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COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD103A/22	Course title: Algebra 1
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: 2.	
Level of study: I.	
Prerequisites: KMAT/Ma-BD101A/22	
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 will gain a solid understanding of the basic concepts of algebraic structures with one and two operations, in particular groups and rings, with particular reference to applications in school mathematics. Students will become familiar with the divisibility of integers, the central position of polynomials in mathematics, their divisibility, roots, important properties, and their relationship to other parts of mathematics. Students will learn how to prove mathematical theorems, apply them, and solve problems in the subject area. Referring to the matrix of objectives and learning outcomes, upon completion of the course, students will have the following knowledge, skills, and competencies: V4 He/she has 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: 1. Binary operations on a set, commutativity, associativity, distributivity, neutral element, inverse elements. 2. Structures with one operation, groups, subgroups, morphisms of groups. 3. Structures with two operations, circuits, integrity scopes, bodies, fields, isomorphism of circuits.	

4. Polynomials, divisibility of polynomials, Division theorem with remainder, decomposition of polynomials into product of irreducible elements.
5. Roots of polynomials, Multiple roots, Fundamental theorem of algebra.
6. Viet's relations, rational roots, Necessary condition for the existence of rational roots.
7. Roots and reducibility of polynomials in $Z[x]$, $Q[x]$, $R[x]$, $C[x]$.

Recommended or required literature:

1. Katriňák, T. a kol.: Algebra a teoretická aritmetika 1. Alfa, Bratislava 1985.
2. Chvál, V., Mikola, M.: Algebra. ŽU, Žilina 1999.
3. McLane S., Birkhoff G.: Algebra. Alfa, Bratislava 1973.
4. Šalát T. a kol.: Algebra a teoretická aritmetika 2. Alfa, Bratislava 1986.

Language of instruction:

Slovak

Notes:

Course evaluation:

Assessed students in total: 10

A	B	C	D	E	FX
20.0	30.0	10.0	20.0	0.0	20.0

Name of lecturer(s): prof. RNDr. Miroslav Haviar, CSc.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:

doc. Mgr. Eva Litavcová, PhD.

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: 0</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>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table>	A	B	C	D	E	FX	0.0	0.0	0.0	0.0	0.0	0.0
A	B	C	D	E	FX							
0.0	0.0	0.0	0.0	0.0	0.0							
<p>Name of lecturer(s): prof. RNDr. Miroslav Haviar, CSc.</p>												
<p>Last modification: 29.08.2022</p>												
<p>Supervisor(s): Person responsible for the delivery, development and quality of the study programme: doc. Mgr. Eva Litavcová, PhD.</p>												

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD115A/22	Course title: Didactics of mathematics 1
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture Recommended study range: hours weekly: 1 hours per semester: 13 Teaching method: on-site	
Credits: 1	Working load: 25 hours
Recommended semester/trimester: 5.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: Verification of the student's acquisition of the relevant knowledge, skills and competences is carried out on the basis of theoretical and practical tasks during the semester course (40%) and the final examination (60%). The final assessment is based on the total number of points obtained from the assignments and the final examination. 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: After completing the course, the student will acquire the following knowledge, skills and competences: - The student applies knowledge of general pedagogy and didactics to the subject of mathematics. - The student develops a logical-didactic analysis of a thematic unit in school mathematics (ISCED 2). - The student is familiar with the content and results of international and national testing in mathematics and their implications for school mathematics. - The student has an overview of innovative methods suitable for teaching mathematics.	
Course contents: 1. National curriculum (ISCED 1, ISCED 2, ISCED 3) for mathematics 2. Competences of a mathematics teacher 3. Structure of a mathematics lesson 4. Logic-didactic analysis of the thematic unit 5. Assessment and classification in mathematics education 6. Innovative methods in mathematics education 7. International and national testing in mathematics	

Recommended or required literature:

1. Hejný, M. a kol.: Teória vyučovania matematiky 2. Bratislava: SPN, 1990. ISBN 80-080-1344-3
2. Hejný, M., Novotná, J. & Stehlíková, N.: Dvacetpět kapitol z didaktiky matematiky. Praha: Univerzita Karlova v Praze, 2004.
3. Petlák, E.: Všeobecná didaktika. Bratislava: IRIS, 1997. ISBN 80-88778-49-2
4. Mathematics text-books for lower secondary education

Language of instruction:

Slovak language

Notes:**Course evaluation:**

Assessed students in total: 4

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Name of lecturer(s): RNDr. Lucia Csachová, PhD.

Last modification: 25.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD109A/22	Course title: Geometry 1
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: 4.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: Verification of the extent to which the student has acquired the relevant knowledge, skills and competences is carried out on the basis of a two-stage examination: (a) continuous assessment in the form of written work: 40% (b) final assessment: written examination: 20% oral examination: 40% Credit will not be awarded to a student who obtains less than 50% of the maximum possible marks for part (a) or part (b). 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: After completing the course, the student will acquire the following knowledge, skills and competences: - The student knows and understands the basic definitions, has an idea of the correctness of the definition, can illustrate the definition with appropriate examples. - The student knows and understands basic mathematical theorems, has an idea of the meaning and logical structure of the theorem, can support the theorem with appropriate examples and counterexamples, can prove the theorem. - The student can solve basic types of problems, knows and can specifically use the computational procedures needed to solve a problem, can justify all steps in his/her solution of a problem. - The student can express him/herself in terms and symbols and can graphically illustrate reasoning with a picture when possible.	
Course contents: 1. Affine space and its basic properties. Linear coordinate system. Subspaces of affine space. 2. Parametric and general equations of subspaces.	

3. Relative position of two subspaces. Interpenetration and connection of subspaces. The cross section of the extrasubspaces.
4. Non-parametric representation of subspaces. Bundles and clusters of superspaces.
5. Partition ratio. Arrangement of points on a line and concepts based on it (half-space, half-line, line segment.) Convex sets. Angles.
6. Transformation of a linear coordinate system. Orientation of affine space.
7. Scalar product and its properties. The outer product in n-dimensional vector space. Vector product in 3-dimensional vector space.
8. Euclidean space and its basic properties. Cartesian coordinate system.
9. Distance of two points, distance of a point from a subspace. Distance of two off-shell subspaces. Deviation of two subspaces.

Recommended or required literature:

1. Sekanina, M. a kol.: Geometrie 1, SPN Praha 1986.
2. Hejný, M. – Zaťko, V. – Kršák, P.: Geometria 1, SPN Bratislava 1985.
3. Billich, M. – Trenkler, M.: Zbierka úloh z geometrie. Verbum, Ružomberok 2013.

Language of instruction:

Slovak

Notes:

Course evaluation:

Assessed students in total: 5

A	B	C	D	E	FX
20.0	0.0	40.0	0.0	0.0	40.0

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD112A/22	Course title: Geometry 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: 5.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: Verification of the extent to which the student has acquired the relevant knowledge, skills and competences is carried out on the basis of a two-stage examination: (a) continuous assessment in the form of written work: 40% (b) final assessment: written examination: 20% oral examination: 40% Credit will not be awarded to a student who achieves less than 50% of the maximum possible marks for part (a) or part (b). 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: After completing the course, the student will acquire the following knowledge, skills and competences: - The student knows and understands the basic definitions, has an idea of the correctness of the definition, can illustrate the definition with appropriate examples. - The student knows and understands basic mathematical theorems, has an idea of the meaning and logical structure of the theorem, can support the theorem with appropriate examples and counterexamples, can prove the theorem. - The student can solve basic types of problems, knows and can specifically use the computational procedures needed to solve a problem, can justify all steps in his/her solution of a problem. - The student can express him/herself in terms and symbols and can graphically illustrate reasoning with a picture when possible.	
Course contents: 1. Affine representation of n-dimensional affine space. Associative representation of the associated focus vector.	

<ol style="list-style-type: none"> 2. Analytic representation of the affine representation. Group of affine transformations. 3. Subspaces of self-adjoint figures and self-adjoint directions of affine mappings. 4. Homothetic transformations of an affine space. The group of homotheties. Basic affinities. 5. Classification of affine mappings in the affine plane based on the set of self-intersecting points and self-intersecting lines of the affine mapping. 6. Analytical expression of congruences in plane and space. 7. Analytic expression of similarities in the plane. 8. Classification of correspondences and similarities. Groups of geometric representations. 9. Sets of points in the Euclidean plane defined by distance. Conics. 																	
<p>Recommended or required literature:</p> <ol style="list-style-type: none"> 1. Sekanina, M. a kol.: Geometrie 1, SPN Praha 1986. 2. Hejný, M. – Zaťko, V. – Kršák, P.: Geometria 1, SPN Bratislava 1985. 3. Billich, M. – Trenkler, M.: Zbierka úloh z geometrie. Verbum, Ružomberok 2013. 																	
<p>Language of instruction: Slovak</p>																	
<p>Notes:</p>																	
<p>Course evaluation: Assessed students in total: 2</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>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>100.0</td> </tr> </tbody> </table>						A	B	C	D	E	FX	0.0	0.0	0.0	0.0	0.0	100.0
A	B	C	D	E	FX												
0.0	0.0	0.0	0.0	0.0	100.0												
<p>Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.</p>																	
<p>Last modification: 29.08.2022</p>																	
<p>Supervisor(s): Person responsible for the delivery, development and quality of the study programme: doc. Mgr. Eva Litavcová, PhD.</p>																	

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD101A/22	Course title: Introduction to mathematics studies
Type and range of planned learning activities and teaching methods: Form of instruction: Seminar Recommended study range: hours weekly: 6 hours per semester: 78 Teaching method: on-site	
Credits: 7	Working load: 175 hours
Recommended semester/trimester: 1.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: Verification of the student's acquisition of the relevant knowledge, skills and competences is carried out on the basis of theoretical and practical examinations during the semester course (50%) and the final examination (50%). The final assessment is based on the total number of points obtained from the mid-term examinations and the final examination.	
Learning outcomes of the course: After completing the course, the student will acquire the following knowledge, skills and competences: - The student has a comprehensive overview of the content of secondary school mathematics, which is a necessary foundation for higher education studies as a mathematics teacher. - The student solves standard and non-standard problems of varying difficulty in school mathematics as defined by the requirements for ISCED 2, ISCED 3 using various methods and strategies, while also being able to use heuristic procedures. - The student is able to assess the correctness, appropriateness and effectiveness of different procedures in solving different types of mathematical problems. - The student is able to create variations of mathematical problems and tasks of different levels of difficulty.	
Course contents: 1. The solving process of (mathematical) problems according to G. Pólya, phases of solving process. Strategies for solving problems in school mathematics. 2. General strategies for solving problems in school mathematics. 3. Functions, composition of functions, inverse function. 4. Binary relations on a set, equivalence relation, partial ordering. 5. Integers division, Theorem of Division with Remainder, Fundamental Theorem of Arithmetic, Divisibility Criteria. 6. Greatest common divisor, Least common multiple, Euclidean algorithm. 7. Numerical and algebraic expressions, their modification and operations with them 8. Elementary functions 9. Definitional domain and domain of values of a function	

10. Equations and inequalities I
11. Equations and inequalities II
12. Heuristic methods in mathematics

Recommended or required literature:

1. Hecht, T., Sklenáriková, Z.: Metódy riešenia matematických úloh. Bratislava: SPN, 1992. 80-08-00340-5
2. Katriňák, T. a kol.: Algebra a teoretická aritmetika 1. Bratislava: Alfa, 1985. 63-568-85
3. Klenovčan, P., Haviar, Š., Haviar, M.: Úvod do štúdia matematiky. Banská Bystrica: Univerzita Mateja Bela, 1996. 8080550107
4. Kopka, J.: Ako riešiť matematické problémy. Ružomberok: Verbum, 2010. ISBN 978-80-8084-563-6
5. Kopka, J.: Metoda zkoumání ve školské matematice. Ružomberok: Katolícka univerzita, 2008. ISBN 978-80-808-4390-8
6. Lengyelfalussy, T., Horváthová, K.: Metódy riešenia matematických úloh I. a II. Žilina: Edis, 2016. ISBN 978-80-554-0109-6
7. Novotná, J.: Analýza řešení slovních úloh. Praha: Univerzita Karlova v Praze – Pedagogická fakulta, 2000. ISBN 80-7290-011-0
8. Petáková, J.: Matematika (Příprava k maturitě a k přijímacím zkouškám na vysoké školy). Praha: Prometheus, 2008. ISBN 8071960993
9. Polya, G.: Jak to řešit? Praha: Matfyzpres. 2016. ISBN 978-80-7378-325-9
10. Vondrová, N. a kol.: Matematická slovná úloha. Medzi matematikou, jazykem a psychológií. Praha: Karolinum, 2019. ISBN 978-80-246-4516-2.
11. Učebnice matematiky pre stredné školy, zbierky úloh.

Language of instruction:

Slovak language

Notes:

Course evaluation:

Assessed students in total: 10

A	B	C	D	E	FX
40.0	10.0	20.0	20.0	10.0	0.0

Name of lecturer(s): RNDr. Lucia Csachová, PhD.

Last modification: 25.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:

doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD100A/22	Course title: Language of mathematics
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 1 / 1 hours per semester: 13 / 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 1.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: Verification of the degree of acquisition of the relevant knowledge, skills and competencies of the student is carried out on the basis of theoretical and practical examinations during the semester teaching of the subject (40%) and the final exam (60%). A – 100%-93% B – 92%-85% C – 84%-77% D – 76%-69% E – 68%-60% Fx – 59%- 0%	
Learning outcomes of the course: After completing the subject, the student will acquire the following knowledge, skills and competences: An overview of the historical development of mathematics Basic knowledge of mathematical logic that leads to a deeper understanding of mathematical theory Use the basic rules of logical proof Basic knowledge of set theory Apply the consequences of the axioms of real numbers After completing the subject, the student will acquire the following knowledge, skills and competences: V3 He has a rough overview of the methodology and epistemology of his subject specialization. Z2 He is able to think critically and argue. Z3 Can estimate the strengths and weaknesses of things, carry out mental experiments. K3 Is able to search for new professional information and process it independently. K4 Does not trust cheap and quick solutions to difficult tasks.	
Course contents: 1. Historical view of the development of mathematics 2. Propositional logic 3. Semantics of propositional logic 4. Quantified propositions and their negation	

5. Basic terms of mathematical theory
6. Mathematical proofs
7. Sets and their properties
8. Set operations
9. Finite and countable sets
10. Real numbers, axioms of real numbers and their consequences
11. Natural numbers and mathematical

Recommended or required literature:

1. Čižmár, J.: Dejiny matematiky, Bratislava 2017, ISBN 2017978-80-8046-829-3
2. Bukovský, L.: Úvod do Matematiky, Košice 2001, https://ics.upjs.sk/~novotnyr/home/skola/uvod_do_matematiky/uvoddm.pdf
3. Devlin, K.: Jazyk matematiky, 2011, ISBN 978-80-7363-364-6
4. Kvasnička, V., Pospíchal, J.: Matematická logika, STU Bratislava 2006, ISBN 80-227-2449-1
5. Fuchs, E.: Teorie množin pro učitele, Brno 1999, ISBN 80-210-2201-9

Language of instruction:

English

Notes:

Course evaluation:

Assessed students in total: 18

A	B	C	D	E	FX
11.11	27.78	5.56	16.67	11.11	27.78

Name of lecturer(s): doc. RNDr. Mária Jurečková, CSc.

Last modification: 26.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD104A/22	Course title: Mathematical analysis 1
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 2 / 1 hours per semester: 26 / 13 Teaching method: on-site	
Credits: 4	Working load: 100 hours
Recommended semester/trimester: 2.	
Level of study: I.	
Prerequisites: KMAT/Ma-BD101A/22	
Requirements for passing the course: There will be two written quizzes during the semester, with a maximum of 20 points for each quiz. A minimum of 20 points must be obtained from the quizzes in order to participate in the exam. Students may earn a maximum of 60 points on the final oral examination. The maximum number of points that can be obtained is 100. The minimum number of points to be obtained for a satisfactory assessment of the student's knowledge is 50.	
Learning outcomes of the course: After completing the course, the student will acquire the following knowledge, skills and competences: - basic knowledge of sequences, the skill to determine the sum of the members of a sequence, the supremum and infimum of both a set and a function, the skill to decide the summability of a sequence, - basic knowledge of the continuity of a function, proper and improper limit of a function at proper and improper points.	
Course contents: Sequence, its definition and properties. The sum and product of a finite number of members of a sequence and their properties, Cauchy's inequality. Partial sums and summability of a sequence. Geometric sequence and its sum, Archimedes' property. Absolute summable sequences, comparison and Abelian criterion of summability, properties of summable sequences. Continuity of monotone functions - neighbourhood of a point, continuity on the left, continuity on the right, continuity at a point. Continuity of functions, continuity from the left continuity from the right, continuity at a point - ϵ - δ definition, continuity and inequalities, properties of continuous functions, continuity of a composite function, principle of continuous extension, operations on continuous functions. Limit, left limit, right limit, limit at a point. Limit at a non-eigenpoint, limits and bounds, operations with limits.	

Limits and inequalities. Intrinsic limits. Theorems on continuous functions, fundamental theorem of algebra, Weierstrass theorems on maximum and minimum.

Recommended or required literature:

1. Kluvánek I. : Preparatory course for differential and integral calculus, PF KU, Ružomberok 2006, ISBN 80-8084-069-5.
2. Kluvánek, I. : Differential calculus of a function of one real variable, PF KU, Ružomberok 2007, ISBN 978-80-80-8084-236-9.
3. Veselý, J.: Mathematical analysis for teachers I, Matfyzpress, 1997, Prague, 230 p., ISBN, 80-85863-23-5
4. Eliáš J., Horváth J., Kajan: Collection of problems from higher mathematics 2, STU, Bratislava 1995, ISBN 8022707422.

Language of instruction:

Slovak

Notes:

Course evaluation:

Assessed students in total: 10

A	B	C	D	E	FX
0.0	0.0	10.0	60.0	10.0	20.0

Name of lecturer(s): doc. Mgr. Eva Litavcová, PhD.

Last modification: 27.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD107A/22	Course title: Mathematical analysis 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: There will be two written quizzes during the semester, with a maximum of 20 points for each quiz. A minimum of 20 points must be obtained from the quizzes in order to participate in the exam. Students may earn a maximum of 60 points on the final oral examination. The maximum number of points that can be obtained is 100. The minimum number of points to be obtained for a satisfactory assessment of the student's knowledge is 50.	
Learning outcomes of the course: Upon completion of the course, the student will: <ul style="list-style-type: none"> - has a basic knowledge of the differential calculus of a real function of one real variable and the ability to describe some properties of functions using this apparatus - can formulate theorems about the increment of a function and apply them to concrete examples; can investigate the progression of a function, - has a basic understanding of function sequences, power series, can use the Taylor theorem to develop a function into a power series, - can describe exponential, logarithmic, goniometric and cyclometric functions using power series, - has a basic understanding of the limit of a sequence, is aware of the difference between the limit of a function and the limit of a sequence. 	
Course contents: Differentiability of a function and derivative of a function at a point. Counting with differential functions, k-th order derivatives. Maxima and minima of a function, monotonicity and convexity of a function. Theorems on the increment of a function (Rolle's theorem, Lagrange's theorem, Cauchy's theorem), investigation of the progress of a function. Differential functions, applications of differential calculus, numerical methods for calculating the derivative of a function at a point and numerical search for roots of equations. Functional sequences and series, uniform and pointwise summability of functional sequences. Basic properties of uniformly summable sequences, power series, radius of convergence. Power series, the power series differentiability theorem, development into power series - Taylor polynomial. Description of elementary functions by power series.	

Convergence of a sequence and limit of a sequence. Relationship between limit of a sequence and limit of a function, properties of monotone sequences.

Recommended or required literature:

1. Kluvánek, I. : Differential calculus of functions of one real variable, PF KU, Ružomberok 2007, ISBN 978-80-80-8084-236-9.
2. Kluvánek, I. : Integral calculus of a function of one real variable, PF KU, Ružomberok 2008, ISBN 978-80-80-8084-373-1.
3. Veselý, J.: Mathematical analysis for teachers I, Matfyzpress, 2001, Prague, 230 p., ISBN, 80-85863-62-6 : 180
4. Veselý, J.: Mathematical Analysis for Teachers II, Matfyzpress, 2001, Prague, 190 s., ISBN,978-80-7378-063-0
5. Eliáš, J., Horváth, J., Kajan: Collection of problems from higher mathematics 2, STU, Bratislava 1995, ISBN 8022707422.
6. Demidovič, B. P.: Collection of Problems and Exercises in Mathematical Analysis, Fragment, Prague, 2003.

Language of instruction:

Slovak

Notes:

Course evaluation:

Assessed students in total: 1

A	B	C	D	E	FX
0.0	0.0	100.0	0.0	0.0	0.0

Name of lecturer(s): doc. Mgr. Eva Litavcová, PhD.

Last modification: 27.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD110A/22	Course title: Mathematical analysis 3
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: 4.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: There will be two written quizzes during the semester, with a maximum of 20 points for each quiz. A minimum of 20 points must be obtained from the quizzes in order to participate in the exam. Students may earn a maximum of 60 points on the final oral examination. The maximum number of points that can be obtained is 100. The minimum number of points to be obtained for a satisfactory assessment of the student's knowledge is 50. 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: Upon completion of the course, the student will: <ul style="list-style-type: none"> - has a basic knowledge of primitive functions and the skill to calculate them, - has a basic knowledge of Lebesgue and Riemann integrals, - knows how to use the integral to calculate the content, volume and surface of various geometric figures and the length of curves, - knows how to solve some types of differential equations and how to apply this to solving some problems in the natural sciences. 	
Course contents: <ol style="list-style-type: none"> 1. The primitive function, methods of calculating the primitive function, application of the method of substitution and per partes. 2. Methods of computing primitive functions to rational, irrational and transcendental functions. 3. Integral (Lebesgue - Kluvank), definition, integrability on the interval. 4. Basic properties of integrable functions. 5. Methods of calculating the definite integral. 6. The use of the integral to calculate the content, volume and surface of various geometric figures and the length of curves. 	

7. Other ways of defining and types of integrals (Riemann and Newton integrals), numerical methods of calculating integrals.
8. Applications of the integral to the solution of simple first order differential equations, including those with separable variables.

Recommended or required literature:

1. Kluvánek, I. : Integrálny počet funkcie jednej reálnej premennej, PF KU, Ružomberok 2008, ISBN 978-80-8084-373-1.
2. Veselý, J.: Matematická analýza pro učitele I, Matfyzpress, 2001, Praha, 230 s., ISBN, 80-85863-62-6 : 180
3. Veselý, J.: Matematická analýza pro učitele II, Matfyzpress, 2001, Praha, 190 s., ISBN,978-80-7378-063-0
4. Eliáš J., Horváth J., Kajan: Zbierka úloh z vyššej matematiky 2, STU, Bratislava 1995, ISBN 8022707422.
5. Demidovič, B. P.: Sbírka úloh a cvičení z matematické analýzy, Fragment, Praha, 2003.

Language of instruction:

Slovak

Notes:

Course evaluation:

Assessed students in total: 5

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	100.0	0.0

Name of lecturer(s): doc. Mgr. Eva Litavcová, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:

doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD102A/22	Course title: Seminar in mathematics 1
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 1 / 1 hours per semester: 13 / 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 1.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: The final grade of the course will be determined by the points earned for the student's discussion activity, the level and content of the student's presentations, as well as the quality of the final written work. 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 will learn to think critically, discuss, present, study a selected piece of mathematics, present undergraduate/diploma work, and build community at the same time. Referring to the matrix of learning objectives and outcomes, upon completion of the course, the student will acquire the following knowledge, skills, and competencies: V3 He/she has an overview of the methodology and epistemology of their subject specialisation. V4 He/she has relevant knowledge of mathematical analysis, algebra, geometry and didactics of mathematics as the foundations of the profession of mathematics teacher, as well as of other parts of modern mathematics, appropriately selected to his/her liking and with respect to the content of school mathematics. 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. Z4 He/she is able to present in a sophisticated manner. K4 He/she is able to seek out new technical information and process it independently. K5 He/she does not trust cheap and quick solutions to difficult problems. K6 He/she is interested in social events, willing to work on himself/herself, enjoys problem solving, views phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents: The basic skeleton of the implementation of the course will consist of a series of meetings, the content of which will be critical discussions and reflections on agreed topics related to mathematics and its teaching, sometimes raised by the guest during his lecture, critical readings of selected texts and their presentation, presentations of the results of bachelor's and master's theses.	

Recommended or required literature:

The selection of appropriate study literature will be made at the beginning of each semester, also taking into account student preferences.

Language of instruction:

Slovak

Notes:**Course evaluation:**

Assessed students in total: 18

A	B	C	D	E	FX
38.89	16.67	5.56	11.11	11.11	16.67

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD105A/22	Course title: Seminar in mathematics 2
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 1 / 1 hours per semester: 13 / 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 2.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: The final grade of the course will be determined by the points earned for the student's discussion activity, the level and content of the student's presentations, as well as the quality of the final written work. 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 will learn to think critically, discuss, present, study a selected piece of mathematics, present undergraduate/diploma work, and build community at the same time. Referring to the matrix of learning objectives and outcomes, upon completion of the course, the student will acquire the following knowledge, skills, and competencies: V3 He/she has an overview of the methodology and epistemology of their subject specialisation. V4 He/she has relevant knowledge of mathematical analysis, algebra, geometry and didactics of mathematics as the foundations of the profession of mathematics teacher, as well as of other parts of modern mathematics, appropriately selected to his/her liking and with respect to the content of school mathematics. 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. Z4 He/she is able to present in a sophisticated manner. K4 He/she is able to seek out new technical information and process it independently. K5 He/she does not trust cheap and quick solutions to difficult problems. K6 He/she is interested in social events, willing to work on himself/herself, enjoys problem solving, views phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents: The basic skeleton of the implementation of the course will consist of a series of meetings, the content of which will be critical discussions and reflections on agreed topics related to mathematics and its teaching, sometimes raised by the guest during his lecture, critical readings of selected texts and their presentation, presentations of the results of bachelor's and master's theses.	

Recommended or required literature:

The selection of appropriate study literature will be made at the beginning of each semester, also taking into account student preferences.

Language of instruction:

