

# INST 354 - DECISION MAKING FOR INFORMATION SCIENCE

Fall 2017

Section 0101,

School of Architecture, Room 1101

Tue/Thu. 3:30-4:45 PM

**Instructor:** Christopher Antoun

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**Office Hours:** By appointment on Wednesdays (via Google Hangout) and Thursdays (in person)

## Learning Outcomes

A critical determinant of success for information professionals is being a good decision maker. But why is it that we don't always make rational and logical choices? How can we improve the quality of our judgments and choices? This course examines the use of information in individual and organizational decision making, including the role of quantitative data analysis in making informed choices. The course has two main goals. The first is to introduce you to a variety of psychological perspectives on decision making, with an emphasis on errors of judgment and choice. The second is to introduce you to a variety of quantitative tools to help you make informed decisions when analyzing data.

After successful completion of the course, you will be able to:

- Distinguish between normative and descriptive decision making;
- Articulate heuristics and biases that lead to judgment errors;
- Select and apply appropriate quantitative methods to solve a range of decision problems; and
- Use spreadsheets for data analytics.

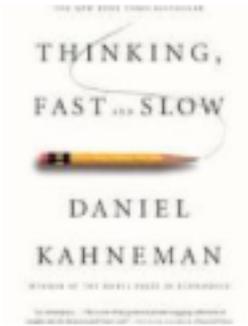
*The Pre-requisites for this course are: MATH 115 Precalculus, AND STAT 100 Elementary Statistics and Probability, AND PSYC 100 Introduction to Psychology, AND INST 314 Statistics for Information Science.*

## Required Resources

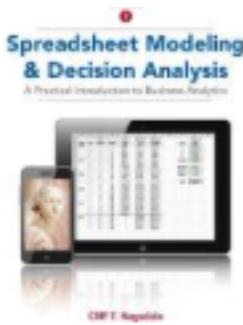
The following resources are necessary for you to successfully complete this course.

- A computer with *Microsoft Excel*. If your computer does not have Excel, consider downloading it through the university's TERPware website (<https://terpware.umd.edu>). If you do not own a computer, you can use campus computers ([www.lib.umd.edu/services/computing](http://www.lib.umd.edu/services/computing)) or borrow a laptop ([www.lib.umd.edu/tlc/equipment](http://www.lib.umd.edu/tlc/equipment)) for assignments and exams.
- Analytic Solver software. I will provide instructions for downloading a free version of this software to use for the course.

- The course website, [www.elms.umd.edu](http://www.elms.umd.edu)
- Two books:



[TFS]: Kahneman, D. (2011) *Thinking, Fast and Slow*, Farrar, Straus and Giroux - ISBN: 978-0374275631 (Hardcover); 978-0374533557 (Paperback)



[SM] Ragsdale, C. (2014), *Spreadsheet Modeling and Decision Analysis: A Practical Introduction to Business Analytics*, 7<sup>th</sup> Edition, South-Western College Pub. ISBN: 978-1285418681

## My Teaching Philosophy

To understand how I view my role as a teacher, please read my statement of teaching philosophy: <https://sites.google.com/site/chrisantoun/teaching-philosophy>

## Campus Policies

Please visit <http://www.ugst.umd.edu/courserelatedpolicies.html> for the Office of Undergraduate Studies' full list of course related policies and follow up with me if you have questions. It is our shared responsibility to abide by the University of Maryland's policies.

**Academic Integrity** – Cases of academic misconduct will be referred to the Office of Student Conduct irrespective of scope and circumstances, as required by university rules and regulations. Thus, it is important that you complete your own work on the assignments and exams. Please visit <http://osc.umd.edu/OSC/Default.aspx> for more information about academic integrity.

**Special Needs** — Students with disabilities should inform me of their needs at the beginning of the semester. Please also contact the Disability Support Services (301-314-7682 or [www.counseling.umd.edu/DSS](http://www.counseling.umd.edu/DSS)). DSS will make arrangements with you and me to determine

and implement appropriate academic accommodations. Students encountering psychological problems that hamper their course work are referred to the Counseling Center (301-314-7651 or [www.counseling.umd.edu](http://www.counseling.umd.edu)) for or expert help.

## Learning Assessments

**Homework Assignments (HA)** – There will be four assignments over the semester. You will have about one week to work on and complete each assignment. The assignments are “individual work.” Assignments will be made available on the course Canvas page. Completed assignments will be submitted via Canvas, as well. Timely submission of the completed assignments is essential. If an assignment due date is a religious holiday for you, please let me know as soon as the assignment is announced, so an alternate due date can be set.

**Worksheets (WS)** are learning assessments about the assigned readings and help you and I gauge what you have mastered and what requires more attention. The worksheets are to be completed on your own. Worksheets will be released at around 6:00 PM on the day before they are due. Set up as an online quiz on our course Canvas page, then complete and submit each worksheet by 2:00 PM on the day it is due. No worksheets will be accepted for credit after the deadline, so please be sure that you submit your work ahead of the deadline. In the rare case of a persistent technical issue, you can email it to be before the deadline passes.

**Midterm Exam** – The exam will be posted on Canvas for one day for you to complete outside of class. The exam is open book. You may *not* share your answers or work with other students. It will be administered to test your understanding of the concepts covered in the first half of the course. The midterm exam may include a variety of question types, including but not limited to multiple choice, true/false, fill-in-the-blanks, short answer, essay, and problem solving. It will be designed to take two hours, but you may take more time if you need it.

