Such extrapolation will be done in very special cases supported by a number of documents under the sole discretion of the faculty. When a student wants to avail such thing, the student needs to apply to the faculty in written form along with supported documents within one week of the missed day. In cases where such extrapolation is not possible faculty may follow alternative ways to evaluate student's performances such as oral exam, additional homework or examination. In no cases students have the right to choose any of the processes; selection of any alternative will depend on the faculty only.

Grading

Lab Assignments (Individual)	**40%**
Group Project (Group)	**40%**
Exam (Individual)	**20%**
Extra Credits	**a%**
Total:	**100+a%**

The instructor may provide extra credits (usually 1-3% per incident up to maximum 10% per student) to some students for their excellent performance or additional effort. There are several ways to earn extra credits – e.g., answering in-class questions, demonstrating exercises in class, sharing knowledge with other students, etc.

Tentative Course Schedule

The class will follow the following schedule. However, please note that the contents and timelines are subject to change at the discretion of the instructor, depending on the class performance and progress.

Week#	Date	Topic	Reading	Theme
1	Feb 7	Introduction to Course		
2	Feb 12	Data Mining Process	DMBA1&2[2]	
	Feb 14	Lab Practice (Database)[1]		
3	Feb 19	Data Exploration	DMBA3	
	Feb 21	Lab Practice (Data Exploration)		
4	Feb 26	Dimension Reduction Methods	DMBA4	Unsupervised Learning
	Feb 28	Lab Practice (Dimension Reduction)		
5	Mar 5	Association rules	DMBA14	
	Mar 7	Lab Practice (Association rules)		
6	Mar 12	Clustering Analysis	DMBA15	
	Mar 14	Lab Practice (Clustering Analysis)		
7	Mar 19	Regression Predicting Performance	DMBA5&6	Supervised Learning
	Mar 21	Lab Practice (Regression)		
8	Mar 28	Mid-Term (No class on Mar 26)		
9	Apr 4	Group Project Proposal Presentation (No class on Apr 2)		
10	Apr 9	Logistic Regression	DMBA10	Supervised Learning
	Apr 11	Lab Practice (Logistic Regression)		
11	Apr 16	*k*-NN Neighbors	DMBA7	

	Apr 18	Lab Practice (*k*-NN Neighbors)		
12	Apr 23	Decision Tree	DMBA9	
	Apr 25	Lab Practice (Decision Tree)		
13	Apr 30	Neural Network	DMBA11	
	May 2	Lab Practice (Neural Network)		
14	May 7	Discriminant Analysis	DMBA12	
	May 9	Lab Practice (Discriminant Analysis)		
15		No class (work on group project)		
16		Group Project Final Presentation		

Note:

1. Every lab practice is an individual assignment that must be submitted. The due is before the next Thursday class. For example, in Week 2, Lab Practice (Database) will be introduced and practiced in class. Students have to complete this exercise and submit it before Week 3's Thursday class.
2. DMBA# refers to the main textbook's chapter #. Students are strongly encouraged to read the assigned chapters before class.