

Welcome to Maastricht University

MSc Neuroeconomics
Research Master in
Cognitive and Clinical
Neuroscience

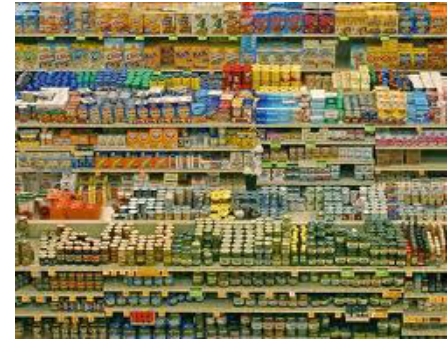


Neuroeconomics seeks to understand and explain (puzzling) everyday behavior

So many choices.



How do we choose?



How do we know what a good and a bad choice is?



(A hint: this program = good choice)

Neuroeconomics seeks to understand and explain (puzzling) everyday behavior



- Why are people gambling and taking insurance at the same time?
- Why do casinos only talk about the possible gains and insurance companies only about the danger of losses?

Neuroeconomics seeks to understand and explain (puzzling) everyday behavior



- Why are people tempted to pick the chocolate when they know that they should better pick the fruit?
- Why are all sweets in the rack at the cashier in the supermarket?

Neuroeconomics seeks to understand and explain (puzzling) everyday behavior



- What makes us humans greedy and cooperative at the same time?
- Why are bankers paid huge bonuses and is there anything wrong with that?

Neuroeconomics seeks to understand and explain (puzzling) everyday behavior

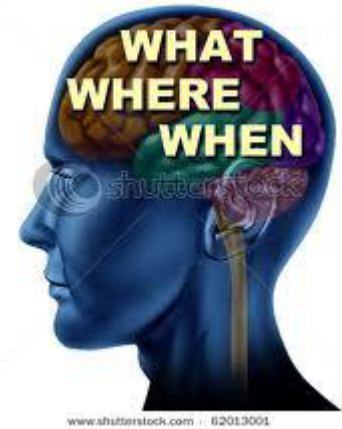


How does this all fit together?

Neuroeconomics is an interdisciplinary endeavor

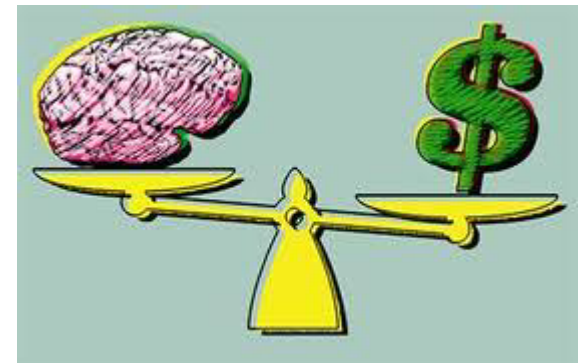
Neuroeconomics adds brain to economics.

- Neuroeconomics seeks to uncover the neuronal basis of our choices and behavior.



Neuroeconomics adds economics to neuroscience.

- Neuroeconomics looks at the brain as a system using limited resources.



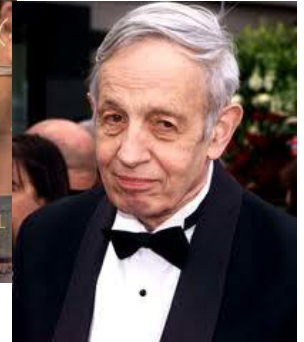
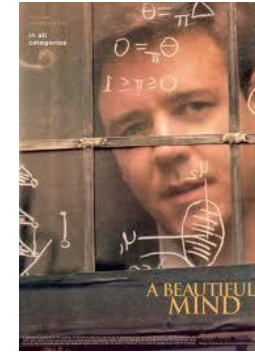
Tools and methods from economics, neuroscience, and psychology

Economics and Game Theory

Use the formal language of economics and game theory to model and predict behavior.

Economics Experiments

Use incentivized experiments without deception to explore behavior.



Neuroscience

Use methods from neuroscience to measure and explore neural processes underlying observed behavior.

Psychology

Use insights from psychology (illusions, heuristics, framing effects) to improve models of behavior.

The neuroeconomics curriculum

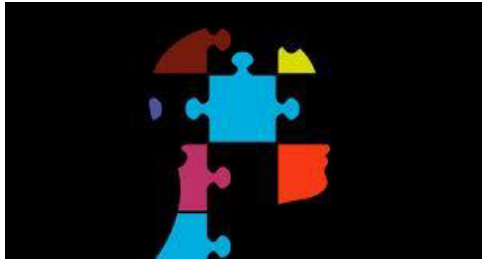
Jointly offered by Faculty of Psychology and Neuroscience (FPN) and School of Business and Economics (SBE).

- You will follow courses at both, FPN and SBE.

