Name of university, Name of faculty: Trnava University
Faculty of Education

INFORMATION SHEET OF THE SUBJECT

Code: XPEB322	**Name:** Initial mathematics education	
Cover: Department of School Education		
Type of educational activity: Lecture, Seminar, Professional Training **Scope of educational activity (in hours):** **Weekly:** 4/2/2 **For term of study:** LS 120,60,60 **Method of educational activity:** Combined	**Number of credits:** 9	**Recommended semester:** ST **Study grade:** Bachelor

Recommended semester	Study programme
1.year ST	Pre-School Elementary Pedagogy (DPEP_E1) Pre-School Elementary Pedagogy (XPEP-D1) Pre-School Elementary Pedagogy (XPEP-E1)

Underlie subjects:

Conditions for passing the course:
Method of evaluation: Completion by taking an examination

Continuous evaluation: None.
Final evaluation: The final evaluation consists of a written test for which a maximum of 100 points can be obtained. The content of the test follows the items in the schedule of the course.
Finished: The course is completed on the basis of a final assessment. A minimum of 91 points is required for getting an A grade, a minimum of 81 points for a B grade, a minimum of 71 points for a C grade, a minimum of 61 points for a D grade and a minimum of 51 points for an E grade. Completion of the non-contact part of the course is also a prerequisite for passing the course. This part is realized mainly by regular study of the material covered in the last lecture, regular preparation for the next seminar, preparation for practice, study of electronic courses available in Moodle and recommended study literature, study of video recordings available in Teams, preparation for the final test.

Learning outcomes:
LO1 The student gains general knowledge of the aims and content of teaching mathematics in pre-primary and primary education
LO2 The student is able to characterise the stages of the cognitive process in mathematics and to use this knowledge in the development of mathematical ideas of pupils in pre-primary and primary education
LO3 The student acquires knowledge of logic, theory of sets and binary relations and is able to apply them in the development of children's mathematical ideas
LO4 The student is able to use knowledge of geometric figures, toys and building blocks in activities that develop children's spatial intelligence and geometric knowledge
LO5 The student can select appropriate activities to develop children's combinatorial thinking
LO6 The student is able to apply knowledge of numeration in the educational process of preschool children

Schedule of subject:
Aims and content of teaching mathematics in pre-primary (and primary) education. State educational programme.
Mechanism of cognitive process. Conceptual process in mathematics. Error as an element of teacher's educational strategy.
Stages of formation of mathematical concepts, examples on different models.
Hejny's method of teaching mathematics.
Numeration.
Introduction to propositional logic. Propositions, negations. Definition, theorem, hypothesis, axiom, proof.
Basics of intuitive theory of set, set operations.
Binary relations. Equivalence relation. Ordering. Representations.
Elementary knowledge of logic, intuitive theory of set and binary relations, their interrelation in the acquisition of mathematical ideas and knowledge, including the use of these concepts in everyday communication. Tasks developing mathematical ideas in children's magazines.
Planar and spatial geometric figures in pre-primary and primary education.
Spatial intelligence, building blocks and toys supporting the development of spatial intelligence, intuitive recognition of selected planar and spatial geometric shapes (figures).
Development of combinatorial thinking.
Measurement and estimation. Elementary theoretical basis of measuring length, content and volume.

Recommended reading:
Štátny vzdelávací program pre predprimárne vzdelávanie v materských školách. Bratislava, 2016.
KOLLÁRIKOVÁ, Z. – PUPALA, B.: Predškolská a elementárna pedagogika. Praha: Portál, 2001.
KASLOVÁ, M.: Předmatematické činnosti v předškolním vzdělávání. Praha: Raabe. 2010.
FICOVÁ, L.: Rozvoj počiatočných matematických predstáv. UTB, Zlín 2018.
BLAŽKOVÁ, R.: Rozvoj matematických pojmů a představ u dětí předškolního věku. Brno: Masarykova univerzita, 2010.
FUCHS, E. – LIŠKOVÁ, H. – ZELENDOVÁ, E.: Rozvoj předmatematických představ dětí předškolního věku: metodický průvodce. Praha: Jednota českých matematiků a fyziků, 2015.
HÍC, P. – POKORNÝ, M.: Logika, množiny, binárne relácie. PdF TU, 2010. ISBN 978-80-8082-389-4
HEJNÝ, M. – NOVOTNÁ, J. – STEHLÍKOVÁ, N.: Dvacet pět kapitol z didaktiky matematiky. Univerzita Karlova, Praha 2004.
HEJNÝ, M. – KUŘINA, F.: Dítě, škola a matematika. Praha : Portál, 2001.
PARTOVÁ, E. – MARCINEK, T.: Metódy vyučovania matematiky v primárnom vzdelávaní 1. Verbum, Ružomberok 2020.
POKORNÝ, M.: Kombinatorika a práca s údajmi. Trnava : Pedagogická fakulta Trnavskej univerzity v Trnave, 2019.
ŽIDEK, O.: Geometrické modelovanie a priestorová predstavivosť. Trnava : Pedagogická fakulta Trnavskej univerzity v Trnave, 2013.

ŽILKOVÁ, K.: Geometria. Trnava : Pedagogická fakulta Trnavskej univerzity v Trnave, 2013.
DIVÍŠEK, J.: Metodika rozvíjania matematických predstáv v MŠ. Praha : SPN, 1987.
PARTOVÁ, E.: Relácie a ich aplikácia v predškolskej matematike. Bratislava, 2004.
ŠEDIVÝ, O. – KRIŽALKOVIČ, K.: Didaktika matematiky. Bratislava : SPN, 1990.
Pracovné zošity určené pre deti predškolského veku
Časopisy určené pre deti predškolského veku (Včielka, Macko Pusík, Zvonček, Lienka, ...)

Language requirements: Slovak, English

Notes:

Course evaluation:
Assessed students in total: 1367

A	B	C	D	E	FX
20%	27%	23%	17%	10%	3%

Lecturers:
doc. PaedDr. Milan Pokorný, PhD., lecturer, examiner
PaedDr. Jana Fialová, PhD., examiner, instructor, seminary supervisor

Date of last change: 01.09.2026

Approved by: prof. PhDr. Oľga Zápotočná, CSc.