



## Math Education

MAT/04 - 9 CFU - 1° Semester

### Teaching Staff

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### LEARNING OBJECTIVES

Knowledge and comprehension of the main topics of teaching/learning mathematics. Learning methodologies and technologies to teach and the main theoretical frameworks of research in mathematics education.

### COURSE STRUCTURE

The goal of the course is to give both theoretical and practical tools to develop a professionalism as a mathematics' teacher.

To reach such a goal, every lecture is divided into two parts:

I) in the first part knowledges on pedagogical theories and didactic methodologies are provided through participated taught classes;

II) in the second part such theories and methodologies are put into practice either through laboratorial activities (usually those experimented in actual classes), often by using collaborative or cooperative learning or by analyzing learning students, or by organizing lectures to be experimented in classes at school.

If possible, a visit to a science museum will take place.

Some activities related to teacher training are planned.

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### DETAILED COURSE CONTENT

The mathematics laboratory and the pedagogy of Dewey. "Embodied mind" theory. Role of gestures in

teaching/learning mathematics. History of mathematics in mathematics education. Learning theory of Piaget. Learning theory of Vygotskij. Theory of semiotic mediation. The role of technology in mathematics education and the TPACK framework. Dynamic geometry systems in the learning of mathematics. Theory of multiple intelligences of Gardner. Kolb learning styles. Collaborative and cooperative learning. Special education needs in inclusive teaching/learning environments.

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## **TEXTBOOK INFORMATION**

Main resource is to attend the lectures, that will provide also laboratorial activities.

Research papers will be provided together with on-line material.

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