The curriculum:

- A. Behavior and Mind (at SBE and FPN)
- B. Neuroscientific Methods (at FPN)
- C. Research Skills (at FPN and SBE)
- D. Research (at FPN and SBE)

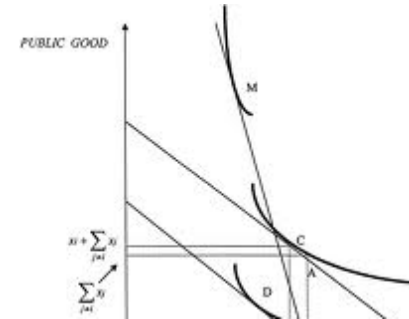
Behavior and mind



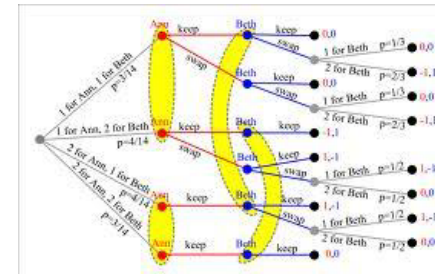
Psychology ~ Neuroscience
~ Economics



Social Neuroscience



Decision & Equilibrium Theory



Game Theory & Information



Behavioral Economics

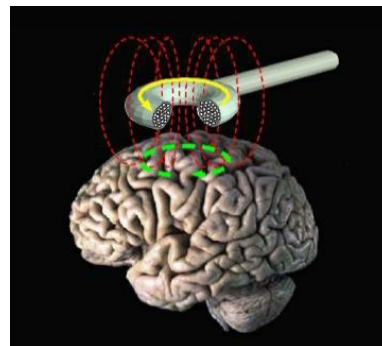
Neuroscientific methods



Imaging (fMRI)

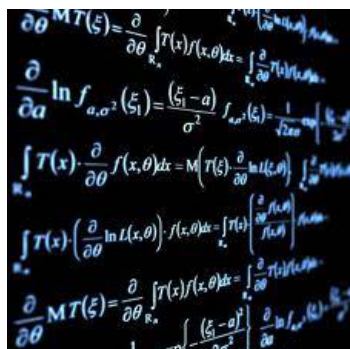


Electroencephalography (EEG)
Magnetoencephalography (MEG)



Non-Invasive Brain Stimulation (NIBS)

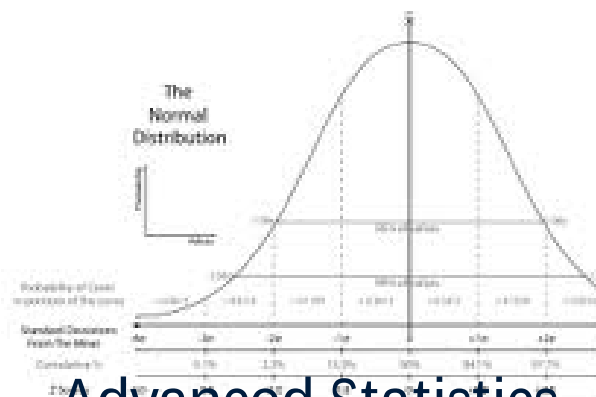
Research skills



Handwritten mathematical formulas on a chalkboard, including:

$$\frac{\partial}{\partial \theta} \ln f_{a, \sigma^2}(\xi_i) = \frac{(\xi_i - a)}{\sigma^2} - \frac{1}{2\sigma^2} \left(\frac{\partial a}{\partial \theta} \right)^2$$
$$\int_{\mathbb{R}^n} T(x) \cdot \frac{\partial}{\partial \theta} f(x, \theta) dx = M \left(T(\xi) \frac{\partial}{\partial \theta} \ln f(\xi, \theta) \right) - \int_{\mathbb{R}^n} T(x) \left(\frac{\partial}{\partial \theta} \ln f(x, \theta) \right) \cdot f(x, \theta) dx = \int_{\mathbb{R}^n} T(x) \left(\frac{\partial}{\partial \theta} \ln f(x, \theta) \right) \cdot f(x, \theta) dx$$
$$\frac{\partial}{\partial \theta} M T(\xi) = \frac{\partial}{\partial \theta} \int_{\mathbb{R}^n} T(x) f(x, \theta) dx = \int_{\mathbb{R}^n} T(x) \frac{\partial}{\partial \theta} f(x, \theta) dx = \int_{\mathbb{R}^n} T(x) \left(\frac{\partial}{\partial \theta} \ln f(x, \theta) \right) \cdot f(x, \theta) dx = \int_{\mathbb{R}^n} T(x) \left(\frac{\partial}{\partial \theta} \ln f(x, \theta) \right) \cdot f(x, \theta) dx$$

Mathematical Research Tools



Advanced Statistics



MATLAB & Brain Voyager



Experimental Economics Methods

Your own research

The larger part of the second year is dedicated to research:

- A. Research Grant Writing
- B. Research Internship and Master Thesis

In Maastricht: Excellent multidisciplinary research groups at Maastricht University – Center of Neuroeconomics (MU-CEN).

Abroad: Students have joined research groups at CalTech, Cambridge, MIT, Oxford, WZB-Berlin, Max Planck Institutes, and more.

Topics: Range from individual decisions to social human behavior.

Methods: Range from behavioral research to fMRI, TMS, ...



Career focus

Optimal basis for fundamental and applied research in neuroeconomics and decision sciences:

- PhD careers at economics, psychology, or neuroscience department (e.g., University of Oxford, University of Santa Barbara, Max Planck Institute Berlin, ...)

Excellent preparation for advice in decision making and conflict resolution:

- Consultant and advisor at institutions and organizations (e.g., Internet start-up, Ministry of Education, ...).



More information? Questions?

- Ask me questions now.
- Meet with current students at the Information Market.
- Send me an email:
m.wibral@maastrichtuniversity.nl
- Visit our Research Master website at
<https://www.maastrichtuniversity.nl/education/master/research-master-cognitive-and-clinical-neuroscience> or
www.neuroeconomics.nl

