

Decision-making: theories, models and cognitive processes 2026-2027

Prof. Marius Usher (marius@post.tau.ac.il)

Mon, 16-18 -- ***This course is taught in English***

Textbooks:

- 1) Straight choices: the psychology of decision-making., BR Newel, DA Lagnado & D. Shanks. Psychology Press. 2007.
- 2) Thinking & Deciding, Jonathan Baron. Cambridge University Press 2008.

Course Requirements

- Final Assignment will be uploaded to the course site in the last meeting. To be handed in ~1 month after the end of the semester. Further details will be given in the last meeting.

Course Plan

Relevant reading material (in English) before each lecture will be suggested on the course site.

Lecture 1: Introduction to decision making. Types of decisions: evidence/value-based, normative/descriptive, risk/multiple-attributes. Heuristics. Description/experience. Averaging and judgments of probability. Rationality, History, choice paradoxes (St Petersburg; invariance; sunk-costs). Affect and unconscious processes in decision-making.

Lecture 2: Evidence-based decisions. The signal detection theory (d' , criterion, ROC curves). Decision-confidence; Speed-accuracy tradeoff; probability biases and coherency.

Lecture 3: Probability judgments. Bayesian model of hypothesis updating. The relation to signal detection and diffusion model of choice-RT.

Lecture 4: Intuitive averaging of perceptual and numerical values. Statistical summaries outside focal attention; number representations; the intuitive statistician (Jordan effect).

Lecture 5: Probabilistic inference; Heuristics vs compensatory strategies. Integration of probabilistic cues; weighted averaging for multi-attribute decisions.

Lecture 6: Value-based decision: the normative theory. Expected utility; Axioms of rational choice; Utility functions (Bernoulli). risk/loss aversion.

Lecture 7: Deviations from normativity and Prospect theory. Allais paradox; framing; Dominance. Prospect-theory. Framing, loss-aversion. Ambiguity effect and

Ellsberg paradox.

Lecture 8: Advanced topic: CPT; Transfer of attention model. Problems with original PT, Cumulative (Revised) Prospect Theory. TAX Model.

Lecture 9: Multi-attribute decision making and preference reversals. Similarity, compromise and attraction effects. Elimination by aspects; violations of transitivity and the lexicographic model. Compensatory and non-compensatory models.

Lecture 10: Heuristics and Experience based decisions. Priority Heuristic, Experience-based decisions, Decisions with RSVP, Selective Integration Model.

Lecture 11: Emotions and Affect in decision-making; The role of orbital frontal lobe: Damasio's somatic theory; Iowa Gambling Task

Lecture 12: Unconscious decisions, Intuitive vs. Analytical decisions. Dijksterhuis' Unconscious Thought Theory; Lie-Detection; Intuitive vs. Analytical mind-sets.

Lecture 13: Intuitive Decisions. Predictions, Intuitive forecasts, Individual differences