UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Applied Cognitive Development

2627-2-F5109P016

Learning area

Applied Experimental Psychological Sciences

Learning objectives

Knowledge and understanding
• Typical cognitive development: models, methods and instruments to assess cognitive development
• Atypical cognitive development: etiological models explaining neurodevelopmental disorders
• Experimental designs to study neurodevelopmental disorders
• Technological approaches to assess and address neurodevelopmental disorders

Applying knowledge and understanding
• Understanding, analysis, and evaluation of research designs in cognitive developmental psychology
• Identifying and analyzing the critical elements of research designs to understand different application in cognitive development
• Applying experimental paradigms for the investigation of typical and atypical cognitive development and its relationships with behaviour and emotions
• Exploring and reasoning about potential and limits of technological approaches applied to atypical development

Making judgment
Students will gain the ability to independently integrate methodological and theoretical skills in the field of applied cognitive development and to apply them to critically judge previous studies and propose new research projects in the different sub-fields of applied cognitive development, taking into account the specific critical aspects of each research technique and various operational situations. Students will also gain the ability to reorganize the acquired knowledge to promote innovative and original solutions through judgment based on empirical data and a critical reading of the complexities inherent to applied cognitive development. This will be achieved through class discussions and group work.

Communication skills
Students will acquire communication skills that allow effective interaction with various professionals from different cultural and scientific backgrounds; through group presentations, students will learn how to propose innovative research projects in applied cognitive development and to communicate their results and conclusions to an audience of specialists and non-specialists in a clear, detailed, and scientifically grounded manner, using the specific lexicon of the discipline. Students will also learn how to coordinate during teamwork and collaborate effectively and competently in English.

Learning skills
The course will promote the acquisition of the ability to adopt new developments and innovations emerging from international scientific results in applied cognitive development, updating one's skills to the rapid evolution of the field. The course will also promote the use of specialized bibliographic resources to perform in-depth scientific reviews to critically judge current knowledge in applied cognitive development and capitalize on it to propose further advancements in the field (e.g., through the development of new scientific projects). This will be achieved by discussing the available digital instruments to perform bibliographic research and through class discussions.

Contents

Studies on cognitive development are devoted to understand the typical developmental trajectory, as well as the etiology of neurodevelopmental disorders, and improve assessment tools and treatment programs. In this course, different types of cognitive processes will be presented and discussed: attention, memory, executive function, school learning, language, theory of mind, intelligence and visuo-spatial skills. These cognitive processes will be analyzed in relation to neurodevelopmental disorders (ADHD, Autism, Learning Disability, Language Impairment), school inclusion, effects of the new media on cognition, the reliability of child witness, as well as sensory and social deprivation. Students will familiarize with experiments and tests for the assessment of cognitive development. The neurological basis and the use of new technological approaches, such as robots and virtual reality to assess and promote cognitive development will be presented and discussed.

Detailed program

The course focuses on theory and practice of the research approach to analyze different aspects of cognitive development:

• Assessment and treatment of neurodevelopmental disorders, with a focus on Learning Disabilities, ADHD and Autism
• Neurological basis of developmental disorders
• Trainings for children with neurodevelopmental disorders: how to define a project and how to test their efficacy
• Use of new technology, such as robots and virtual reality, to understand and train cognitive processes in children
• School inclusion of children with special educational needs
• Atypical development of attention and executive function in relation to technological devices, such as video games
• Sensitive periods for sensory learning
• Sensory and social deprivation

Prerequisites

A background in developmental psychology and cognitive psychology will help in understanding the course content. Students lacking such basic knowledge are encouraged to ask for a list of basic references.

Teaching methods

a) All classes will be held in presence (90%)
b) Teaching will consist of lecture-based lessons, and also interactive classwork that will take place through the discussion of scientific articles, videos' presentations and comments, practical exercises, and discussions on the course topics (10%)
c) No class will be held online, and no class will be recorded

The course material (slides and, when possible, scientific articles) will be made available on the e-learning site of the course so that also non-attending students can use it

Assessment methods

The exam will verify the level of mastery of the course contents with special attention to:

- Methods and research designs for treatment evaluation
- Methods and research designs in cognitive development
- Ability to elaborate course contents
- Ability to analyze a scientific paper in the field of cognitive development.

The exam will be written and will consist of 4 open questions, that the student will need to answer within 90 minutes.
The final grade will consist of the sum of points given by the written exam and the two presentations given during the class.

Textbooks and Reading Materials

1. Slides presented in class
2. Papers will be presented at the beginning of the class

The bibliography will be provided at the beginning of the class and published in the class web-site.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING