Course Guide
ISE 562: Decision Analysis

Welcome to "ISE-562, Decision Analysis". This course guide has been designed to give you an introduction to the course and to explain its logistics. Please read this handout carefully.

Introduction

Everyone makes decisions, but few people think about how they do it. Psychological research has shown that people make decisions that after close examination they regard as wrong. Decision analysis is the normative field of decision-making; that which brings clarity of action about the decisions and choices that we make especially when uncertainty is present.

Throughout the course, we will develop rules of thought that will transform complex decisions into simpler decisions where the course of action is clear. We will create powerful distinctions that will improve your personal decision-making and will enable you to help others with their decisions.

This topics in this course have been carefully selected from the practice and teaching of decision analysis to students, executives, organizations, at-risk teens, policy makers, and numerous other areas. For some of you, this will merely be a course you take for credit. For others, it will be a skill you learn to help you in your future career (such as consulting, investment banking, public policy analysis, or a step towards PhD research,,.. etc). For others, this may be a life changing experience that you will talk about for a long time! I hope you enjoy the course and that you will remember the concept we discuss in your daily decisions.

Lectures

Professor: Ali Abbas, aliabbas@price.usc.edu
Office: OHE 310R

Lectures:

Day: Wednesdays
Time: 3:00 p.m. to 5:50 p.m.
Location: Online
Office Hours: Tuesday 12:00 – 2:00 pm and by appointment.

Teaching Assistant: TBA

The lecture style features a mix of Socratic dialogue, demonstration, lecture, and directed inquiry. The lecture demonstrations capture the essence of applying decision analysis to 'real' problems. The lectures have been carefully designed to demonstrate the need for decision making tools. They are a compilation of lessons learned through the practice and teaching of decision analysis to executives, graduate students, undergraduate students, gifted teens, and at-risk youth.

Try to appreciate the philosophy and depth behind what is being taught in the lectures and demonstrations, even if (at times) they may appear deceptively simple. There is a deep meaning in every conversation. Listen carefully to the questions posed and to the responses provided. The course is interactive: contribute your enthusiasm and energy and you will be rewarded many times over.

Before asking or answering a question in the lectures, please say your name. Max and I would like to know you throughout the semester just like you know us. I typically make announcements at the beginning of class about assignments and other course-related information. Please come on time.

Office Hours

I will be holding several online office hours to answer questions related to lectures or homework assignments. Time and location of office hours will be announced in a further handout.

Sign Up As Soon As Possible

It is important to sign up for the class as soon as possible. We will retrieve the class list from the web and plan groups and assignments. .

Required Text

Howard, R. A. and A. E. Abbas. 2015. ***Foundations of Decision Analysis***, Pearson, NY. NY.

Handouts

PowerPoints of all lectures will be posted online on Blackboard.

Additional handouts and articles will also be posted online throughout the semester.

Homework Assignments

There will be several homework assignments. You are allowed to work in groups and discuss the assignments with your classmates. For the probabilistic questions section on the HW assignment, please feel free to discuss with your classmates but please submit your own probabilities. We will discuss this in further detail during the class.

Homework assignments will generally include some or all of the following:

1) Reading assignments.
2) Definitions.
3) Probabilistic questions.
4) Quantitative problems.
5) Food for thought.

Unless otherwise mentioned, you will NOT need to turn in your solutions for the whole assignment. Each homework assignment will include brief instructions of what questions are to be turned in. However I will expect a full knowledge and command of the material covered in the other sections of the assignment that you will not turn in. Solutions to the full HW assignment will be available after the assignment is handed in.

Answers to Food For Thought section are optional but can contribute to your participation grade and will give us feedback on the overall grasp of certain topics of the course. The different sections of the homework assignments will be further discussed in the lectures.

Cases Studies

There will be one or more case studies throughout the semester to help you see larger size problems than those encountered in HW assignments. Many of these cases will require spreadsheet modeling.

Participation

I encourage participation in class. Those who will participate will greatly enhance their learning experience. For those not very comfortable expressing their views, please e-mail me with any questions or thoughts. One good way to enhance class discussion is to bring with you decision related articles from the media and let us know your personal views. As a starter (and to wet your appetite), here is an article that I would like you to read. We will talk about it in class.

http://www.cnn.com/2004/SHOWBIZ/TV/04/12/roulette.win/

Exams and Grading Policy

There will be two exams during the semester; a midterm and a final. The midterm will be closed book, closed notes and open mind. The format will be the same as the probabilistic format of the homework assignments. The final is yet to be decided upon. In the past we have had either final exams or case studies.

The breakdown of your final grade is shown below:

Participation 10%
Homework assignments 25%
Mid Term: 20%
Group assignments: 20%
Final group project: 30%

Hope you have a wonderful learning experience. For now, just relax and make good decisions.

Course Schedule: A Weekly Breakdown (Tentative and may change)

	Topics/Daily Activities	Readings and Homework	Deliverable/ Due Dates
Week 1 Dates	**Decision Demonstration** • What is a Decision? • Thumbtack vs Medallion • Sunk Cost • Value of Info	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 2 Dates	**Structuring a decision** • The six elements of decision quality. • Creating distinctions • Precise decision language	**Weekly readings and HW assignments from the text and other readings will be assigned.**	**Wednesday after class**
Week 3 Dates	**Structuring a decision** • Decision Diagrams	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 4 Dates	**Handling Uncertainty:** • Probabilistic relevance • Probabilistic inference Associate logic errors	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 5 Dates	**Handling Uncertainty:** • Probabilistic assessment - Probabilistic relevance -Probabilistic inference Probability encoding 20 Questions	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 6 Dates	**Tools for Framing a Decision** • Decision Hierarchies • Strategy Tables • Decision Diagrams	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 7 Dates	**Structuring Preferences:** • Utility theory and risk preference • Certain equivalents	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 8 Dates	**Structuring Preferences:** • Direct and indirect values	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 9 Dates	**Information Gathering:** • Value of perfect and imperfect information • Value of control • Value of experimentation • Advanced Information Gathering – • Valuing multiple sources of information	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class

Week 10 Dates	**Sensitivity Analysis:** erministic sensitivity analysis - Tornado diagrams abilistic sensitivity analysis – n loop and Closed loop sensitivity analysis	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 11 Dates	**Biases in Decision Making:** • Decision Traps – • Anchoring – • Representativeness – • Availability Overconfidence	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 12 Dates	**Decision Making in Organizations** • The decision analysis cycle and basis of analytical modeling • Formulate – Evaluate- Appraise –Decide • Handling Organizational Complexity	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 13 Dates	**Auctions and Bidding** . Bidding as a decision . The Winner's Curse	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 14 Dates	**Medical Decision Making** • Micromorts • Life and Death Decisions	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
Week 15 Dates	**Decisions and Ethics** • Ethical- Legal- Prudential • Building an Ethical Code	Weekly readings and HW assignments from the text and other readings will be assigned.	Wednesday after class
FINAL Date			Date: For the date and time of the final for this class, consult the USC *Schedule of Classes* at www.usc.edu/soc.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* http://equity.usc.edu or to the *Department of Public Safety* http://adminopsnet.usc.edu/department/department-public-safety. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage http://sarc.usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* *http://emergency.usc.edu* will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.