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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Pedagogical Faculty in Vranje |
| **GENERAL INFORMATION** |
| Study program  | Technical Education and Informatics |
| Study Module (if applicable) | / |
| Course title | Mathematical Logic |
| Level of study | ☐Bachelor ☒ Master’s ☐ Doctoral |
| Type of course | ☒ Obligatory☐ Elective |
| Semester  | ☒ Autumn ☐Spring |
| Year of study  | Third |
| Number of ECTS allocated | 5 |
| 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 basic concepts, ideas and methods of propositional logic, set theory, Boolean algebra, cardinals, predicate logic, proof techniques and the development of logical thinking and ability to solve mathematical problems and the implementation and verification of knowledge in practice, particularly in the field of information technology and Computing. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Theoretical teaching: propositional calculus (logical argumentation, logical conjunctions of propositional formulas, truth-tables, truth-function formula, normal form, tautologies, contradictions and logical laws, properties tautology, hypothesis and consequences, correct logical argument). Boolean algebra, Boolean equations and inequalities, Boolean functions, canonical forms and minimization of Boolean functions, sets (setting meetings, equality and inclusion, set operations, power set, decorated pairs and n-tuples, Cartesian product of sets), Relations (representing relations, graphs, basic properties of relations, operations on relations, equivalence relations and partitions the set, the relation order and ordered sets, special items ordered sets, lexicographic and arranging alphabetic), functions (correspondence and functions, composition function, injective, surjective and bijective functions, inverse function, the core functions of the operation), Cardinals (equipotency sets, cardinality of sets, finite and infinite sets, countable and uncountable sets, variables, quantifiers, quantifier restrictions), Predicate logic (thermal, formulas, bound and free variables, interpretation, truth-value formulas, hypotheses and semantic implications), Techniques of proof (rules of inference, correct argumentation, theorem proving methods, errors in the evidence, the strategy of proof, mathematical induction, mathematical definitions) . Practical classes: Classes exercises 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 set of mathematical and logical problems and others. |
| **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** | **6** | **Written examination** | **30** |
| **Practical teaching** | **6** | **Oral examination** | **20** |
| **Teaching colloquia** | **38** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |