INDRUM2024

Fifth conference of the
International Network for Didactic Research in University Mathematics (INDRUM)
10–14 June 2024, Barcelona (Spain)

Second announcement https://indrum2024.sciencesconf.org

INDRUM 2024 is an ERME Topic Conference: http://erme.site/topic-conferences/

We are pleased to announce INDRUM2024, the fifth conference of the International Network for Didactic Research in University Mathematics, to be held 10–14 June in Barcelona (Spain). This conference is an activity of the International Network for Didactic Research in University Mathematics (INDRUM), which aims to contribute to the development of research in didactics of mathematics at all levels of tertiary education, with a particular focus on supporting new researchers in the field and on a dialogue between the communities of Mathematics and Mathematics Education. The target audience of this conference are researchers in the didactics of mathematics, mathematicians, as well as teachers and researchers who are interested in university mathematics education.

The scientific programme of the conference is presented below. It comprises a plenary lecture by Marianna Bosch (University of Barcelona, Spain), with a reaction from Yves Chevallard (University of Aix-Marseille); an expert panel discussion (chaired by Laura Branchetti, University of Milan "La Statale", Italy); five thematic working groups (TWGs) ith short communications in parallel (three 120-minute sessions) and TWG discussion sessions (three 90-minute sessions); a poster exhibition; and a workshop for early-career researchers. The main language of the conference is English. There is the possibility to present a paper in Spanish, provided the presenter considers how to address the conference audience in its linguistic diversity through slides or a handout in English. Pre-conference proceedings will be distributed to registered participants through the website before 17 May. The final version of the proceedings will be posted on the open archive HAL (https://hal.archives-ouvertes.fr/INDRUM).

Scientific programme

Workshop for early-career researchers: Starting to write journal articles – Coordinators: Elena Nardi (University of East Anglia, United Kingdom), Megan Wawro (Virginia Tech, United States).
Monday, 10 June, 9:30–13:00

Plenary talk: *Teaching inquiry at the university: in need of mathematical infrastructures* – Marianna Bosch (University of Barcelona, Spain).
Reaction to the plenary talk: Yves Chevallard (University of Aix-Marseille, France).
Monday, 10 June, 15:00–16:45

Plenary panel: *Mathematics and other disciplines: epistemological issues and their impact on teaching practices at tertiary level* – Chair: Laura Branchetti (University of Milan "La Statale", Italy).
Thursday, 13 June, 09:00–11:00

Poster session
Wednesday, 12 June, 14:30–16:30

Thematic working groups (TWGs)

TWG1: *Teaching and learning of analysis and calculus*
Chairs: Erik Hanke (Germany), Rafael Martínez-Planell (Puerto Rico)
TWG2: *Teaching and learning of linear and abstract algebra*
Chairs: Yael Fleischmann (Norway), Megan Wawro (United States)
TWG3: *Mathematics and other disciplines*
Chairs: Matija Bašić (Croatia), Ida Maria Landgärds-Tarvoll (Norway)
TWG4: *Teacher education and knowledge*
Chairs: Imène Ghedamsi (France), Pedro Nicolás (Spain)
TWG5: *Teachers' and students' practices and experience*
Chairs: Athina Thoma (United Kingdom), Olov Viirman (Sweden)

INDRUM2024 Timetable

Monday, 10 June		
09:30–11:00	Workshop for INDRUM early career researchers – part 1	Room TBC
11:00–11:30	*Coffee break*	Room TBC
11:30–13:00	Workshop for INDRUM early career researchers – part 2	Room TBC
The number of participants in the early career researchers' workshop is limited to 40. Participants might pre-register to the workshop at the following link: https://bitly.cx/MgH		
14:30–15:00	Opening	Room TBC
15:00–16:45	Plenary talk: *Teaching inquiry at the university: in need of mathematical infrastructures* Marianna Bosch (University of Barcelona, Spain) Reaction to the plenary talk: Yves Chevallard (University of Aix-Marseille, France)	Room TBC
16:45–17:15	*Coffee break*	Room TBC
17:15–18:15	TWGs Session 1 – Introduction	Room TBC
18:30–19:30	Welcome reception	Room TBC
Tuesday, 11 June		
9:00–11:00	TWGs Session 2 – Presentations	Room TBC
10:00–10:30	*Coffee break*	Room TBC
10:30–13:00	TWGs Session 3 – Thematic discussion	Room TBC
13:00–14:30	*Lunch*	Room TBC
14:30–16:30	TWGs Session 4 – Presentations	Room TBC
16:30–17:00	*Coffee break*	Room TBC
16:30–18:00	TWGs Session 5 – Thematic discussion	Room TBC
Wednesday, 12 June		
9:00–11:00	TWGs Session 6 – Presentations	Room TBC
11:00–11:30	*Coffee break*	Room TBC
11:30–13:00	TWGs Session 7 – Thematic discussion	Room TBC
13:00–14:30	*Lunch / IJRUME Editorial Board Meeting*	Room TBC
14:30–16:30	Poster session [A0 poster in portrait format. Posters must be printed and brought along]	Room TBC
16:30–17:00	*Coffee break*	Room TBC
17:00–19:00	Networking for participants INDRUM INSC and INCG Meetings	Room TBC
Thursday, 13 June		
9:00–11:00	Plenary panel: *Mathematics for non-specialists* Chair: Laura Branchetti (University of Milan "La Statale", Italy)	Room TBC
11:00–11:30	*Coffee break*	Room TBC
11:30–13:00	TWGs Session 8 – Preparation of summary	Room TBC
13:00–14:30	*Lunch*	Room TBC
Excursion		
19:00-23:00	*Gala Dinner*	Room TBC
Friday, 14 June		
9:00–10:00	TWGs Session 9 – Finishing the summary	Room TBC
10:00–10:30	*Coffee break*	Room TBC
10:30–11:30	Plenary TWGs presentation	Room TBC
11:30–12:15	Closing ceremony of INDRUM 2024	Room TBC

Plenary talk*: *Teaching inquiry at the university: in need of mathematical infrastructures
Marianna Bosch (University of Barcelona, Spain)
Reaction to the plenary talk: Yves Chevallard (University of Aix-Marseille, France)

Doing mathematics, including its teaching and learning, is always supported by knowledge infrastructures that provide the conceptual, methodological, and other kinds of means and tools needed for the activity. Terms, notations, symbols, as well as theories, proofs, techniques, types of tasks, either problematic or not, are part of these infrastructures, which are constantly being developed, reshaped, and restructured to meet new needs. The study of knowledge infrastructures is crucial to research in mathematics education. By their very nature, infrastructures remain invisible and silent under current usage. They underpin what we do from beneath. However, breakdowns or significant perturbations remind us of their existence—and especially their insufficiency or dysfunction. Thirty years of research in university mathematics education within the *Anthropological Theory of the Didactic* provide many examples of such insufficiencies and the kind of didactic transposition work needed to overcome them. The examples also show the strong connections with university pedagogic infrastructures, as well as the pressing challenges posed by the transition from the traditional didactic paradigm of visiting works to the new paradigm of questioning the world.

Plenary Panel*: *Mathematics and other disciplines: epistemological issues and their impact on teaching practices at tertiary level
Frank Feudel (Humboldt-Universität zu Berlin, Germany)
Felix Ho (Uppsala University, Sweden)
Ricardo Karam (University of Copenhagen, Denmark)
Noemí Ruiz Munzón (Escola Universitària Salesiana de Sarrià, Barcelona, Spain)
Chair: Laura Branchetti (University of Milan "La Statale", Italy)

Panel members will present a variety of issues that emerge when considering the interplay between mathematics and other disciplines in a didactical context, with particular attention to epistemological issues and their concrete impact on teaching at the tertiary level. The discussion will start from a well-known challenge in university mathematics education: the perception that mathematics courses at university are of little use for succeeding in subsequent disciplinary courses, as well as in the practice of professional fields. The main assumption shared by all the speakers of the panel is that professionals in different fields have their own aims and values, necessitating a departure from an "applicationist" and instrumental approach to mathematics courses—an approach predicated on the "illusion of prerequisites", viewing mathematics as merely a toolbox. The design of interdisciplinary teaching and learning activities, as well as disciplinary teaching when aimed at better integration with others subjects, should incorporate multiple perspectives in a respectful and inclusive environment. This includes several aspects of the disciplines such as reasoning, modelling, and the relationship between the disciplinary knowledge and societal and professional issues from external sources.

The panelists, who have diverse academic backgrounds and teaching and research experiences, will explore the challenge of rethinking the relationship between mathematics and other disciplines and professional fields from different and original perspectives. Three of them will share their experiences as "boundary people", reflecting on the mathematical and interdisciplinary aspects of modelling in fields like chemistry, economics, and physics. They will discuss the nature and relevance of the so-called *extra-mathematical knowledge* involved in such processes, and the new kinds of mathematical knowledge and practices that should be considered beyond the traditional conception of mathematical prerequisites for non-mathematicians at the tertiary level. The fourth speaker will present results from several implementations of so-called *study and research paths* focusing on mathematical modelling, along with reflections on institutional barriers that might constrain the application of modelling in university courses. The panel will conclude with a discussion of the common issues identified as relevant and worthwhile by all members in order to make the inclusion of interdisciplinarity in teaching feasible and sustainable at the university level. Possible concrete examples of interdisciplinary design principles and ways to deal with institutional constraints will be proposed, figuring out who might take responsibility for such a process of didactical innovation at the epistemological and institutional level.

A Workshop for INDRUM early-career researchers: Starting to write journal articles
Elena Nardi (University of East Anglia, UK)
Megan Wawro (Virginia Tech, United States)

In this workshop, we will set out from our recollections of the work we have each put towards producing a paper, either emerging from our own doctoral work or from co-authoring a paper with a doctoral student. We aim to trigger discussion on what constitutes the challenges – and ways to overcome these – of preparing a manuscript for submission to a peer-reviewed mathematics education research journal. Participants are kindly asked to prepare for this workshop according to the brief guidelines given on the conference website. It is important to consider that the number of participants in this workshop is limited to 40 participants.

Committees

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Elena Nardi (University of East Anglia, UK)
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Heidi Strømskag (Norwegian University of Science and Technology, Norway)
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