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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** |  |
| **GENERAL INFORMATION** |
| Study program  | Mathematics |
| Study Module (if applicable) | Mathematics |
| Course title | The theory of numbers and polynomials |
| Level of study | x Bachelor ☐ Master’s ☐ Doctoral |
| Type of course | x Obligatory ☐ Elective |
| Semester  | x Autumn ☐Spring |
| Year of study  | First |
| Number of ECTS allocated | 7 |
| Name of lecturer/lecturers |  Prof. Snežana Ilic  |
| Teaching mode | x Lectures x Group tutorials ☐ Individual tutorials☐Laboratory work ☐ Project work ☐ Seminar☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Students are introduced to the basics of the theory of numbers and polynomials and get qualification to use that in other mathematical disciplines and other areas of science.Students are trained to apply their acquired theoretical knowledge and resolve selected concrete examples –various topics from the school curriculum in mathematics. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Enclosed are some of the topics that will be covered: the principle of mathematical induction, elementary properties of integers, divisibility and the division algorithm, the greatest common divisor, the Euclidean algorithm, prime numbers, the fundamental theorem of arithmetic, the Euler function, the sum-of-divisors function, number-of-divisors function, linear Diophantine equations, congruences modulo *m*, residue systems, theorems of Fermat, Euler and Wilson, linear congruences, the Chinese remainder theorem, introduction to quadratic residues, Legendre symbol, Pythagorean triangles, the equation xⁿ+yⁿ=zⁿ, polynomials – definitions and basic operations, division algorithm, irreducible polynomials, unique factorization, roots of polynomials, polynomials and polynomial functions, fundamental theorem of algebra, bounds of roots of polynomials, Sturm series, resultant of two polynomials, discriminant polynomials, rational functions.  |
| **LANGUAGE OF INSTRUCTION** |
| x 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 |  | Written examination |  |
| Practical teaching | 10 | Oral examination | 50 |
| Teaching colloquia | 40 | OVERALL SUM | 100 |
| \*Final examination mark is formed in accordance with the Institutional documents |