Mathematics for Management

Course Name	Course type (credit/hours)	Elective course(3/3)	Course code	I085
	Target students Division/major/grade	Business Administration/Freshman	Opening semester	2020 2ND SEMESTER
	Class time and classroom	Tue E(DaB106)Fri E(DaB106)	English Grade	A(100%English)
Reference to this course	Prerequisite courses			
	Related basic courses			
	Recommended concurrent courses			
	Related advanced courses	Management Science; Business Probability Models		

Instructor	Name (title/division)	Kim, Sunkyo(Professor, Business Administration)				
	Office Room Number	다528	Office phone Number	2841	e-mail	
	Office hours	TBA		Homepage address		
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

This course introduces mathematical models and methods of quantitative business analysis. Various examples are used to explain and show how the decision-maker can apply quantitative methods to solve many different kinds of managerial problems. The objective of the course is to provide students with a basic understanding of the role that quantitative approaches play in the decision-making process.

Students will learn how to
-formulate various business problems as mathematical programming models and
-apply mathematical concepts and techniques to find an optimal solution/decision

Previous versions of the textbook are available on the web.

2. Course Objectives

The objective of the course is to provide students with a basic understanding of the role that quantitative approaches play in the decision-making process.

Students will learn how to
-formulate various business problems as mathematical programming models and
-apply mathematical concepts and techniques to find an optimal solution/decision

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K2	

3. Class types and activities

Lecture, discussion, and team projects.

4. Teaching Method

- [V] lecture
- [ ] discussion and debate
- [ ] team project(presentation and case studies)
- [ ] experiments(role-playing,etc)
- [ ] designing and production
- [ ] on-site learning(on-site training)
- [ ] others

5. Support Systems in Use

- [V] AjouBb
- [ ] automatic recording system
- [ ] web-based assignment
- [V] cyber lecture
- [ ] online content
- [ ] class behavior analyazing system
- [ ] others

6. Teaching Tools

V PBL(Problem Based Learning)	V CBL(Case Based Learning)	TBL(Team Based Learning)
UR(Undergraduate Research)	FL(Flipped Learning)	DSAL(Data Science Active Learning)
others		

7. Knowledge and ability required for taking this course

- Solving a system of equations
- Spreadsheet modeling

8. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance			
midterm exam	1	40	
final exam	1	40	
quiz	3	10	수업 참여도 포함
presentation			
discussion			
homework	3	10	
etc			
study hours	6		

9. Textbook and supplementary material

Main/Sub	Title (Web-site)	Writer	Publisher	Publication year
Main	Introduction to Operations Research, 10 th ed.(PDF of 8th and 9th are available at academia.edu)	Hillier and Lieberman	McGraw-Hill	2014
Sub	IntroductiontoMathematicalProgramming	W.Winston&M. Venkataraman an	Duxbury	2003
Ref.	경영과학 (Introduction to Operations Research 번역서 8판 또는 9판)	김선교외4인역	McGraw-Hill Korea	2013

10. Class system and Class shedule

Linear programming formulation

-> Product mix and resource allocation
-> Profit maximization & cost minimization
-> Crew/work scheduling problem
-> Network flows problem
-> Dynamic Programming
-> Integer programming

Differential calculus

-> Unconstrained optimization of function of one variable: application to EOQ mdel
-> Unconstrained optimization of function of several variables: application to least square estimation

< Class Schedule >

* language : K-korean, E-English

Weeks	Topics	language	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
1	Linear programming: Product mix and resource allocation		Kim, Sunkyo			
2	Linear programming: Network flows problem		Kim, Sunkyo			
3	Linear algebra: system of linear equations		Kim, Sunkyo			
4	Linear algebra: matrix inverse and Cramer's rule		Kim, Sunkyo			
5	Linear programming: crew scheduling and blending problems		Kim, Sunkyo			
6	Transportation Problems		Kim, Sunkyo			
7	Assignment Problems		Kim, Sunkyo			
8	Mid-Term Exam		Kim, Sunkyo			
9	Network Optimization Models		Kim, Sunkyo			
10	Network Optimization Models		Kim, Sunkyo			
11	Project Management		Kim, Sunkyo			
12	Differentiation		Kim, Sunkyo			
13	Differentiation and optimization		Kim, Sunkyo			
14	Differentiation and optimization		Kim, Sunkyo			
15	Unconstrained optimization of several variables: partial differentiation		Kim, Sunkyo			

< Class Schedule >

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Weeks	Topics	language	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
16	Final Exam		Kim, Sunkyo			

11. Other items of notification
