

## MGT 878 – Decision Analysis Course Syllabus

### **CONTACT INFO**

Professor Elisa Long

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### **COURSE INFO**

Time: Monday, Wednesday 1:00-2:20pm

Location: School of Management, 135 Prospect Street, Room A48

### **COURSE DESCRIPTION**

When faced with a complex, uncertain problem, how does one make a good decision? As a normative science, decision analysis provides a logical framework for structuring and evaluating a decision scenario, with the goal of obtaining clarity of action. This framework involves formulating creative alternatives, characterizing uncertain events, and incorporating the decision-makers values and preferences. This course introduces a set of coherent tools used for framing problems and performing logical analyses, and provides a foundation for decision-analytic modeling in Excel. Topics covered include decision trees, influence diagrams, value of information, sensitivity analysis, risk preferences, and Monte Carlo simulation.

### **COURSE OBJECTIVES**

This course aims to improve your understanding of quantitative decision-making for management. Specifically, the course objectives are to:

- Develop an understanding of how quantitative tools and analysis may lead to improved decision-making.
- Improve your quantitative reasoning ability.
- Increase your facility with spreadsheets.

### **GRADING POLICY**

Homework + Final exam (take-home) – 50%

Merck case study (group project) – 30%

Class participation – 20%

### **REQUIRED MATERIAL**

- Students should purchase a course packet, which includes chapters 3, 11, 12 of “Making Hard Decisions” (2004 edition) by Robert Clemen and Terence Reilly.
- Students will receive a free copy of DecisionTools Suite, including PrecisionTree and @Risk, which are Excel add-ins for constructing decision trees and performing Monte Carlo simulations. [http://www.palisade.com/decisiontools\\_suite/default.asp](http://www.palisade.com/decisiontools_suite/default.asp)
- Additional readings are given below and will be posted on Classes v2.

<b>JudDate</b>	<b>Topic</b>	<b>Reading</b>	<b>Homework</b>
Mon, Oct. 26	What is a good decision?		
Wed, Oct. 28	Framing decisions: alternatives, information, and preferences	“Judgment under Uncertainty: Heuristics and Biases” by Tversky and Kahneman	
Mon, Nov. 2	Decision trees	“Decision Trees” by Greenwood and White (optional reading)	
Wed, Nov. 4	Solving decision trees	MHD Chapter 3	<b>Homework 1 due</b>
Mon, Nov. 9	Influence diagrams		
Wed, Nov. 11	Probability encoding, risk preferences		<b>Homework 2 due</b>
Mon, Nov. 16	Value of information	MHD Chapter 12	
Wed, Nov. 18	Deterministic sensitivity analysis		<b>Homework 3 due</b>
Mon, Nov. 23	In-class exercise: Freemark Abbey Winery	“Freemark Abbey Winery”	
<b>Thanksgiving Break!</b>			
Mon, Nov. 30	Monte Carlo simulation (part 1)	MHD Chapter 11	<b>Homework 4 due</b>
Wed, Dec. 2	Monte Carlo simulation (part 2)		
Mon, Dec. 7	Group presentations – Risk Analysis at Merck	“Merck & Co: Product KL-798” “Risk Analysis for Merck & Co: Product KL-798”	<b>Group assignment due</b>
Wed, Dec. 9	Decision quality, class summary		
<b>Take-home final due Mon, Dec. 14 at 5:00pm</b>			