SYST 473: Decision and Risk Analysis
Fall 2008
Course Overview
Systems Engineering and Operations Research
George Mason University

Instructor:	Dr. Rajesh Ganesan
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Office Hours:	**1**:00-3:00 PM, W
Text:	Making Hard Decisions, by Clemson and Reilly Duxbury Publishers Logical Decisions Software
Class Hours	M/W, 3 – 4:15 PM, Innovations 215

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 Assignment***
Introduction	Read Chapt. 1-2
Introduction and Review of Probability	Read Chapt.7-8-9
Value Focused Thinking, Value Hierarchies	Read Chapts. 6
Value Functions and Weight Elicitation	Read Chapt. 12
Sensitivity Analysis	Read Chapt. 5
Influence Diagrams, Decision trees	Read Chapt. 3-4
Utility Functions, Risk	Read Chapt. 13-14

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

Class Rules

1. The book for this course is a basic text for a broad coverage of Decision Analysis. It emphasizes problem solution using Excel. The class presentation will often depart from the book in order to give you multiple perspectives on the covered topics. You should read the applicable sections of the book prior to class.

2. Grades will be determined as follows. Check grades on Blackboard

Homework	10%
Class Quiz	15%
Midterm	30% (Oct 8th)
Projects	10 % (title due Oct 29th)
Final Exam (final project also due)	35% (Dec 12th 1:30 PM)

Letter grades will be decided as follows:

97% and above –A^+, 94-96%- A, 90-93% -A^-, 86-89- B+, 83-85%-B, 80-82%-B-, 76-79%- C^+, 73-75%- C, 70-72%-C^-, 66-69%-D^+, 63-65%-D, 60-62%-D^-, at or below 59%-F

3. In any work you do, always show all the steps you used to get your answer. If the answer is wrong, you may still get a great deal of partial credit if I can follow your logic. This is especially important in the exam.

4. Some of the lectures will be overhead presentations. Previous classes have found it useful to have copies of the overheads during class for their use. I am in the process of developing a web page for the class. They will be available, along with other material, there. The website is http://classweb.gmu.edu/rganesan

5. There will be homework problem sets just about every class. These will be collected each week. I will not grade them in detail, but I will keep track of students that do not hand them in. I will also use them to gain insight into the understanding of the students. Invest the time to do the problem sets. You will have a hard time with the exam material if you cannot do the homework.
Each HW is out of 10 points. Late HW policy: (Late by 1 class: you can earn a max of 10 points out of 20, provided you have all correct answers. If late beyond 1 class then it will not be graded). Check for grades on Blackboard. If you don't see the grade, report to me by the next class after HWs have been returned. I will not entertain missing grade requests that come later in the semester.

6. There will be a project where you will perform a decision analysis. The project will include both a written report and an oral presentation. We will have an "in progress review" around the midterm where the groups will brief the problem statement and proposed approach. The project presentations will be at the end of the semester. Students in senior design are encouraged to use their senior design project for the SYST 473 class project.

7. Attendance in class is very important. Information will be presented that will not necessarily be in the book that will show up on the midterm and final.

8. We will make use of the decision analysis software Logical Decisions for Windows. This is a student copy that has a nominal time out after a year. I have been told that software vendor will extend the time out if you ask.

"Logical decisions for Windows - Version 6.1" This can be bought from http://www.logicaldecisions.com/ (Student version). The bookstore **does not carry** a copy of this software.

9. Academic Policy: All academic policies as given in the Honor System and code will be strictly followed. Visit URL http://www.gmu.edu/catalog/apolicies/#Anchor12

10. Exams will only be given at the predetermined dates. Early or late exam taking will not be allowed, except for **very special** cases.

11. Please visit http://classweb.gmu.edu/rganesan to check for announcements, Hw problems, and solutions.

12. Please turn off your cell phones before class and do not use your cell phone during lecture. Feel free to walk out without distracting the class as and when needed.

BEST WISHES FOR A GREAT SEMESTER!!