

## CERME 12: Thematic Working Group 11 Algorithmics

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### Scope and focus of the Working Group

Algorithms have always been at the heart of mathematics, and their importance has grown continuously since the beginnings of theoretical computer science. Accordingly, the science of algorithms – or *algorithmics* – lies at the intersection of mathematics and computer science, focusing on the design and analysis of algorithms, that is on questions such as their correctness, complexity or efficiency. Therefore, various algorithmic activities have a certain place in mathematics curricula. As the teaching and learning of algorithms can be theorized in various ways, this TWG welcomes contributions from a variety of different frameworks.

### Call for papers and poster proposals

We invite papers addressing (but not necessarily limited to) questions such as the following (at a theoretical, at a descriptive-empirical, or at normative-curricular level, where appropriate):

- *Concept of algorithm and algorithmic thinking:* What are the specifics of algorithm as a concept and of algorithmics as a scientific domain? Which subject matter from mathematics curricula can be conceived algorithmically? How are algorithms related to mathematical proofs? How algorithms are studied in computer science and how is this linked to mathematics? What are the specifics of algorithmic activities? What relationships does algorithmic thinking have to algebraic thinking, computational thinking, or problem solving? What role programming can play in algorithmic activities and what role unplugged activities can play?
- *Algorithms in classrooms and curricula:* How is the teaching and learning of school algorithms in mathematics education related to the teaching of algorithms in computer science education in different countries? How can approaches to teach algorithms support conceptual learning and avoid rote learning? What mathematical knowledge and skills can be acquired by algorithmic activities? How do different theoretical perspectives (e.g., a cognitive or a semiotic perspective) interact with the teaching and learning of algorithms?

All papers and posters are welcome, provided that their motivation is clearly drawn from the field of teaching and learning mathematical algorithms. Even though TWG-15 and TWG-16 (technology and programming) are related to our group TWG-11, our group focuses on the teaching and learning of algorithms, regardless of the use of digital technology such as computers or tablets.

Papers and poster proposals should use the CERME template, and conform to the guidelines at [www.cerme12.it](http://www.cerme12.it) CERME 12 uses an electronic submission system [www.conftool.pro/cerme12](http://www.conftool.pro/cerme12) 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 submit papers to this TWG. Please expect to be asked to review up to two papers. The group leaders will decide about the acceptance of posters.

### Important dates

- **15<sup>th</sup> July 2021:** Deadline for [Early Bird Procedure](#)
- **15<sup>th</sup> September 2021:** Deadline for submission of papers and posters.
- **4<sup>th</sup> November 2021:** Preliminary decisions on papers.
- **12<sup>th</sup> November 2021:** Preliminary decisions on posters.
- **2<sup>nd</sup> - 6<sup>th</sup> February 2022:** CERME 12 takes place.
- See [www.cerme12.it/deadlines/](http://www.cerme12.it/deadlines/) for other important dates