<table>
<tr><td>COURSE NAME</td><td colspan="5">Basic algebraic structures</td></tr>
<tr><td>Code</td><td>PMM715</td><td>Year of study</td><td colspan="3">3rd year of undergraduate study and
2nd year of graduate study</td></tr>
<tr><td>Course teacher</td><td>Gordan Radobolja</td><td>Credits (ECTS)</td><td colspan="3">6,0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td></tr>
<tr><td>30</td><td></td><td>30</td></tr>
<tr><td>Status of the course</td><td>required, elective</td><td>Percentage of application of e-learning</td><td colspan="3"></td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5"></td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">Prerequisites: completed courses Introduction to Algebra with Analytic Geometry or Linear algebra and Matrix Calculus

Required competencies: knowledge of fundamentals of linear algebra and elementary mathematics.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">It is expected that the student will be able to:
Distinguish between a formal polynomial and a polynomial function
Check reducibility of and factorise a rational polynomial
Apply Euclidean algorithm
Solve cubics and quartics
Explain the concept of solvability in radicals
Find Galois group of simple polynomials
State basic definitions and theorems in theory of commutative rings
Distinguish algebraic and transcendental numbers
Distinguish from algebraically closed and open fields</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Classical algebra (4 hours)
Elementary number theory. Pythagorean triples, fundamental theorem of arithmetic.
Number systems. Complex numbers. Roots of unity.
Commutative rings (6 hours)<ol start="3">
Basics
Domains and rings of fractions
Polynomial ring and polynomial functions
Homomorphisms
Arithmetic of polynomials (8 hours)<ol start="7">
Divisibility
Roots
Factorisation
Irreducibility and criteria. Cyclotomic polynomials
Field theory (8 hours)<ol start="11">
Quotient ring
Field extensions
Algebraic extensions
Splitting fields
Solvability in radicals (4 hours)<ol start="15">
Groups
Radical extensions
Galois theory</td></tr>
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	18. Insolvability of the quintic
Format of instruction	Lectures and tutorial sessions.
Student responsibilities	Class attendance and partial written exams.
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance: 2 ECTS Partial written exams: 2 ECTS Final exam: 2 ECTS
Grading and evaluating student work in class and at the final exam	Partial written exams and final written and oral exam. Positive grade of the written exam is required to take the oral exam.
Required literature (available in the library and via other media)	A. Cuoco, J. J. Rotman, *Learning modern algebra*
Optional literature (at the time of submission of study programme proposal)	D.S. Dummit, R.M. Foote, *Abstract Algebra*, treće izdanje, John Wiley and Sons, 2004.
Quality assurance methods that ensure the acquisition of exit competences	Anonymous student evaluations at the end of semester according to the regulations of the University of Split.
Other (as the proposer wishes to add)	