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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Pedagogical Faculty Vranje |
| **GENERAL INFORMATION** |
| Study program  | Primary School Teaching |
| Study Module (if applicable) | / |
| Course title | Mathematics |
| Level of study | $☒$Bachelor ☐ Master’s ☐ Doctoral |
| Type of course | $☒$Obligatory ☐ Elective |
| Semester  | $☒$ Autumn $☒$Spring |
| Year of study  | First |
| Number of ECTS allocated | 9 |
| Name of lecturer/lecturers | Milena Bogdanović, Ph.D. |
| Teaching mode | $☒$Lectures ☐Group tutorials ☐ Individual tutorials☐Laboratory work ☐ Project work $☒$ Seminar☐Distance learning $☒$Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Acquiring basic knowledge about the theory of numbers, of linear equations and inequalities with one unknown, the determinants and matrices, the basic concepts in mathematics, of mathematical logic, the set as a basic concept and operations on sets, arranged on n-tuples of binary relations, the mappings and functions, basic concepts of combinatorics, the algebraic structures with a single binary operation and with two binary operations, the basic concepts Euclidean geometry, vectors and operations over the vectors and the development of logical thinking and ability to solve mathematical problems and the implementation and verification of knowledge in practice.After completing the course the student is expected to be able to: Formulate and generalize knowledge about the subject and positions algebra and arithmetic as a mathematical discipline, applies linear equations and inequalities in the problem-solving logical problems; adopt and master new and general content related to the program of mathematics in primary school; it has the ability to generalization and abstraction of mathematical concepts necessary for establishing links with other subjects; formulate and generalize knowledge about the subject and positions of mathematical logic, algebra, arithmetic, geometry, as the mathematical disciplines; applies basic laws of logical reasoning and tautology to solve problems that can be modelled tools of mathematical logic; Continue, deepen and apply the knowledge in the course of Teaching mathematics 1 and 2. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Theoretical classes: Number theory, axiomatic establishment of the set of natural numbers, arithmetic operations in the set of natural numbers, traits (algebraic aspects) arithmetic operations in the set N, Extending the set of natural numbers, zero, negative integers, fractions, decimals and basic properties of the newly synthesized sets of numbers: N0, Z, Q, R, Arithmetic operations in the set of integers, rational and real numbers and their basic properties, mathematical induction, Divisibility of numbers, divisibility rules, Euclidean algorithm, Numeral systems, rational algebraic expressions, linear algebraic equations with one unknown, systems of linear equations, linear algebraic inequalities with one unknown, systems of linear inequalities, determinants-types, properties methods of calculating the value determinants, Cramer's rule, matrices - types, properties, operations on matrices, inverse matrix, matrix methods for solving systems of linear equations, matrix equation, Historical development of mathematical logic, the basic concepts of mathematical logic, the statement (Court) and of the statements of operations, tautology, test methods and demonstration of the logical formulas, logically equivalent formulas quantifiers, as a set of basic mathematical concept, operations on sets, relations - binary relations, properties, types of binary relations (relations of equivalence and order relations), mappings, functions, types, properties, composition mapping (complex mapping), The term combinatorics. Variations, permutations, combinations, probability term events, algebraic structures with a single binary operation, Algebraic structures with two binary operations Examples of algebraic structures, basic concepts of Euclidean geometry. Measurements and dimensions in geometry, Polygon, types, properties, vector and scalar quantities, properties, operations on vectors, scalar, vector and mixed product of vectors.Practical teaching: Seminar classes are realized in the form of development tasks that are in line with the themes covered in the form of individual and group ways of solving the given math problems. |
| **LANGUAGE OF INSTRUCTION** |
| $☒$Serbian (complete course) ☐ English (complete course) ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)☐Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **10** | **Written examination** | **30** |
| **Practical teaching** | **10** | **Oral examination** | **20** |
| **Teaching colloquia** | **30** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |