



UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP127_DIP_MAT

Visiting Professor Program Academic year 2022/2023

TEACHING COMMITMENT: 16 hours

COURSE TITLE

Didactics of Mathematics 2

TEACHING PERIOD

2nd term

SCIENTIFIC AREA

Mathematics Education

LANGUAGE USED TO TEACH

English

COURSE SUMMARY

The course presents the field of mathematics education research from a general point of view considering various aspects of mathematics teaching and learning. In particular, it focuses on multimodal perspectives and elements of semiotic and cognitive analyses of thinking processes, the study of mathematical practice and problem solving, the role of the teacher within the classroom, the role of technologies and communicational infrastructures, the material dimension of mathematical activity. It also investigates the theory and practice of elementary algebra teaching (symbol sense, operational vs. structural views in mathematics, the arithmetic-algebra gap, algebraic competencies) and calculus teaching (the concept of function, the notion of procept, covariation of variables, the mathematics of change, the algebra-calculus gap, cognitive roots), other than presenting epistemological and methodological implications. Critical analysis of didactic software for the teaching and learning of algebra and calculus is also part of the discourse.

LEARNING OBJECTIVES

The course belongs to the theoretical curriculum and can be suitably attended by students interested in the didactical and cultural aspects of mathematics.

Its learning objectives are:

- (a) developing critical knowledge about mathematics teaching and learning processes in relation to national and international research in mathematics education, to the institutional framework, to didactic methodologies and the use of technology for the teaching and learning of mathematics;
- (b) developing capacity to apply knowledge to the analysis of contexts and problems of mathematics teaching and learning, and to construct new didactic approaches to mathematics learning at secondary school;
- (c) fostering interest in research activity on specific themes;
- (d) working individually and in group, examining a subject matter from various perspectives, using language for scientific communication, developing flexibility, rigor, openness.

TUTORSHIP ACTIVITIES

N/A

LAB ACTIVITIES

N/A

OTHER ACTIVITIES BESIDES THE COURSE

Seminars for PhD students and researchers in mathematics education

VISITING PROFESSOR PROFILE

The Visiting Professor works at Adelphi University, NY. She is an expert in mathematics education. Her early work draws on socio-cultural theories and narrative theories to study the lived experience of mathematics students and teachers. She has also deeply studied social semiotics to analyse mathematics classroom discourse, with particular attention to diagramming and other visual modalities, as research shows the extreme significance of visualization in mathematics teaching and learning. Her later work incorporates a focus on educational technology and the role of the body in learning mathematics, exploring how multimodality plays an important role in teaching and learning. The Visiting Professor published extensively on this topic, exploring, for instance, how touch-screen technologies are changing the way we learn mathematics. She has been Associate Editor at the journal Educational Studies in Mathematics, and continues to contribute to leadership roles in the research community.

CONTACT PERSON AT THE DEPARTMENT

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