SYLLABUS EMSE 269:
ELEMENTS OF PROBLEM SOLVING AND DECISION MAKING

Instructor Information:
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Office Hours: Tuesday 1:00PM to 3:00PM

Course Description:
In this course the concepts of how to formulate, structure, analyze, and solve complex decision problems will be studied. These concepts will make use of: (1) influence diagrams and decision trees for modeling decision problems, (2) Bayesian analysis as applied to decision analysis, (3) the concept and use of subjective probability, (4) the value of information, and finally (5) the use of probability models for solving decision problems.

Recommended Prerequisite:
Prerequisites for this course are the same as the prerequisite requirements for admission into the Masters program of the Engineering Management and Systems Engineering Department.

Students entering the course with a solid grasp of algebra, analytic geometry and knowledge of probability calculus equivalent to the level of ApSc 115 will find some off the materials in this class more accessible due to prior exposure to similar topics. Elementary probability calculus needed for this class will be discussed in an early class.

Course Objectives:
Introduce students to decision analysis approaches for complex decision problems by using decomposition; "Divide and Conquer". Introduce students to the use of expert judgment as a data source when solid data is not available. Introduce students to approaches for estimating the value (in $) of perfect and imperfect information.

Method of Instruction:
Book: "Making Hard Decisions with Decision Tools"
By: Robert T. Clemen and Terence Reilly

Class Sessions:
Students will be assigned reading assignments which they are expected to read before class. During class the material will be presented using lecture slides. A copy of the slides may be printed from this site prior to class. Additional information may be posted for individual class sessions.
To print a copy of the slides one needs to install adobe acrobat reader which students can download for free from


Homework is considered to be a vital part of the course. Homework sets will be assigned during the course. The homework will not be collected on a routine basis and will not be graded. Electronic homework solutions will be e-mailed to you via an electronic class list. Starting Session 1 Extra Problems will be assigned. The following class an electronic solution to the Extra Problem will be provided and the solution will be presented in class.

Students may work together on the homework and the Extra Problem. A total of 13 Extra Problems will be assigned.

FINAL GRADE CALCULATION:
45% Midterm Exam
55% Final Exam

The midterm exam and final exam are closed books, closed notes exams. Student may have one sheet of paper with formulas to use during these exams. Each exam will consist of four questions. One of these questions will be selected out of the Extra Problem set.

Academic Integrity:

THE ACADEMIC INTEGRITY CODE WAS DEVELOPED BY THE STUDENTS AND THE FACULTY OF GW WORKING TOGETHER IN 1995. BY ATTENDING GW EACH STUDENT IS PART OF THIS TRADITION.

"THE RIGHT ANSWER COMES FROM YOU"

Cheating will not be tolerated, i.e. copying or looking on another student's paper during the midterm exam or the final exam, will not be tolerated. In the event of cheating action will taken in accordance with the Academic Integrity Code. A copy of the Academic Integrity Code may be picked up at:

ACADEMIC INTEGRITY OFFICE
THE GEORGE WASHINGTON UNIVERSITY
609 22nd STREET, N.W. BLDG. AJ
WASHINGTON D.C. 20052
Lead Professor and Co-Lead Professor:
Tom Mazzuchi, D.Sc. (LEAD PROFESSOR),
Professor of Engineering Management & Systems Engineering Office Address: 1776 G Street, Office 110, Washington DC 20052. mazzu@gwu.edu

J. Rene van Dorp, D.Sc. (CO-LEAD PROFESSOR)
Assistant Professor of Engineering Management & Systems Engineering Office Address: 1776 G Street, Office 135, Washington DC 20052 dorpjr@gwu.edu

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- Electronic copies of the lecture notes and the Extra Problem assignment can be downloaded from my Faculty web-page at:

  http://www.seas.gwu.edu/~dorpjr/EMSE%20269/Intro.html

- Please send me an introductory e-mail with subject “EMSE 269 Fall 2005” so I can create an E-mail Class List. Electronic solutions to the homework above and the Extra Problems will be distributed via this E-mail Class List.