



Summer School

Intercultural Learning in Mathematics Education 23 June – 4 July 2019, Vilnius

**For prospective mathematics / informatics teachers:
Join a unique intercultural experience preparing you for the future classroom!**

For intercultural learning, first-hand experiences are indispensable and in particularly relevant for the future classroom. Yet, prospective mathematics / informatics teachers need to be aware of the cultural realities of many tasks as well as of culturally different algorithms. They should be able to perceive culturally different perspectives and develop intercultural sensitivity.

Participating students of the IncluSMe summer school will have numerous opportunities for intercultural exchange, both within the international student group and outside when meeting local students, teacher and pupils. This will enable them to gain rich intercultural experience connected to their own future profession.

Lectures will be held by an international team of renowned lecturers from 5 countries.

Venue: Vilnius University Faculty of Philosophy (Vilnius, Universiteto str. 3)

Main target group: Mathematics / Informatics students in teacher education programmes – also interested university teachers and doctoral students welcome!

Application deadline: 30 April, 2019

Award: 3 ECTS credits from Vilnius University, certificate of participation

Language: English

Costs for students of IncluSMe partner universities: Attendance fee 30,- EUR.

Fee for students of other universities: Attendance fee 90,- EUR. Travel, accommodation and subsistence costs on own expenses

Organizer: IncluSMe Project – Vilnius University

Contact for information: valentina.dagiene@mii.vu.lt

Website: <http://inclusme-project.eu>

Programme

Students profit from the summer school as an excellent opportunity for gaining international and intercultural experiences which enable them to better appreciate and understand cultural and social diversity. During the summer schools, students will live and work in an intercultural setting together with students from many different European countries, having numerous opportunities for intercultural communication.

The programme provides lectures and workshops on intercultural learning as well offers activities to make own experiences in activities that are offered after the lectures and workshops: for example visits of the Open-Air Museum of Lithuania, the National Palace of Lithuanian Dukes, the Modern Museum - MO. Also, a school excursion and discussion with mathematics teachers will be organised to give prospective teachers an insight into education life in another country.

Modules

During the summer school lectures and workshops with a particular emphasis on those topics will be held:

- **Module A:** Intercultural experience and culture related study events (VU)
- **Module B (IO1)** - Introduction to culture and diversity for prospective mathematics and science teachers (PHFR)
- **Module C (IO2):** Culture-related contexts for mathematics and science (UU)
- **Module D (IO3):** Different cultures – different approaches to reasoning and algorithms in mathematics (VU)
- **Module E (IO7):** Dealing with deficiencies and excellency in the mathematics proficiency of immigrant pupils (SEC)
- **Module F (IO10):** Intercultural mathematics learning outside of school (CPU)
- **Module G:** Assessment in mathematics / informatics in multicultural contexts (All partners)

Participation in the modules A to G is mandatory to apply for 3 ECTS credits.

Module descriptions

Module A:

Intercultural experience and culture related study events

Team of lecturers from the Vilnius University (VU), Lithuania

This module will be offered to prospective teachers of mathematics / informatics to participate and study culture related events. The module aims to prepare the prospective teachers for intercultural teaching experiences and to study cultural related events. Aims include helping prospective teachers reflect on their own experiences and learn from the field exchange, including reflecting on their own attitudes, values and development of intercultural competences. The module includes activities to make own experiences in visiting museums and exhibitions, meeting interesting individuals, visiting schools, and taking part in discussions with experienced teachers.

Module B: Introduction to culture and diversity for prospective mathematics and science teachers

Team of lecturers from the Freiburg University of Education (PHFR), Germany

In this module future teachers in initial teacher education are introduced to intercultural learning in Science and Mathematics. The intention is to make students familiar with the topic by giving them concrete examples and connect these examples to a broader theoretical background. They will learn important definitions related to intercultural learning in general and then will connect intercultural learning to science and mathematics education. At the end of this introductory module students will get an overview about the modules to follow. The module was designed on the one hand so as to be relevant to day-to-day teaching. Therefore concrete situations were chosen to make students experience challenges in connection to cultural diversity. On the other hand we also provide the theoretical background to balance theory and practice and connect both aspects. The methods chosen prioritise students' active learning.

Module C: Culture-related contexts for mathematics and science (UU)

Team of lecturers from the University of Utrecht (UU), Netherlands

The module introduces students/future teachers to the role and the use of culture-related contexts in the teaching and learning of mathematics. Students will perform better in mathematics, if the central concepts are grounded in contexts that are meaningful to them and that they can relate to. Whether this is the case will depend on the cultural background of the students and of you as a teacher. The module prepares future teachers for teaching in cultural diverse classrooms, acknowledging and appreciating the cultural background - including the language- of their students. In the sessions we will explore and analyse several examples of contexts that are in some way related to culture, including the cultural roots of mathematics. We will investigate how to relate these contexts to the contents of your mathematics curriculum. And you will design a lesson, using such a context, for teaching in diverse classrooms.

Module D: Different cultures – different approaches to reasoning and algorithms in mathematics

Team of lecturers from the Vilnius University (VU), Lithuania

In this module pre-service teachers are introduced to intercultural learning in mathematics using different definitions. For teacher educators we offer a short and extended version of the training module. Teacher educator can take part of activities that are most suitable for students. For preparation future teachers it is important to pay attention on students different background and experience, their cultural aspects should be appreciated. Students may perform better in mathematics when the key concepts are grounded in contexts especially recognisable from students' daily life. Aims of this module is: 1) Introduction into the topic 'reasoning and algorithms in mathematics', 2) Theory and background is based on the role of contexts in reasoning and algorithms in mathematics, understanding ethnomathematics, and on reasoning and algorithms in mathematics by Seymour Papert, 3) Connecting theory to educational practice in reasoning and algorithms in mathematics.

Module E: Dealing with deficiencies and excellency in the mathematics proficiency of immigrant pupils

Team of lecturers from the University of Jönköping (SEC), Sweden

The aim of this module is to enable prospective teachers to foster an appreciative classroom atmosphere, create a good and shared learning environment, and develop teaching approaches in accordance to the different achievement levels of their pupils. The module will prepare prospective teachers to work with immigrant pupils of secondary school age and above – all of them having widely divergent learning backgrounds in mathematics. On the one hand, there are those students who did not learn basic arithmetic operations or left school with only primary school knowledge. On the other hand, there are those pupils who may know mathematics on a level far ahead of the local or national curriculum. The public rhetoric about immigrant pupils often follows a deficiency perspective. But in this module we will not only consider possible deficits, but will also take a strength-oriented perspective – and thus prepare prospective teachers for immigrant pupils who excel the local or national curriculum in parts (or entirely).

Module F: Intercultural mathematics learning outside of school

Team of lecturers from the University of Constantine the Philosopher (CPU), Slovakia

„Let’s create our common space, little piece of our common World, full of game and joy. “ This is the message of education program entitled Architects. The target group of the program are pupils of 3rd – 9th grade at primary school who in the role of architects propose a new functional use of the concrete area. They are focused on the area which is well known and in which they have better experiences than adults. Thus their attention is aimed at the game and proposal of a new children playground. The program Architects presents Cross-curricular learning which connects educational content of several teaching subjects especially mathematics, geography and computer science. Duration of the program is at least 4 lessons (180 minutes), but there is possibility to realize it as a long-term pupil’s project. Realisation of the program allows connection of several pedagogic approaches e.g. Outdoor education, Inquiry-based learning (Project-based learning), Role playing, use of ICT in education, Adventure pedagogy principles etc. Purpose of the Module is to introduce education program Architects to the students of teaching training studies (students of Initial Teachers Education as an alternative for modern, active, multidisciplinary education. Through the individual activities students are gradually familiarized with a content of education program, methods and forms of learning used as well as with topic of intercultural education.

Module G: Assessment in mathematics / informatics in multicultural contexts

The main aim of this module is to enable prospective teachers to become ‘assessment literate’ with respect to multicultural contexts. According to literature being ‘Assessment literate’ means that prospective teachers have “a repertoire of skills and understandings to design quality assessments and to use achievement standards and evidence as a means by which to discern, monitor and improve learning as well as judge the qualities of student work”. Therefore, this module aims to introduce prospective teachers to various procedures and help them develop skills that will allow them to take into account pupils’ diversity and support them to address issues of equity and social justice.

Schedule

Sunday 23 June - Arrival

VU students dormitory: Olandų str. 51, Vilnius.

Lectures at the Faculty of Philosophy, Vilnius University (Universiteto str. 3)

Monday 24 June

Time	Session	Contacts
09:00 - 09:30	Registration in the lobby of the dormitory	VU team
10:00 - 13:00	Module A Introducing to Lithuanian culture: The Open-Air museum of Lithuania	VU team
13:00 - 14:00	Lunch	
14:00 - 16:00	Module A Mathematics in traditional Lithuanian culture	VU team
16:00 - 16:30	Break	
16:30 - 19:30	Module A Questions, discussions, and reflection	VU team

Tuesday 25 June

Time	Session	Contacts
09:00 - 12:00	Module B (IO1) Introduction to culture and diversity for prospective mathematics and science teachers science	PHFR team
12:00 - 13:00	Lunch	
13:00 - 15:00	Module B (IO1) Introduction to culture and diversity for prospective mathematics and science teachers science	PHFR team
15:00 - 15:30	Break	
15:30 - 18:30	Module A Visit to a school and discussion with mathematics and informatics teachers	VU team

Wednesday 26 June

Time	Session	Contacts
09:00 - 12:00	Module B (IO1) Introduction to culture and diversity for prospective mathematics and science teachers science	PHFR team
12:00 - 13:00	Lunch	
13:00 - 15:00	Module B (IO1) Introduction to culture and diversity for prospective mathematics and science teachers science	PHFR team
15:00 - 15:30	Break	
15:30 - 18:30	Module E (IO7) Dealing with deficiencies and excellency in the mathematics proficiency of immigrant pupils	SEC team

