



UNIVERSITÀ DEGLI STUDI
DI MILANO
DIPARTIMENTO DI MATEMATICA
"FEDERIGO ENRIQUES"

Second Conference on The Learning and Teaching of Calculus Across Disciplines

16-20 June 2025

Milan, Italy

<https://matriccalconf3.sciencesconf.org/>

**MATH
EXCEL
LENCE
PROJECT**

Call for papers and posters

How do biologists, chemists, computer scientists, economists, engineers, and physicists understand and use Calculus concepts and reasoning in their disciplines? And what does this imply for teaching and learning Calculus oriented to scaffold the students' learning in these disciplines, with particular attention to modelling and argumentation?

*This conference seeks to explore these issues
by bringing specialists from these disciplines and their didactical research together with mathematics educators.*

In what ways might ideas within Calculus or its foundations form part of the culture of thought in biology, chemistry, computer science, economics, engineering, and physics? How might ideas in Calculus be important in these disciplines and their workplace practices, with particular attention to modelling and argumentation? How do experts in these disciplines think with fundamental Calculus ideas such as rate of change, accumulation, and differentials? Are there connections and parallels in how experts in these disciplines think about modelling processes involving Calculus concepts? What is the role of technologies and simulations in these processes?

How do those who teach mathematics to students in these disciplines need to rethink calculus so as to make it relevant to these processes and ways of thinking? What results from the research in the teaching and learning of other disciplines can be relevant for mathematics educators interested in the didactical aspects related to the use of Calculus across disciplines, and how do these impact the teaching and learning of Calculus in, and for, these disciplines?

The aim of this conference is to foster debate on these questions and to encourage researchers in didactics of mathematics and other disciplines to join forces towards making significant steps in addressing these questions. In order to make the dialogue between mathematics and other disciplines deep and authentic, and to encourage the participation of researchers interested in the didactics of mathematics and these disciplines, scholars with expertise in these disciplines and interdisciplinarity (science and STEM education, mathematics and economics, mathematics for engineering, mathematics and physics education) have been invited to become members of the scientific committee (SC) of the conference.

The conference will span five days, from June 16th to June 20th, 2025. It will include plenary activities featuring experts in the interplay between mathematics and other disciplines who are interested in Calculus-related didactical issues. These experts will propose critical reflections, research results, and good practices with a focus on the following topics among others: epistemological and institutional barriers and opportunities; interdisciplinary co-design and co-teaching experiences; task design and teaching practices; students' reasoning; teacher education. These plenary activities will take place during the first part of the conference. Participants will then attend presentations of contributed papers and work in discussion groups that focus on the general topics of the plenaries with relevance across disciplines and a focus on Calculus (with topics such as rate of change, accumulation, quantitative reasoning and quantification, modelling, use of units and meanings of variables, limits, differentials, integrals and more). Discussion group themes will be agreed on later and will depend on themes in the submitted papers.

On the final day, participants will focus on achieving the two main aims of the conference:

1. to generate recommendations about the calculus curriculum and examples of prototypical teaching and co-teaching experiences concerning calculus targeted to biology, chemistry, computer science, economics, engineering, and physics students in several contexts and courses, that are at the same time relevant and conceptually robust;

2. to identify aims for (further) research in this area and establish research collaborations accordingly.

We invite research papers and poster proposals on the following themes:

1. Teaching and learning of specific topics in Calculus.
2. Teachers' and students' practices related to Calculus across disciplines at the secondary and university levels.
3. Transition to, within, and from university mathematics, specifically related to Calculus and potentially relevant to other disciplines.
4. Curricular and institutional issues concerning the teaching of Calculus, potentially across disciplines.
5. Novel approaches to teaching Calculus, potentially across disciplines.
6. Digital and other resources for teaching Calculus, potentially across disciplines.
7. Assessment practices related to Calculus at the secondary and tertiary levels, potentially across disciplines.
8. Pre-service and in-service teacher education (secondary and university) related to Calculus and other disciplines.
9. Epistemology, philosophy, and history of Calculus and its co-evolution with other disciplines.

Submissions should comply with the guidelines at the end of this document and the template. Please note that the working groups will be organised after we have received submissions.

