



INDRUM2020



**Third conference of the
International Network for Didactic Research in University Mathematics
March 27-29,2020, Bizerte (Tunisia)**
<http://indrum2020.sciencesconf.org/>

Third announcement

INDRUM 2020 is an ERME Topic Conference: <http://www.mathematik.uni-dortmund.de/~erme/>

We are pleased to announce INDRUM2020, the third conference of the International Network for Didactic Research in University Mathematics, to be held between March 27 and 29 in Bizerte, Tunisia. This Conference falls within the activities of INDRUM, initiated by an international team of researchers in didactics of mathematics and aiming to contribute to the development of research in didactics of mathematics at all levels of tertiary education, with a particular concern for the development of new researchers in the field and for dialogue with mathematicians. The themes to be addressed at INDRUM 2020 cover teacher and student practices and the teaching and learning of specific mathematical topics at undergraduate and post-graduate level as well as across disciplines. The target audience of this conference is researchers in didactics of mathematics, mathematicians, as well as teachers and researchers who are interested in these issues. The programme of the conference comprises: a plenary talk by Carl Winsløw (University of Copenhagen, Denmark); an expert panel discussion on higher education in the “digital age”; four thematic working groups (4h each); short communications in parallel (two sessions of 2h); a poster exhibition and a workshop for young researchers. The main language of the conference is English. There is the possibility to present a paper in French or Arabic 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. The final version of the proceedings will be posted on the open archive HAL (<https://hal.archives-ouvertes.fr/INDRUM>).

Scientific programme

Plenary talk: Professional and academic bases of university mathematics teaching for the 21st century: the anthropological approach to practice based research - Carl Winsløw (Denmark)

Friday March 27th 10:00-11:30

Presentation of posters and of Thematic working groups

Friday March 27th 12:00-13:00

Plenary panel: Higher education in the “digital age” - Panelists: Yael Fleischmann (Norway), Ghislaine Guedet (France), Said Hadjerrouit (Norway) - Chair: Pedro Nicolás (Spain).

Friday April 6th 16:30-18:30

Workshop for early career researchers - Coordinators: Elena Nardi (United Kingdom), Carl Winsløw (Denmark)

Friday April 6th 14:30-16:00

Thematic working groups (TWGs)

TWG1: Calculus and Analysis

Chairs: Laura Branchetti (Italy), Maria Trigueiros (Mexico)

TWG2: Mathematics for engineers, Mathematical Modelling, Mathematics and other disciplines

Chairs: Berta Barquero (Spain), Nicolas Grenier-Boley (France)

TWG3: Number Theory, Algebra, Discrete Mathematics, Logic

Chairs: Viviane Durand-Guerrier (France), Rolf Biehler (Germany)

TWG4: Students' and teachers' practices.

Chairs: Irene Biza (United Kingdom), Imène Ghedamsi (Tunisia)

International Programme Committee

Chair: Thomas Hausberger (France)

Co-chair: Marianna Bosch (Spain)

Members: Faïza Chelloughi (Tunisia), Viviane Durand-Guerrier (France), Imène Ghedamsi (Tunisia), Simon Goodchild (Norway), Reinhard Hochmuth (Germany), Elena Nardi (United Kingdom), Chris Rasmussen (United States of America), Maria Trigueros (Mexico)

Local Organising Committee

Chair: Faïza Chelloughi (Tunisia)

Members: Rahim Kouki (Tunisia), Mahdi Abdeljaouad (Tunisia), Sonia Ben Nejma (Tunisia), Béchir Dali (Tunisia), Viviane Durand-Guerrier (France), Imène Ghedamsi (Tunisia), Faten Khalloufi (Tunisia), Mahel Mosbah (Tunisia)

INDRUM2020 Timetable

Friday March 27th 2020		
9:00 – 9:30	Registration	
9:30 – 10:00	Opening ceremony	Utique
10:00 – 11:30	Plenary Lecture: <i>Professional and academic bases of university mathematics teaching for the 21st century: the anthropological approach to practice based research</i> C. Winsløw (University of Copenhagen, Denmark)	Utique
11:30 – 12:00	<i>Coffee-break</i>	
12:00 – 13:00	Plenary: Poster Presentations (5 min max), TWG Introductions (8 min max)	Utique
13:00 – 14:30	<i>Lunch</i>	
14:30 – 16:30	Parallel Presentations Session 1	TWGs rooms
16:30 – 17:00	<i>Coffee-break</i>	
17:00 – 18:30	Thematic Working Groups Session 1	TWGs rooms
Saturday March 28th 2020		
8:35 – 11:00	Parallel Presentations Session 2	TWG rooms
11:00 – 11:30	<i>Coffee-break</i>	
11:30 – 13:00	Thematic Working Group Session 2	TWG rooms
13:00 – 14:00	<i>Lunch</i>	
14:00 – 15:00	Poster session	
14:30 – 16:00	<i>A workshop for INDRUM early career researchers: Starting to write journal articles</i> Co-ordinators: E. Nardi (University of East Anglia, United Kingdom), C. Winsløw (University of Copenhagen, Denmark)	Ichkeul
16:00 – 16:30	<i>Coffee-Break</i>	
16:30 – 18:30	Plenary Panel: <i>Tertiary education in the digital age</i> Y. Fleischmann (Teknisk-Naturvitenskaplige Universitet, Norway) G. Guedet (Université de Brest, France) S. Hadjerrouit (Universitetet i Agder, Norway) Chair: P. Nicolas (Universidad de Murcia, Spain)	Utique
20:00	<i>Gala Dinner</i>	
Sunday March 29th 2020		
9:00 – 10:00	Thematic Working Group Session 3 – preparation of plenary reports	TWG rooms
10:00 – 11:30	Plenary Session: Thematic Working Groups reports	Utique
11:30 – 12:00	Closing ceremony	Utique
12:00 – 14:00	<i>Farewell lunch</i>	

Note: the programme of the special day in honour of Viviane Durand-Guerrier for her retirement may be consulted on the conference website or via the direct link <https://indrum2020.sciencesconf.org/resource/page/id/3>

Plenary Lecture: Professional and academic bases of university mathematics teaching for the 21st century: the anthropological approach to practice based research

Carl Winsløw, University of Copenhagen (Denmark)

INDRUM2020 Keynote Presentation

Abstract: The Didactics of University Mathematics is at the same time similar to, and different from, the Didactics of School Mathematics. The similarity comes from the kinds of phenomena which are studied, from innovative task design, over the descriptive study of teaching episodes and curricula, to institutional conditions and constraints – all pertaining to the teaching and learning of mathematics. Here, the Anthropological Theory of the Didactic (ATD) offers specific tools for a variety of purposes, from the modelling of specific mathematical practices and theories concerned, to the interrelated levels of didactic co-determination ranging from subjects to civilizations. At the same time, Universities offer particular conditions and constraints, such as the co-habitation of scientific research and teaching, and the simultaneous task of teaching mathematics to very diverse populations, including (massively) students for whom mathematics is just a smaller part of their current university curriculum and their future professional aspirations; moreover, the teaching tasks range from filling in gaps in students' pre-university learning of mathematics to the teaching of highly advanced subjects. University mathematics teaching thus represents a profession that involves and requires rather specific and specialized knowledge on the part of the teacher. How are these needs currently attended to? How can the Didactics of University Mathematics interact with the preparation and practice of teachers, given current and future institutional conditions and constraints? In particular, how can teaching and research in University Mathematics interact? In our talk, we will attend to these questions (naturally, pertaining both to the present and the future of the profession) based on ongoing and recent research done within the framework of ATD.

Plenary Panel: Tertiary education in the digital age

Yael Fleischmann (Norwegian University of Science and Technology, Norway),

Ghislaine Guedet (Université de Brest, France)

Said Hadjerrouit (University of Agder, Norway)

Chair: Pedro Nicolas (Universidad de Murcia, Spain)

Abstract: Due to the whole world of possibilities provided by digital resources, both for teachers and students, many questions arise concerning their use in the teaching of mathematics at tertiary level.

Already the question of what is a digital resource is interesting, as different approaches in didactics may give alternative conceptualisations of this notion, emphasising diverse purposes. One could also wonder about the different uses of digital resources by teachers and students. For instance, in the case of teachers, do they use digital resources to design their course? Does it entail a deep change in the corpus of didactic tools and strategies? In the case of students, do they use digital resources in their studying processes? Does it implicate an essentially new bond to the acquisition of knowledge? Of course, the use of digital resources strongly relies on the didactic paradigm (made of teaching ends, teaching means, epistemological model) under which the corresponding study process is taking place. How could the use of digital resources vary in relationship with the different possible didactic paradigms? Regardless this paradigm, what is specific to digital resources and their use at tertiary level?

Perhaps we conclude that digital resources are drastically changing or have already changed education. Or perhaps we conclude quite the opposite. Or maybe everything depends on the assumed didactic paradigm. In any case, it will be interesting to reflect on it.

A Workshop for INDRUM early career researchers: Starting to write journal articles

Elena Nardi (University of East Anglia, UK)

Carl Winsløw (University of Copenhagen, Denmark)

In 2016, as the first INDRUM conference – and our duties as its chairs – were coming to a close, we invited submissions to a Special Issue for the International Journal for Research in Undergraduate Mathematics (IJRUME). With support from its then editors, and from reviewers who were members of the INDRUM2016 Scientific Committee and/or the journal's Editorial Board, our invitation for papers resulted in twenty-three submissions, ten of which made it into Select Papers from the First International Network for Didactic Research in University Mathematics (INDRUM) conference (Vol. 4, Issue 1). We were delighted to welcome papers from across the board in terms of author experience and seniority and we worked hard to provide support and constructive feedback to early career researchers taking their first steps towards publishing in an international, peer-reviewed journal. In this workshop, we will set out from our recollections of work towards the Special Issue in order to trigger discussion on what constitutes the challenges – and ways to overcome these – of preparing a manuscript for submission to a mathematics education research journal. Participants are kindly asked to prepare for this workshop according to the brief guidelines given on the conference website (direct link: <https://indrum2020.sciencesconf.org/resource/page/id/18> or click on “Workshop for INDRUM early career researchers” on the left banner of the website).