Syllabus for IE432: Decision Analysis and Risk Management

Instructor
- Woo Chang Kim, ISysE Dept., E2 3107, T3129, wkim@kaist.ac.kr, Office hours: TBA
- TA: TBA in KLMS Website

Lectures: 1 to 2:30PM on Tue/Thu

Objectives

The main objective of this course is to build up the techniques required for the decision analysis. We will develop several quantitative tools throughout the semester and integrate them with case studies in finance, marketing and operations management.

Prerequisites
- IE241 Engineering Statistics or similar courses
- IE331 Operations Research I or similar courses

Textbook
- Practical Management Science (Asia Edition), 6e, Winston and Albright, Cengage, 2018 (Textbook)
- Introduction to Decision Analysis, 3e, Skinner, Probabilistic, 2009

Evaluation: Assignments, exams, and attendance

Course Website

Course materials including lecture notes and homework assignments as well as course announcements will be posted on the KLMS website. Students are required to register to the site and strongly recommended to check the website periodically.

Tentative Schedule
- Week 1: Introduction
- Week 2: Deterministic decision making models – the easy case: reviews on LP
- Week 3: Generalizing "easy" deterministic optimization models – Convex optimization (1)
- Week 4: Generalizing "easy" deterministic optimization models – Convex optimization (2)
- Week 5: "Difficult" optimization models – branch and bound for Integer programming
- Week 6: Introduction to global optimization algorithms
- Week 7: Multi-objective decision making – Goal programming, AHP, DEA
- Week 8: Midterm exam
- Week 9: Reviews on probability
- Week 10: Time series and forecasting models
- Week 11: Adding uncertainty to decision making – Introduction to stochastic optimization
- Week 12: Holistic decision making – dynamic programming and multi-stage stochastic programming (1)
- Week 13: Holistic decision making – dynamic programming and multi-stage stochastic programming (1)
- Week 14: What if you can't "solve" decision making problems? – simulation approaches
- Week 15: Emerging topics – Data mining
- Week 16: Final exam