

## The Neuroscience of Time Space and Number

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The course will offer a journey into cognitive neuroscience, in particular into the neuroscience of time and its link with the neuroscience of space and numerosity.

The ability to tell time is one of the most important function the brain performs. Tasks such as, understanding/producing language, appreciating music, playing a musical instrument or predicting when an external event will occur rely on the brain's ability to tell time. The course will offer an overview of the state of the art of the neuroscience of time from theoretical models to empirical data. Particular emphasis will be given to the processing and perception of time in a range spanning from a few hundreds of milliseconds to a few seconds.

### 1. *What is Time*

- a. A few specifications to start with
  - b. How we study duration perception and processing
  - c. Properties of duration perception.
- [1]

### 2. *How and Where is Time Represented in the Brain?*

- a. Internal Clock Models [2][3][4]
- b. State Dependent Network Model [5][6]
- c. Energy Read-out /Ramping Models[7][8]
- d. Striatal Beat Frequency Model[9][10]
- e. A new prospective: neural population dynamics and duration tuning. [11][12] [13]

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