

Friday, 5:00 – 7:40 pm, Room OHE100D

Professor: Virgil Adumitroaie

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Course Text: Goodwin, P., and G. Wright, Decision Analysis for Management Judgment, 3rd edition, John Wiley & Sons, Inc., 2004.

Course References: In addition to the above text, some course material and in-class problems may come from the sources listed below.

Pre-requisites: ISE 220, 225 and working knowledge of Calculus. Basic computational skills with spreadsheet modeling in Excel.

Course Objectives: This course will provide the students with the knowledge and the tools to formulate, collect, analyze, frame, and interpret decision making information for selecting the "best" alternative action. The student will be introduced to the mathematics of rationality through complex decision problems. The subjective representations of uncertainty and value will be reviewed, as well as sensitivity analysis methods for decision quality characterization. Both Bayesian and MAUT approaches for decision making under uncertainty using theoretical and empirical probability models will be covered. Risk analysis models using Monte Carlo simulation methods will be highlighted. Furthermore, resource allocation and group decision-making will be introduced along with behavioral issues regarding the decision process (e.g., framing). The presentations will end with a quick review of AHP and other alternative decision support systems.

Course Schedule: See below.

Course Assignments: See below.

Grading: As noted in the attached, there are 12 separate homework assignments, each of which is valued at 20 points (45% of grade). The midterm exam is 120 points (23%) and the final examination is 170 points (32%). The exams will be open book and open notes. You may bring a calculator, but not a laptop, PDA, or any wireless devices.

Under close guidance from the professor, all homework and exams will be graded by the TA. If dissatisfied with the TA's grading in a specific instance, the student may appeal to the professor to re-evaluate the grade. An appealed grade may be raised, lowered, or remain as originally scored. (Caution: The final grade in this course depends in significant measure on graded homework, and thus we take very seriously the academic integrity issue inherent in this activity. Do your own work. Copying the work of others is cheating and will be dealt with accordingly.)

Class Participation: Attendance will be taken; it is expected that students will want to attend every class meeting. Active participation in the class will be noted, although there will be no explicit credit given for participation.

Office Hours: Prof. Adumitroaie is available for office hours on Mondays, 4:45-6:15 pm, in GER 205. The TA, TBD, is available TBD, in GER 309.

Homework: All written homework assignments are due at the class meetings on the dates indicated below and will be collected at the end of class. Offsite students should place softcopy in DEN dropbox or fax hardcopy on the day of the class. All relevant reading assignments should be completed before coming to class. Include your name, date, course number and assignment number in your submitted homework.

Late homework will be accepted up to two days past due date with 2 points penalty per day. Drop off late homework in the ISE office homework mailbox. Homework turned in later than past due date + 2 days will not receive any credit. No homework will be accepted after the last class meeting.

Course schedule and assignments are summarized below. This syllabus is subject to change as announced in class.

DATE	CLASS	TOPIC(S)	HOMEWORK
Aug 28	1	Introduction & Probability review.	Assigned: #1
Sep 4	2	How people make decisions involving multiple objectives	Due: #1 Assigned: #2
Sep 11	3	Decisions involving multiple objectives: methods	Due: #2 Assigned: #3
Sep 18	4	Decision making under uncertainty	Due: #3 Assigned: #4
Sep 25	5	Structuring decision problems: decision trees and influence diagrams	Due: #4 Assigned: #5
Oct 2	6	Applying simulation to decision problems	Due: #5 Assigned: #6
Oct 9	7	Revising judgments in the light of new information	Due: #6 Assigned: #7
Oct 16	8	MIDTERM EXAM Based on lectures 1 - 7	
Oct 23	9	Biases in probability assessment and methods for eliciting probabilities	Due: #7 Assigned: #8
Oct 30	10	Structured risk and uncertainty management	Due: #8 Assigned: #9
Nov 6	11	Group decision making	Due: #9 Assigned: #10
Nov 13	12	Resource allocation <i>and/or</i> negotiation problems	Due: #10 Assigned: #11
Nov 20	13	Decision framing and cognitive inertia. Scenario planning: an alternative way of dealing with uncertainty	Due: #11 Assigned: #12
Nov 27	No Class. Thanksgiving Break.		
Dec 4	14	The analytic hierarchy process. Alternative decision-support systems	Due: #12
Dec 11	15	FINAL EXAM Comprehensive	

Course References:

French, S., "Decision Theory: An Introduction to the Mathematics of Rationality," Ellis Horwood, Chichester, 1988.
 Keeney, R. L. and H. Raiffa, "Decisions with Multiple Objectives," Cambridge University Press, 1993.
 Parmigiani, G., and L. Inoue, "Decision Theory: Principles and Approaches," John Wiley & Sons, Inc., 2009.
 Winkler, R. L., "An Introduction to Bayesian Inference and Decision," Second Edition, Probabilistic Publishing, Inc., Gainesville, Florida, 2003.

Academic Integrity. The Viterbi School of Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus (<http://www.usc.edu/dept/publications/SCAMPUS/>). Students are expected to be aware of and to observe the academic integrity standards described in SCampus, and to expect those standards to be enforced in this course.

Students with Disabilities. Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.