

MSE505 – Engineering Decision and Risk Analysis
Summer 2009 Class# 10907, Tuesday 18:00-22:05
5/26/09 to 8/18/09

Instructor	Hamid Gholami , (B.S./M.S. – Mechanical Engineering; M.S. Engineering Management) -Expertise: Engineering Consulting, Decision-Making and Risk Analysis, -Department of Manufacturing Systems Engineering and Management (MSEM) -Department Office: (818) 677-2167, Fax: (818) 677-6427 -Faculty email: hamidg@csun.edu
Textbook	Robert T. Clemen & Terence Reilly: Making Hard Decision with Decision Tools , Duxbury Press, Thomson Learning, Pacific Grove, California 2001, ISBN 0-534-42199-7
References	Engineering Management related subjects published in periodicals and scientific journals. Also, the World-Wide-Web offers a wide array of search engines that will lead to numerous valuable references and research material. It is highly recommended that students post such references on the blackboard for the benefit of all members of the cohort.
Catalog Description	Prerequisite: Consent of instructor. An introduction to decision and risk analysis methods in the context of engineering, organizing frameworks for the synthesis, analysis, and evaluation of complex unstructured engineering problems and solutions.

COURSE OBJECTIVES

This course will enhance and, contribute to your:

- Knowledge of decision making concepts, particularly as they pertain to decision making under uncertainty
- Ability to structure decision situations for solution using decision analysis methods
- Ability to use decision analysis to solve complex problems and to improve the quality of the resulting decision
- Ability to lead and function effectively on multidisciplinary and multicultural teams
- Understanding of engineering professional and ethical responsibilities
- Ability to integrate qualitative information and subjective values into decision problems
- Ability to understand the relationship between decision and risk analysis
- Ability to evaluate the relative qualities of decisions
- Ability to use special-purpose software to solve complex decision analysis problems

COURSE PLAN

(Tentative Schedule: These guidelines may change as deemed necessary.)

<u>Topic</u>	<u>Reading Homework**</u>	<u>Important Tasks</u>
Introduction to Decision Analysis	Chapter 1	
Elements of Decision Problems	Chapter 2	
Structuring Decision	Chapter 3	
Making Decision	Chapter 4	
Sensitivity Analysis	Chapter 5	
Creativity and Decision Making	Chapter 6	
Probability Basics	Chapter 7	
Subjective Probability	Chapter 8	
Mid-Term Exam		
Theoretical Probability Models	Chapter 9	
Value of information	Chapter 12	
Risk Attitude	Chapter 13	
Utility Axioms, Paradoxes and Implications	Chapter 14	

Final Exam (Take Home)

Important Dates

June 30 and July 07

STANDARD OPERATING PROCEDURES

1. Class members are encouraged to maintain personal and professional standards consistent with The Fundamental Principles of the Code of Ethics of the Accreditation Board for Engineering and Technology; i.e.,

- Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:*
- *using their knowledge and skill for the enhancement of human welfare;*
 - *being honest and impartial, and serving with fidelity the public, their employers and clients;*
 - *striving to increase the competence and prestige of the engineering profession; and*
 - *supporting the professional technical societies of their disciplines.*

2. Class members are expected to attend class sessions and to be prompt.

3. Class members will be considerate and respectful of their colleagues.

Withdrawing from this course should be done during the first two weeks of the semester. Please note that failure to officially drop this class results in a grade of U (an equivalent of an F on your transcript). See FAQs at www.csun.edu/~msem for additional information regarding withdrawals.

4. It is a University requirement that all undergraduate and graduate students must pass the Writing Proficiency Examination (WPE) as part of their degree. Delaying the completion of the WPE requirement can delay your

graduation. See www.csun.edu/~udwpe1 for complete information.

5. University course roster determines the major of each student. Students whose majors are not correct must submit a change of major within the first three weeks of the semester. Undergraduate students must submit the *Major or Minor Change or Declaration*; Graduate students must submit the *Change of Objective for Graduate Students*. Both forms are available at www.csun.edu/a&r/formslst2.htm

6. Graduate students are advised to ensure that they are either in classified status or making progress toward achieving that status. See FAQs at www.csun.edu/~msem for additional information regarding classification of graduate students.

7. All undergraduate and graduate students majoring in MSEM Department programs are encouraged to add their email addresses to the Department listing. This listing will be used for special notifications (e.g., academic advisement notices, social events, and emergencies). Please use www.csun.edu/~msem/faqs.htm to be added to the list.

COURSE EVALUATION (GRADING SYSTEM)

(30 pts) Case Studies and selected HW problems Assignment

(30 pts) Mid-Term Exam

(40 pts) Final Exam (Take Home)

100 Total points

Letter-Grade Scale:

Note: Plus/minus grading will be used for the overall course grade.

A:93-100; A-:90-93; B+:87-90; B:83-87; B-:80-83; C<80