

DECISION AND RISK ANALYSIS
SYST 473 – FALL 2017

<http://mason.gmu.edu/~helamine/SYST473>

Class time: M/W 3:00-4:15pm

Classroom: Innovation Hall 132

Final exam date: Dec 18, 1:30-4:15pm

INSTRUCTOR

Dr. Hadi El-Amine (helamine@gmu.edu)

Office: Engineering Building 2240

Office hours: Tuesdays 1:00-3:00pm

COURSE OBJECTIVES

This course is an introductory treatment of decision analysis. The objective is to provide a modern perspective on some analytical methodologies that support decision-making. Decision analysis offers a set of procedures that assist decision-makers in structuring decision problems, quantifying uncertainty (probabilities of various outcomes estimated through expert judgments and personal beliefs), and quantifying preferences (through structuring value tradeoffs and examining attitude towards risk.)

Prerequisite: STAT 344

TENTATIVE COURSE TOPICS

<u>Topic</u>	<u>Reading Assignment</u>
Introduction	Chapters 1 and 2
Review of probability	Chapters 7, 8, and 9
Value focused thinking, value hierarchies	Chapter 6
Value functions and weight elicitation	Chapter 12
Sensitivity analysis	Chapter 5
Influence diagrams, decision trees	Chapters 3 and 4
Utility functions, risk	Chapters 13 and 14

TEXTBOOK

Making Hard Decisions with Decision Tools Suite, 3rd Edition, by Clemson and Reilly Duxbury Publishers ISBN 9780538797573

GRADING

MIDTERM	30%	In class, Oct 4
HOMEWORKS	10%	
PROJECT	20%	Due date: Dec 18
FINAL EXAM	40%	Dec 18, 1:30-4:15pm

Letter grades will be decided as follows:

≥97%	A+	86-89%	B+	76-79%	C+	66-69%	D+	≤59%	F
94-96%	A	83-85%	B	73-75%	C	63-65%	D		
90-93%	A-	80-82%	B-	70-72%	C-	60-62%	D-		

CLASS RULES

- **Please turn off your cell phone before class and never use it during lecture.** Feel free to walk out without distracting the class when needed.
- Attendance in class is very important. Some material, not necessarily from the book, will be covered in class and will show up on the midterm and final.
- In order to help you learn the course material, a series of homework exercises will be assigned throughout the semester. You should solve every exercise in order to prepare for the exams. There are some techniques/approaches that you will only learn by solving these problems, and the exams are closely linked to the homework exercises. Each homework is out of 10 points. **Late submissions will not be accepted.**
- Exams will only be given at the predetermined dates. Early or late exam taking will not be allowed, except for **very special** cases.
- 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 during which the groups will brief the problem statement and proposed approach. The project presentations will be at the end of the semester. Students taking their senior design course are encouraged to use their senior design project for the class project.

Make sure you check Blackboard regularly for class announcements, grades, notes, and homework related material.

HONOR CODE

All students must adhere to the Honor Code policies of George Mason University. The Honor Code will be strictly enforced in this course. All work for the course shall be considered graded individual work, unless otherwise noted. All aspects of your coursework are covered by the honor system. Any suspected violations of the Honor Code will be reported to the honor court.

Honesty in your academic work will develop into professional integrity. The faculty and students of George Mason University will not tolerate any form of academic dishonesty. The Honor Code is posted on the George Mason University's web page <http://oai.gmu.edu/the-mason-honor-code-2/>

ACCOMMODATIONS

If you have a documented learning disability or other condition that may affect academic performance, you should: 1) make sure this documentation is on file with Office of Disability Services (<http://ods.gmu.edu>) to determine the accommodations you need; and 2) talk to me and discuss your accommodation needs.