

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD106A/22	Course title: Algebra 2
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 2 / 2 hours per semester: 26 / 26 Teaching method: on-site	
Credits: 4	Working load: 100 hours
Recommended semester/trimester: 3.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: During the semester, students will be given weekly homework assignments and will write short papers - flashcards; the condition for participation in the exam is to score at least half of the total points for the flashcards. The exam consists of both written and oral parts. Course evaluation: A - 100 % - 93 %, B - 92 % - 85 %, C - 84 % - 77 %, D - 76 % - 69 %, E - 68 % - 60 %, Fx - 59 % - 0 %	
Learning outcomes of the course: Students are first introduced to matrices and elementary row operations on matrices as a basic tool, which is then used throughout the rest of the unit. The prospective mathematics teacher then learns about the mutually explicit correspondence of matrices with systems of linear equations, about subspaces of finite-dimensional vector spaces, and about linear mappings between them. The focus of the second part of the course is on finite-dimensional vector spaces. Finite-dimensional Euclidean vector spaces over a field of real numbers are introduced as algebraically indistinguishable from the familiar spaces of tuples of real numbers. Illustrative examples on pertracted topics are a stable part of the course implementation, serving to familiarize the student with various techniques and manipulations, as well as to gain a deeper understanding of the problem through concrete situations. Referring to the matrix of objectives and learning outcomes, upon completion of the course, the student will acquire the following knowledge, skills and competencies: V4 He/she has a basic knowledge of mathematical analysis, algebra, geometry, school stochastics and didactics of mathematics as the foundations of the profession of mathematics teacher. Z2 He/she is able to think and argue critically. Z3 He/she is able to estimate the strengths and weaknesses of things, to carry out mental experiments. K4 He/she does not trust cheap and quick solutions to difficult problems. K5 He/she is interested in what is going on in society, willing to work on oneself, enjoys solving problems, views phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents:	

<ol style="list-style-type: none"> 1. Matrix 2. Systems of linear equations 3. Systems of linear equations and invertible matrices 4. Determinants 5. Vector spaces and subspaces 6. Finite-dimensional spaces. Linear independence, basis, dimension 7. Spaces belonging to matrices and spaces of solutions of homogeneous systems 8. Linear and direct sums of subspaces 9. Linear mappings 10. Euclidean vector spaces 												
<p>Recommended or required literature:</p> <ol style="list-style-type: none"> 1. Katriňák, T. a kol.: Algebra a teoretická aritmetika 1. Alfa, Bratislava 1985. 2. Haviar, M.: Algebra III: Lineárna algebra. Banská Bystrica: Univerzita Mateja Bela, 2001. 3. Haviar, M. - Klenovčan, P.: Basic Algebra for future teachers (Revs. V. Janiš, M. Papčo), Belianum [2nd ed.], Banská Bystrica, 2020. 												
<p>Language of instruction: Slovak</p>												
<p>Notes:</p>												
<p>Course evaluation: Assessed students in total: 7</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>FX</th> </tr> </thead> <tbody> <tr> <td>28.57</td> <td>14.29</td> <td>42.86</td> <td>14.29</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table>	A	B	C	D	E	FX	28.57	14.29	42.86	14.29	0.0	0.0
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<p>Name of lecturer(s): prof. RNDr. Miroslav Haviar, CSc.</p>												
<p>Last modification: 29.08.2022</p>												
<p>Supervisor(s): Guarantor: Administrátor Systému</p> <p>People responsible for the delivery, development and quality of the study programme: prof. ThDr. Rastislav Adamko, PhD., doc. Mgr. Marek Babic, PhD., doc. RNDr. Pavel Bella, PhD., prof. PaedDr. Mgr. art. Rastislav Biarinec, ArtD., prof. Irina Chelysheva, DrSc., prof. PaedDr. František Dlugoš, PhD., Mgr. Juraj Dvorský, PhD., prof. PhDr. Ingrid Emmerová, PhD., doc. Tatiana Korenkova, CSc., prof. PaedDr. Milan Ligoš, CSc., doc. Mgr. Eva Litavcová, PhD., doc. PaedDr. Peter Mačura, PhD., prof. PhDr. David Papajík, PhD., doc. Ing. Miroslav Saniga, CSc., prof. Nóra Séllei, PhD., DrSc., PhDr. ThLic. Martin Taraj, PhD., Prof. Ing. Peter Tomčík, PhD., prof. Dr. phil. fac. theol. Peter Volek, doc. Ing. Igor Černák, PhD.</p>												