Cognitive Neuroscience: Brains, Decisions, and Behavior

Spring 2028

Location and time: TBA
Instructor: Marta Zakrzewska
Email: marta.zakrzewska@swedishprogram.org, marta.zakrzewska@ri.se
Office hours: by appointment
Credit: This course is typically given credit by Psychology Departments.
Prerequisite: Introduction to psychology, one course in neuroscience or cognitive psychology, and one course in statistics.

Course description

Why do we buy the product with the green label, trust one colleague but not another, or refuse to try a food that is perfectly safe? Cognitive neuroscience studies the brain mechanisms behind such choices. It draws on neuroscience, cognitive and social psychology, behavioral economics, and statistics. This course explores how these perspectives can help us understand processes such as decision-making, emotion, learning, collaboration, and innovation, while also considering how scientific evidence can inform challenges in organizations and other complex environments.

We follow a decision from the brain to society. We begin by learning how we can look into the inner workings of the brain, and how it represents value, risk, and reward. We then examine why fast heuristics and emotions such as fear and disgust often steer choices more than careful reasoning, and how learning, habits, and social context shape what we do. The final part applies this knowledge: why people resist innovation, how marketing and misinformation shape beliefs, and why individual choices about personal finance, health, and sustainability add up to collective outcomes. The course combines seminars, student-led discussion, in-class mini-experiments, and a visit to a working research lab in Stockholm.

Topics to be covered

1. What can the brain tell us about behavior: why do brain pictures persuade us, and when should they?
2. Looking into the brain: what do EEG, fMRI, tDCS and related methods actually measure or change?

3. Thinking fast and thinking wrong: are heuristics and biases errors or useful shortcuts?
4. From senses to choices: how perception shapes decisions.
5. Neuroeconomics: how does the brain put a price on things? Risk, reward and prediction errors
6. Emotion as a decision signal: do feelings make choices worse or better?
7. Learning, habits and social contexts: why are habits so hard to change, and how do we learn from others' experiences?
8. Social neuroconomics: trust, cooperation and collaboration
9. Prejudice in the brain: can we see and change our own biases?
10. Innovation and the fear of the new: what drives creativity and why do we reject new solutions?
11. Consumer neuroscience: persuasion, marketing and misinformation and their effects on consumer behavior
12. Choices that affect everyone: financial choices, health, sustainability and behavior change OR Choices that affect everyone: why do people under-save, skip vaccines, work while sick, or not recycle, and what works to change it?

Learning outcomes

By the end of the course, students will be able to:

1. Describe the main brain systems involved in perception, valuation, emotion, learning, and social cognition, and how they interact in everyday decisions.
2. Explain what common methods (EEG, fMRI, tDCS, psychophysiology, behavioral experiments) can and cannot show, including the limits of reverse inference and small samples.
3. Compare psychological, neuroscientific, and economic explanations of the same behavior, drawing on neuroeconomics and consumer neuroscience.
4. Critically evaluate brain-based claims in media, marketing, and management writing.
5. Apply findings to a real challenge in an organization or society (e.g., adoption of sustainable products, saving and spending, health behavior) and design a study that could test a proposed solution.

Course requirements and examinations

Grades are based on your active attendance and participation in class, and on the midterm and the final paper. More details on all elements will be given during the first lecture and throughout the term.

Active participation and discussion moderation

For each discussion seminar, the student is to submit two discussion questions related to the week's literature via Google Classroom. For each seminar, a student will be assigned the role of moderator of the discussion. Thus, once or twice each term, depending on class size, the student will moderate the seminar discussion. This involves gathering the questions submitted by all students and presenting them on-screen in chosen order. You are welcome to look for, and present during class, any additional information that will help you discuss the topic. Feel free to include interactive elements, such as small in-class surveys, exercises, role play, etc. The moderators will also make sure everyone gets space to speak and that the discussion stays on topic.

Attendance

This course takes an interactive approach that requires engaged participation from all members of the class. Students' presence is essential to the liveliness of the course; therefore, attendance is mandatory. If a student is considerably late for class, this may be counted as an absence. Excused absences can include illness or an unexpected emergency such as the death of a family member, but not leisure travel. Students should always contact their instructors to request permission for any excused absence as early as possible. In case of doubt, also contact the Director. For repeated absences, whether excused or unexcused, the instructor can decide to require the student to complete additional work.

Calculation of the final grade

Active participation in seminars and discussion moderation 20%
Midterm paper 30%
Final paper and presentation 50%

Class etiquette

Everybody should behave respectfully in the classroom. This includes coming to class on time, giving speakers undivided attention, addressing classmates and the instructor with respect, and refraining from academic dishonesty.

Academic Dishonesty

In the unfortunate case of any kind of cheating or plagiarism, students receive an automatic F for the exam or paper in question. Moreover, the student may also receive an immediate F for the course. Such a decision will be made in consultation with the Director and Executive Director. Any form of academic dishonesty is a violation of our code of conduct, and as such, may result in further disciplinary actions.

Laptops and phones

You may use electronic devices for note-taking only. Full class engagement is not possible while scrolling social media or browsing the internet. Moreover, it can be both distracting for and disrespectful towards others. If you use your device (especially your phone) extensively for non-note-taking purposes, you risk being marked as absent.

Required readings (TBA)

We will not follow a textbook during this course. Instead, we will read relevant publications that review topics of interest to us and present important studies. Any articles listed in the syllabus may be subject to change.