Thursday 27 June

Time	Session	Contacts
09:00 - 12:00	Module E (IO7) Dealing with deficiencies and excellency in the mathematics proficiency of immigrant pupils	SEC team
12:00 – 13:00	Lunch	
13:00 - 15:00	Module E (IO7) Dealing with deficiencies and excellency in the mathematics proficiency of immigrant pupils	SEC team
15:00 - 15:30	Break	
15:30 - 18:30	Module E (IO7) Dealing with deficiencies and excellency in the mathematics proficiency of immigrant pupils	SEC team

Friday 28 June

Time	Session	Contacts
09:00 - 12:00	Module C (IO2) Culture-related contexts for mathematics and science	UU team
12:00 – 13:00	Lunch	
13:00 - 15:00	Module C (IO2) Culture-related contexts for mathematics and science	UU team
15:00 - 15:30	Break	
15:30 - 18:30	Module C (IO2) Culture-related contexts for mathematics and science	UU team

Saturday 29 June

Time	Session	Contacts
09:00 - 12:00	Module C (IO2) Culture-related contexts for mathematics and science	UU team
12:00 – 13:00	Lunch	
13:00 - 15:00	Module C (IO2) Culture-related contexts for mathematics and science	UU team
15:00 - 15:30	Break	
15:30 - 18:30	Module D (IO3) Different cultures – different approaches to reasoning and algorithms in mathematics	VU team

Sunday 30 June

Time	Session	Contacts
09:00 - 12:00	Module A Mathematical excursion in the Vilnius Old Town and a museum	VU team
12:00 – 13:00	Lunch	
13:00 - 15:00	Module A Palace of the grand dukes of Lithuania	VU team
15:00 - 15:30	Break	
15:30 - 18:30	Module D (IO3) Different cultures – different approaches to reasoning and algorithms in mathematics	VU team

Monday 1 July

Time	Session	Contacts
09:00 - 12:00	Module D (IO3) Different cultures – different approaches to reasoning and algorithms in mathematics	VU team
12:00 – 13:00	Lunch	
13:00 - 15:00	Module D (IO3) Different cultures – different approaches to reasoning and algorithms in mathematics	VU team
15:00 - 15:30	Break	
15:30 - 18:30	Module F (IO10) Intercultural mathematics learning outside of school	CPU team

Tuesday 2 July

Time	Session	Contacts
09:00 - 12:00	Module F (IO10) Intercultural mathematics learning outside of school	CPU team
12:00 – 13:00	Lunch	
13:00 - 15:00	Module F (IO10) Intercultural mathematics learning outside of school	CPU team
15:00 - 15:30	Break	
15:30 - 18:30	Module F (IO10) Intercultural mathematics learning outside of school	CPU teams

Wednesday 3 July

Time	Session	Contacts
09:00 - 12:00	Module G Assessment in mathematics in multicultural contexts	CPU + VU teams
12:00 – 13:00	Lunch	
13:00 - 15:00	Module G Final Colloquium: Evaluation	All partners
15:00 - 15:30	Break	
15:30 - 18:30	Module G Reflections and Farewell	VU team

Thursday 4 July – Departure

The IncluSMe project

IncluSMe (Intercultural learning in mathematics and science initial teacher education) focuses on increasing the quality of the initial teacher education (ITE) of prospective mathematics and science teachers by including intercultural learning into their curricula: Prospective mathematics and science teachers need to learn how to cope with **language barriers, culturally different pre-concepts about science and highly varying proficiencies of (immigrant) students** to be prepared to tackle the challenges of their future profession.

In turn, maths and science competences are crucial for civic participation, academic and professional success, not only for students with diverse backgrounds but for all. But if comprehension and communication problems due to language barriers or cultural differences are not addressed, students with immigrant background may perform poorly in maths and science. In order to secure educational opportunities for immigrant and refugee youth, it is essential to **include intercultural aspects into the initial education of maths and science teachers**.

Thus, our project, aims to improve the relevance of higher education curricula for prospective maths and science teachers by linking maths and science education with intercultural learning – and thereby strengthening students' social, civic and intercultural competences.

By offering **international summer schools** and **multiplier events**, IncluSMe will strengthen transnational cooperation between universities in establishing mobility programmes for maths and science students in initial teacher education.

The project brings together 11 teams of higher education institutions for initial teacher education from across Europe comprising experts in maths and science education, in inclusion and diversity, in mobility and intercultural learning, as well as people involved in pilot projects for refugees:

- University of Education Freiburg, Germany (coordinating institution) - PHFR
- University of Nicosia, Cyprus - UoN
- University of Hradec Králové, Czech Republic - UHK
- University of Jaen, Spain - UJA
- National and Kapodistrian University of Athens, Greece - UoA
- Vilnius University, Lithuania -VU
- University of Malta, Malta - UoM
- Utrecht University, Netherlands - UU
- Norwegian University of Science and Technology, Norway- NTNU
- Jönköping University, Sweden - SEC
- Constantine the Philosopher University, Slovakia- CPU

**We are looking forward to welcome you
at our Summer School in Vilnius!**

The IncluSMe project, 2016-2019, has received funding by the Erasmus+ programme of the European Union (grant no. 2016-1-DE01-KA203-002910) and is coordinated at the International Centre for STEM Education (ICSE) of the University of Education Freiburg, Germany.