OR 681/SYST 573
Decision and Risk Analysis
Fall 2013

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Office Hours: Before or after class, or by appointment

Text: Making Hard Decisions with DecisionTools, by Clemen and Reilly

Software: *Logical Decisions for Windows*, plus the software that comes with the text
Analytica

Description: The intent of this course is to provide a modern perspective on analytical methodologies to support decision making. Decision analysis offers a set of structured procedures that assist decision-makers in structuring decision problems and developing creative decision options, quantifying their uncertainty (this includes combining available statistics with expert judgments, and their own beliefs to arrive at estimates of the probabilities of various outcomes), quantifying their preferences (this includes structuring their value tradeoffs and examining their attitude towards risk), combining their uncertainty and preferences to arrive at "good" decisions. This course provides an introductory treatment of decision analysis. The intended participants are students who want to learn more about decision making under uncertainty and tools that can be used to support it.

Topic	**Reading and Assignment***
Introduction	Read Chapt.1
Review of Probability	Read Chapt. 7 pg 282, # 7.8, 7.9, 7.15, 7.16, 7.19 Prob HW (on your own)
Value Focused Thinking	Read Handout and Chapt. 6 Keeney Article
Value Functions and Weight Elicitation AHP	Read Chapt. 4 pg 142-143, 614-621 (Assessing Weights) Single Dim VF HW Weights and AHP HW Hierarchical Value function HW
Decisions Under Uncertainty	Read Chapt. 3 Decision tree HW

Influence Diagrams	Read Chapt. 3 Analytica Tutorial
Utility Functions, Multiattribute Utilility	Read Chapt. 15, 16 Utility HW1
Sensitivity Analysis	Read Chapt. 5 Utility and Sensitivity
Risk Analysis	

Grading:

Midterm	30%
Project	30%
Final	30%
Class & Homework*	10%

*Homework will be assigned on a weekly basis from problems in the textbook and from handouts