**Final Exam** – The exam will be posted on Canvas for one day for you to complete outside of class. The exam is open book. You may *not* share your answers or work with other students. On this exam, you are responsible for all material previously covered in the course, not just the material covered since the midterm exam. Like the midterm exam, the final exam may include a variety of question types, including but not limited to multiple choice, true/false, fill-in-the-blanks, short answer, essay, and problem solving. It will be designed to take two hours, but you may take more time if you need it.

## Grades

All assessment scores will be posted on the course Canvas page. If you would like to review any of your grades, or have questions about how something was scored, please email me to schedule a time for us to meet. I am willing to discuss any of your grades with you, and if I have made a mistake I will correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

Learning Assessments	#	Points Each	Category Total	Category Weight
Homework Assignments (HA)	4	16	64	32%
Worksheets (WS): pre-class reading quizzes	9	4	36	18%
Midterm Exam	1	40	40	20%
Final Exam	1	60	60	30%
<b>Total Points:</b>			<b>200</b>	

Dates for each learning assessment are indicated below under “Course Schedule.” Homework assignments can be completed at any time during the week leading up to each deadline. Therefore, extensions will be granted sparingly and with penalty.

Final letter grades are assigned based on the percentage of total assessment points earned. To be fair to everyone I have to establish clear standards and apply them consistently, so please understand that being close to a cutoff is not the same thing as crossing it (89.9  $\neq$  90.0). It would be unfair to make exceptions for some and not others.

Final grades will be assigned using the following categories:

A+	97-100 pts.
A	93-96.9
A-	90-92.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	77-79.9
C	73-76.9
C-	70-72.9
D+	67-69.9
D	63-66.9
D-	60-62.9
F	less than 60

## Course Schedule

**WS**= Worksheet submitted online by 2 PM that day

**HA**= Homework assignment submitted by 2 PM that day

**TFS** = *Thinking, Fast and Slow*

**SM** = *Spreadsheet Modeling and Decision Analysis*

**R** = Readings that are not from the two required books. See the list below under “Readings.” They will be made available on Canvas.

Date	Topics	Readings	Learning Assessments
Tue 8/29	Introduction and course overview	---	
Thu 8/31	Descriptive vs. normative decision making	R-1 R-2	<b>WS-1 (by 2 PM)</b>
Tue 9/5	Two systems of thinking	TFS p. 3-58	
Thu 9/7	Two systems of thinking (cont.)	TFS p. 59-108	<b>WS-2 (by 2 PM)</b>
Tue 9/12	Judgment heuristics and biases	TFS p. 109-165	
Thu 9/14	Judgment heuristics and biases (cont.)	TFS p. 166-198	<b>HA-1 (by 2 PM)</b>
Tue 9/19	Judgment heuristics and biases (cont.)	TFS p. 199-233	
Thu 9/21	Judgment heuristics and biases (cont.)	TFS p. 234-268	<b>WS-3 (by 2 PM)</b>
Tue 9/26	Decision making errors	TFS p. 269-321	
Thu 9/28	Decision making errors (cont.)	TFS p. 322-376	<b>WS-4 (by 2 PM)</b>
Tue 10/3	Experience and memory	TFS p. 377-418	
Thu 10/5	Attribution theory	R-3	<b>HA-2 (by 2 PM)</b>

Tue 10/10	Social influences	R-4	
Thu 10/12	<b>Midterm Exam (posted to Canvas at 7:00 AM; due by 11:59 PM)</b>		
Tue 10/17	Introduction and overview of software ( <i>Microsoft Excel</i> ); Modeling for decision making	SM p. 1-16	
Thu 10/19	Optimization and linear programming (LP)	SM p. 17-39	<b>WS-5 (by 2 PM)</b>
Tue 10/24	Modeling and solving LP problems	SM p. 46-81	
Thu 10/26	Modeling and solving LP problems (cont.)	SM p. 81-115	<b>WS-6 (by 2 PM)</b>
Tue 10/31	Sensitivity analysis	SM p. 139-155	
Thu 11/2	Sensitivity analysis (cont.)	SM p. 155-171	<b>HA-3 (by 2 PM)</b>
Tue 11/7	Regression analysis	SM p. 433-446	
Thu 11/9	Regression analysis (cont.)	SM p. 446-453	<b>WS-7 (by 2 PM)</b>
Tue 11/14	Regression analysis (cont.)	SM p. 453-463	
Thu 11/16	Regression analysis (cont.)	SM p. 463-471	<b>WS-8 (by 2 PM)</b>
Tue 11/21	Data Mining	SM p. 484-509	
Thu 11/23	No class		
Tue 11/28	Data Mining (cont.)	SM p. 510-531	
Thu 11/30	Data Mining (cont.)	SM p. 531-543	<b>HA-4 (by 2 PM)</b>
Tue 12/5	Simulations	SM p. 619-645	
Thu 12/7	Simulations (cont.)	SM p. 646-680	<b>WS-9 (by 2 PM)</b>
Thu 12/14	<b>Final Exam (posted to Canvas at 7:00 AM; due by 11:59 PM)</b>		

If there are updates to the schedule, they will be posted to Canvas.

## **Readings**

R-1. Bell, Raiffa, Tversky, (1998) *Descriptive, Normative and Prescriptive Interactions in Decision Making*, p. 9-30.

R-2. Kunreuther, Meyer, et al. (2002) *High Stakes Decision Making: Normative, Descriptive and Prescriptive Considerations*.

R-3. Plous, S. (1993), *The Psychology of Judgment and Decision Making*, McGraw-Hill pp. 174-188.

R-4. Plous, S. (1993), *The Psychology of Judgment and Decision Making*, McGraw-Hill pp. 191-214.