CERME 14: Thematic Working Group 11
Teaching and learning of discrete and computational mathematics

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Scope and focus of the Working Group

The development of computer science in the last decades has generated changes in contents and practices in mathematics. In particular, it has contributed to the recent emphasis and success of discrete mathematics, a classical topic in mathematics. Also, the development of computer science led to the growth of computational approaches in mathematics, fostering applications and new ways of thinking and doing mathematics. These evolutions in mathematics, and the related needs for future generations, require and produce new mathematical contents at school that TWG 11 intends to address, including but not restricted to computational thinking. The topics covered by TWG 11 are taking a huge place in many current curricula around the world, and are entering into the common core of mathematics for international organizations like OECD. For this reason, research developments and insights are expected by teachers, teacher educators, and policy makers.

Call for papers and poster proposals

We invite research-based papers that discuss empirical, theoretical, methodological, or philosophical issues pertaining to the teaching and learning of discrete and computational mathematics. We welcome papers that address, but are not limited to, the following themes:

- all aspects of discrete mathematics, i.e., both classical subjects, and subjects invoking new needs for computer science: combinatorics, graph theory, discrete geometry, automata, game theory, cryptography, etc.;
- manipulation and representation of mathematical objects and data in computer science, simulations and discrete modeling, new computational views on classical mathematical objects, computational approaches in mathematics;
- links between mathematics and computer science, their foundations, concepts, ideas, and methods;
- algorithms in mathematics, the study and analysis of algorithms;
- computational thinking, and programming in mathematics;
- proof, proving, and problem solving in discrete and computational mathematics.

Given the current curricular issues, the TWG is interested in pre-school, primary, and secondary levels, as well as studies at university level, and the implications for teacher education.
All types of research and approaches/methods concerning the listed themes in mathematics education will be included: curricular studies and research on systemic effects, epistemological and theoretical reflections, research on students' thinking and activities, research on teachers' professional development, experimental settings with quantitative or qualitative methodologies, etc.

Papers and poster proposals *must use the CERME template*, and conform to the guidelines at https://www.cerme14.it/. CERME 14 uses an electronic submission system https://www.conftool.pro/cerme14/. The authors submit the initial version of their paper on the website (uploading it both as a .doc and a .pdf file, and providing the required information, in particular the TWG number).

Reviews and decisions

Each paper will be peer-reviewed by two persons from among those who author papers to this TWG. *All co-authors* can be asked to review up to two papers. The group leaders will decide about the acceptance of posters.

Important dates

- **See https://www.cerme14.it/ for important dates**