

Cognitive Psychology of Decision-Making Lab

Draft syllabus



Semester & Location:	Fall 2021 - DIS Copenhagen
Type & Credits:	Elective Course - 3 credits
Major Disciplines:	Neuroscience, Psychology
Faculty Members:	Emil Andersen
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Time	TBA

Description of Course

How rational are our decisions really? This experiential lab covers theories and phenomena that underlie human decision making and reasoning. Implications for human behavior is explored through empirical experiments on the individual and group level. Insights from cognitive science, neuroscience, and psychology are used to investigate the challenging and creative ways that humans' reason and decide.

Learning Objectives

The course provides an overview of three important ways we decide – reasoning, decision making, judgment – and the systematic biases that influence them. This is done through an experiential setup, where you will create and experience variants of the experiments as you read about them.

Through this, you will receive a nuanced, scientific framework with which to judge the ways decisions are made and be equipped with the basic methodological insights for studying decision-making.

By the end of the course, you will:

- Have a nuanced view of reasoning, decision making and judgments, and the most important biases and heuristics that influence them.
- Know about the impact of cognitive and affective states on our decision making.
- Have an overview of the most important research methodologies in the field.
- Be able to create and present your own experiment on decision-making.

Faculty

Emil Andersen

Emil received his Ph. D. in Applied Psychology from the Technical University of Copenhagen in 2019 and his M.Sc. Psychology from the University of Copenhagen in 2015. He has taught applied statistics and experimental methods throughout his studies. Emil is interested in the patterns that underlie human behavior and how those insights can be applied to practice. And since receiving his Ph.D., he has worked as a human factors consultant doing exactly that. With DIS since 2015.

Readings

Books

- Select chapters in Kahneman & Gilovich (2002): *Heuristics and Biases: The Psychology of Intuitive Judgment*

Example articles:

- Evans, J. S. B. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annu. Rev. Psychol.*, 59, 255–278.
- Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. *Science*, 185(4157), 1124–1131.
- Shah, A. K., & Oppenheimer, D. M. (2008). Heuristics made easy: An effort-reduction framework. *Psychological Bulletin*, 134(2), 207.

Field Studies

Potential visits to companies specializing in implementation of decision science.

Guest Lecturers

Potential discussions with experts in the field, invited to discuss their experience with decision science in the Danish/European perspectives pertaining to research and implementation.

Approach to Teaching

The course will give an experiential tour of prominent decision-making research with a focus on re-creating and challenging it.

Class-work will consist of trying and discussing the experiments in the readings and the methodology they employed. You will be encouraged to ask questions and to discuss with your fellow students, and to try out ideas. The purpose is to train you in proper employment of the scientific method.

You will receive freedom under responsibility, meaning that you will be allowed to explore your own ideas under the expectation that you can argue for your choices when challenged.

Expectations of the Students

This is an *experiential lab* and as such, you can expect the course to be not just interactive, but experiential, meaning you will try first hand some of the techniques you are learning about and come up with your own experiments. Therefore, I expect you to be imaginative, reflective and collaborative. It is my responsibility to ensure your mastery of the course material on three conditions:

- You will be prepared for each class and complete assignments on time
- You will ask questions and actively engage in the course
- You will collaborate and engage with your classmates to create a safe and open learning environment

Evaluation

Participation & Engagement:

Class participation will be the central source of engaging with the material and developing your research reports. Asking questions to clarify the material and to understand your fellow students will be key for a successful course. Therefore, examples of good class participation include (but are not limited to):

- Asking relevant questions to dig deeper in the readings.
- Engaging and discussing findings with fellow students.
- Contributing with own ideas and reflections regarding methodological challenges and/or future research.
- Contributing to technical work involved in creating experiments.

Research Reports (1-3):

As part of this experiential lab class, you will re-create adjusted and abbreviated versions of the experiments that you have been learning about in class

For the first three themes, you will choose one experiment to recreate and write a short research report, which will explore the experiment, including:

- The hypotheses, the paradigms and the corresponding conclusions.
- Methodological considerations
- A critical evaluation of the study, leading to suggestions for future research.

Final Research Report

To conclude the course, you will create and execute your own experiment based on the curriculum literature in groups.

The experiment can be a variation of the curriculum designs (possibly with basis in the preceding research reports) or an original design of your own choosing.

The Final Research Report will detail the:

- Background literature
- Research hypothesis/ hypotheses
- Choice of experimental design (including rationale).
- Discussion of the results in relation to the hypothesis /hypotheses.
- Suggestions for future research.

Final Poster Presentation:

Based on the Final Research Reports, groups will create posters to present at the DIS Showcase. The posters will highlight specifically interesting findings, key quotes and research design considerations, and the group will be available to answer questions from the audience.

Grading

Assignment	Percent
Participation & Engagement	20%
Research Report 1	15%
Research Report 2	15%
Research Report 3	15%
Final Research Report Paper	30%
Final Poster Presentation	5%

Course Summary:

Class Nr.	Theme	Class Sub-theme
1	Intro	Introduction
2		Dual-Process Theory (1/2)
3		Dual-Process Theory (2/2)
4	Biased Information Search	The Availability Heuristic
5		Representativeness Bias
6		Confirmation Bias (1/2)
7		Confirmation Bias (2/2)
8	Over-confidence	The Hot-Hand Fallacy
9		The Gambler's Fallacy
10		The Dunning-Kruger Effect
11		Hindsight Bias
12		Overconfidence in Estimates
13	Estimation Bias	Anchoring
14		Prospect Theory
15		Loss Aversion
16		Risk-Aversion and Affinity
17		Framing (1/2)
18		Framing (2/2)
19	Modulations of Biases	Context Based Modulations (1/2)
20		Context Based Modulations (2/2)
21		Affect Based Modulations
22		State Based Modulations
23	Outro	Outro