



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Cognitive and Behavioral Measures

2021-1-F5105P023

---

#### Learning area

2: Research methods in experimental psychological sciences

#### Learning objectives

##### *Knowledge and understanding*

- Illustrating the diversity of behavioural approaches employed to study different aspects of cognition (response inhibition, memory, attention).
- Elucidating how the assumptions made by cognitive researchers are reflected in their experimental methods.

##### *Applying knowledge and understanding*

- Understanding the experimental design of classic reaction time paradigms in psychology.
- Designing and programming computerized experiments.
- Analyzing and interpreting the data to reach a full grasp of the underlying psychological mechanisms

#### Contents

Experimental psychology makes large use of behavioral measures to study psychological functions and, more in general, to build theories of cognition. During this course, students will familiarize with the main experimental paradigms and designs of cognitive psychology and how they are implemented in different subfields of research. Students will deepen the theoretical knowledge of paradigms and designs proper of cognitive psychology; at the same time, they will acquire basic knowledge on how to implement them as computerized experiments.

Finally students will also work on behavioral data analysis (reaction times, accuracy, eye-movement data) with the aim to reach a good understanding of the behavioral measures and how to treat them.

## Detailed program

- RT, Accuracy and Signal Detection Theory measurements (Sensitivity and Response Criterion).
- Behavioral paradigms measuring overt and covert spatial-based attention: the spatial cueing task.
- Behavioral paradigms measuring spatial attention: endogenous and exogenous variants of the Posner cueing task (practicing in programming the experiment).
- Behavioral paradigms measuring feature-based (visual) attention: the visual search task.
- Behavioral paradigms measuring feature-based attention: visual search and its variants (practicing in programming the experiment).
- Behavioural paradigms measuring implicit memory processing and automaticity: the Priming paradigm (practicing in programming the experiment).
- Behavioral paradigms measuring interference: the Stroop task (practicing in programming the experiment).

## Prerequisites

Basic knowledge of statistics. Basic knowledge of MATLAB software (and Psychtoolbox) or other softwares for experiment (e.g., E-Prime, OpenSesame, Inquisit); knowledge of general psychology.

## Teaching methods

The course consists of lessons, classworks, and assignments. All materials needed for the course (e.g., slides, readings) are made available on the e-learning website of the course.

\*\*\* Lessons will be held in presence or through online video lessons, according to the University's regulations regarding the COVID-19 emergency situation. In both cases, all lessons will be video recorded and made available to the students.\*\*\*

## **Assessment methods**

The course will verify the ability of students to: appreciate the methodological value of an empirical study, implement a simple behavioral experiment, and inspect behavioral data.

Students will be asked to implement, administer, and present (in the last class) preliminary results of a behavioral experiment (starting from one in-class example, students are asked to develop a novel experiment or reproduce an experiment from literature to run a follow-up).

\*\*\* During the Covid-19 emergency, exams will be conducted according to the University's regulations regarding the COVID-19 emergency situation.\*\*\*

## **Textbooks and Reading Materials**

All reading materials will be presented and specified during the course and will be available to students on the e-learning website of the course.

---