Timeline

4 November 2024: Opening of the submission of papers and poster proposals & Registration

15 December 2024 ~~30 November 2024~~: Deadline for submission of papers and poster proposals

10 January 2025: Deadline for reviewers to submit their reviews

14 February 2025: Decisions about paper or poster proposal acceptance

28 February 2025: Deadline for registration and payment

4 April 2025: Deadline for revisions of papers and poster proposals

16 May 2025: Third announcement with conference programme and pre-proceedings available on the conference website

16–20 June 2025: Conference in Milan (Italy)

The venue of Conference will be in the neighbourhood of the Department of Mathematics “F. Enriques” of the University of Milan (Statale), close to via Cesare Saldini, 50 (Milan).

On behalf of the CalcConf3 Scientific Committee (SC) and the Local Organising Committee (LOC), we look forward to your submissions and to working towards a stimulating and exciting conference!

Scientific committee (SC)

Laura Branchetti (University of Milan, Italy)

Sibel Erduran (University of Oxford, UK)

Frank Feudel (Humboldt-Universität zu Berlin, Germany)

Alejandro S. González-Martín (University of Montreal, Canada)

Olivia Levrini (Alma Mater Studiorum - University of Bologna, Italy)

LOC Members (University of Milan, Italy)

Giulia Bini

Laura Branchetti - Chair of the LOC

Sara Gagliani Caputo

Luca Lamanna

Sandra Mantovani

Ottavio Giulio Rizzo

Maura Salvatori

Guidelines for paper and poster proposals

How to submit a paper

The website will open for submissions on 4 November 2024. Please submit your paper proposal at the [conference website](#) by 30 November 2024. Note that, to access this page, you need to create an account and log in first. Following peer review, by 14 February 2025, you will receive a decision about whether your paper has been accepted for pre-conference publication on the website and discussion at the conference. After receiving the notification of acceptance of your paper, you will be asked to return the revised version by 4 April 2025. Details concerning the inclusion of your paper in the conference programme will be communicated closer to the start of the conference.

Please format your paper as follows:

1. Write the paper in English using Times New Roman 14-point font, 16-point line spacing, and 6 points between paragraphs; occupying a frame of 170 by 247 mm. You must use the [CalcConf3 template](#).
2. Restrict your paper to a maximum of 5 pages, including references, figures, and appendices.
3. Except the title, authors, and affiliations, justify your text on both sides.
4. Give references in the APA7 style, <https://apastyle.apa.org/style-grammar-guidelines/references/examples>.
5. Your paper may include links to supplementary material available in your own space (but the paper must remain self-contained). Authors are responsible for the availability of their supplementary material.
6. Convert your paper into a PDF file and upload this file on the submission portal (this prevents formatting issues emerging in the conversion).

We kindly request that you comply with this format, and we note that papers not using this format in full may not proceed to the peer review stage.

How to submit a poster proposal

The website will open for submissions on 4 November 2024. Please submit your poster proposal at the [conference website](#) by 30 November 2024. Note that, to access this page, you need to create an account and log in first. Following peer review, by 14 February 2025, you will receive a decision about whether your poster proposal has been accepted for pre-conference publication on the website and discussion at the conference. Details concerning the inclusion of your poster in the conference programme, and the format for poster preparation and presentation, will be communicated closer to the start of the conference.

Poster proposals must include a short description of the research topic, the theoretical framework, research questions, and, if possible, research results and implications based on the research results.

Please format your poster proposal as follows:

1. Write the proposal in English using Times New Roman 14-point font, 16-point line space, and 6 points between paragraphs; occupying a frame of 170 by 247 mm. You must use the [CalcConf3 template](#).
2. Restrict your proposal to a maximum of 2 pages.
3. Do not include an abstract in your two-page poster proposal. A short abstract is required only on the submission portal.
4. Except the title, authors, and affiliations, justify your text on both sides.
5. Give references in the APA7 style, <https://apastyle.apa.org/style-grammar-guidelines/references/examples>.
6. Your text may include links to supplementary material available in your own space (but the text must remain self contained). Authors are responsible for the availability of their supplementary material.
7. Convert your poster proposal into a PDF file and upload this file on the submission portal (this prevents formatting issues emerging in the conversion).

We kindly request that you comply with this format and we note that proposals not using this format in full may not proceed to the peer review stage.