Course Syllabus: Fall 2015

1. Course Title	Management Science 41622-02	
2. Class Time	Class 02 – Wed, 19:00 A.M. - 21:50 A.M.	
3. Class Place	- Building 309, Room: 103	
4. Instructor	Name	Bonghyun Ahn
	Office	outside of campus
	E-mail	
	Phone	
	Office Hours Before /after class	
5. Course Objectives	This course provides an introduction to Management Science. This course covers many approaches to solving business problems from managerial point of view. Various optimization techniques are surveyed with an emphasis on the why and how of these types of models as opposed to a detailed theoretical approach. Students develop optimization models which relate to their areas of interest. Spreadsheets and some related SW are used extensively to accomplish the mathematical manipulations. Emphasis is placed on input requirements and interpretation of results.. More specifically, upon completing this course a student should be able to: - Explain how and why modeling is used in the support system environment. - Identify and differentiate different model components. - Understand and explain the modeling process and be able to apply it in a variety of different business situations. - Compare and contrast different decision structuring techniques and to use these techniques to analyze various situations. - Evaluate models applying good modeling and validation techniques. - Implement model-based management solution using Computer SW. - Develop and demonstrate presentation skills and be able to post reports to the manager.	
6. Course Material	Textbook - Title : Introduction to Management Science, 11th Edition, 2013 - ISBN-13: 978-0273766407 - ISBN-10: 0273766406 - Author : Bernard W. Taylor III - Publisher : Pearson Education - http://book.naver.com/bookdb/book_detail.nhn?bid=7110892 Materials (References – Optional) - Class Notes (i.e., Course Outlines) will be posted online. Note that the complete class notes (with solutions for in-class examples) will NOT be posted. Students are required to fill in the blanks in their own class notes during class hours Software: - Microsoft Excel, QM & LINDO: Linear Programming Software - Crystal Ball will be required tools for simulation modeling. Trial version (valid for 30 days) is available for free download.	

7. Grading Policy

The final grade is determined by assigning the following percentage scores:

Mid-term Exam	30%
Final Exam	35%
Assignments	10% (Every Week)
Quizzes	15% (maybe 2)
Class Participation/Attendance	10%

The following is a basic guideline of letter grades:

Top 15% or above	A+
Top 15% - 35%	A
Top 35% - 50%	B+
Top 50% - 70%	B
Top 70% - 90%	C+
Top 90% - 95%	C
Top 95% or below	D+, D, F

8. Class Policies

- **Homework** problems will be assigned. It is important that each student work on each problem set independently.
- **Quizzes** will be given with announcement. It is recommended not to miss the classes to take the quizzes. Very simple questions will be asked to measure the students' attendance and class participation.
- **Exams** cover class lectures, discussions, homework problems, and required readings. Exams must be taken on the scheduled date. If you feel you have a legitimate excuse for missing an exam, please notify me in advance. Students missing more than one exam will be given an "F" for the course without any exception. A missed exam for any reason not deemed legitimate results in a score of zero. Likewise, dishonesty on any exam also results in a score of zero, and possibly, a failing grade for the course.

Week (Date)	Topic	Detailed Outline	Chapter	Assignments
1 (2.Sep)	▪ **Orientation & Linear Programming: Model Formulation and Graphical Solution**	- Course Introduction and Overview; - The MS Approach to Problem Solving. - MS Modeling Techniques. - Model Formulation. - Maximization/Minimization Model Examples - Graphical Solution of Linear Programming(LP) Models - Irregular Types & Characteristics of LP Problems	Chapter 1 Chapter 2	TBA
2 (9. Sep)	▪ **Linear Programming: Computing Solution and Sensitivity Analysis**	- Computer Solution using by SW - Sensitivity Analysis	Chapter 3	TBA
3 (16. Sep)	▪ **Linear Programming: The Simplex Method**	- Simplex Method	Module A	TBA
4 (23. Sep)	▪ **Integer Programming**	- Integer Programming(IP) Models - IP Graphical Solution - Computer Solution of IP Problems with SW - 0-1 IP Modeling Examples	Chapter 5 Module C	TBA
5 (30.Sep)	▪ **Transportation, Transshipment And Assignment Problems**	- The Transportation Model - The Transshipment Model - The Assignment Model - Computer Solution of the Transportation, Transshipment, Assignment Problems	Chapter 6 Module B	TBA
6	▪ **Network Models**	- Network Components	Chapter 7	TBA

(7.Oct)	▪ **Nonlinear Programming**	- The Shortest Route Problem - The Minimal Spanning Tree Problem - The Maximal Flow Problem - Nonlinear Programming	Chapter 10	
7 **(14.Oct)**	▪ **Linear Programming: Modeling Example**	- A Product Mix Example - A Diet Example - An Investment Example - A Marketing Example - A Transportation Example - A Blend Example - A Multi-period Scheduling Example - A Data Envelopment Analysis(DEA) Example	Chapter 4	TBA
8	**Mid-term Exam**			
9 **(28.Oct)**	▪ **Multi-criteria Decision Making**	- Goal Programming(GP) - Graphical Interpretation of GP - Computer Solution of GP Problems with SW - The Analytical Hierarchy Process(AHP) - Scoring Model	Chapter 9	TBA
10 **(4,Nov)**	▪ **Decision Analysis**	- Components of Decision Making - Decision Making Without Probabilities - Decision Making with Probabilities - Decision Analysis with Additional Information - Utility	Chapter 12	TBA
11 **(11, Nov)**	▪ **Markov Analysis**	- The Characteristics of Markov Analysis - The Transition Matrix - Steady-State Probabilities - Special Types of Transition Matrices	Module F	TBA
12 **(18, Nov)**	▪ **Game Theory**	- Types of Game Situations - Pure Strategy - A Mixed Strategy	Module E	TBA
13 **(25. Nov)**	▪ **Queuing Analysis**	- Element of Waiting Line Analysis - The Single-Server Waiting Line System - Undefined and Constant Service Times - Finite Queue Length - Finite Calling Population - The Multi-Server Waiting Line - Additional Types of Queuing Systems	Chapter 13	TBA
14 **(2.Dec)**	▪ **Simulation**	- The Monte Carlo Process - Computer Simulation with SW - Simulation of a Queuing System - Continuous Probability Distributions - Statistical Analysis of Simulation Results - Verification of the Simulation Model - Areas of Simulation Application	Chapter 14	TBA
15 **(9,Dec)**	▪ **Wrap-up & Review**	Class Wrap-up and Review		
16	**Final Exam**			