Slovak

Notes:**Course evaluation:**

Assessed students in total: 16

A	B	C	D	E	FX
18.75	12.5	31.25	6.25	0.0	31.25

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD108A/22	Course title: Seminar in mathematics 3
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 1 / 1 hours per semester: 13 / 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 3.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: The final grade of the course will be determined by the points earned for the student's discussion activity, the level and content of the student's presentations, as well as the quality of the final written work. 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 will learn to think critically, discuss, present, study a selected piece of mathematics, present undergraduate/diploma work, and build community at the same time. Referring to the matrix of learning objectives and outcomes, upon completion of the course, the student will acquire the following knowledge, skills, and competencies: V3 He/she has an overview of the methodology and epistemology of their subject specialisation. V4 He/she has relevant knowledge of mathematical analysis, algebra, geometry and didactics of mathematics as the foundations of the profession of mathematics teacher, as well as of other parts of modern mathematics, appropriately selected to his/her liking and with respect to the content of school mathematics. 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. Z4 He/she is able to present in a sophisticated manner. K4 He/she is able to seek out new technical information and process it independently. K5 He/she does not trust cheap and quick solutions to difficult problems. K6 He/she is interested in social events, willing to work on himself/herself, enjoys problem solving, views phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents: The basic skeleton of the implementation of the course will consist of a series of meetings, the content of which will be critical discussions and reflections on agreed topics related to mathematics and its teaching, sometimes raised by the guest during his lecture, critical readings of selected texts and their presentation, presentations of the results of bachelor's and master's theses.	

Recommended or required literature:

The selection of appropriate study literature will be made at the beginning of each semester, also taking into account student preferences.

Language of instruction:

Slovak

Notes:**Course evaluation:**

Assessed students in total: 7

A	B	C	D	E	FX
14.29	14.29	14.29	14.29	28.57	14.29

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD111A/22	Course title: Seminar in mathematics 4
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 1 / 1 hours per semester: 13 / 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 4.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: The final grade of the course will be determined by the points earned for the student's discussion activity, the level and content of the student's presentations, as well as the quality of the final written work. 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 will learn to think critically, discuss, present, study a selected piece of mathematics, present undergraduate/diploma work, and build community at the same time. Referring to the matrix of learning objectives and outcomes, upon completion of the course, the student will acquire the following knowledge, skills, and competencies: V3 He/she has an overview of the methodology and epistemology of their subject specialisation. V4 He/she has relevant knowledge of mathematical analysis, algebra, geometry and didactics of mathematics as the foundations of the profession of mathematics teacher, as well as of other parts of modern mathematics, appropriately selected to his/her liking and with respect to the content of school mathematics. 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. Z4 He/she is able to present in a sophisticated manner. K4 He/she is able to seek out new technical information and process it independently. K5 He/she does not trust cheap and quick solutions to difficult problems. K6 He/she is interested in social events, willing to work on himself/herself, enjoys problem solving, views phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents: The basic skeleton of the implementation of the course will consist of a series of meetings, the content of which will be critical discussions and reflections on agreed topics related to mathematics and its teaching, sometimes raised by the guest during his lecture, critical readings of selected texts and their presentation, presentations of the results of bachelor's and master's theses.	

Recommended or required literature:

The selection of appropriate study literature will be made at the beginning of each semester, also taking into account student preferences.

Language of instruction:

Slovak

Notes:**Course evaluation:**

Assessed students in total: 6

A	B	C	D	E	FX
16.67	16.67	50.0	0.0	0.0	16.67

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD114A/22	Course title: Seminar in mathematics 5
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 1 / 1 hours per semester: 13 / 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 5.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: The final grade of the course will be determined by the points earned for the student's discussion activity, the level and content of the student's presentations, as well as the quality of the final written work. 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 will learn to think critically, discuss, present, study a selected piece of mathematics, present undergraduate/diploma work, and build community at the same time. Referring to the matrix of learning objectives and outcomes, upon completion of the course, the student will acquire the following knowledge, skills, and competencies: V3 He/she has an overview of the methodology and epistemology of their subject specialisation. V4 He/she has relevant knowledge of mathematical analysis, algebra, geometry and didactics of mathematics as the foundations of the profession of mathematics teacher, as well as of other parts of modern mathematics, appropriately selected to his/her liking and with respect to the content of school mathematics. 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. Z4 He/she is able to present in a sophisticated manner. K4 He/she is able to seek out new technical information and process it independently. K5 He/she does not trust cheap and quick solutions to difficult problems. K6 He/she is interested in social events, willing to work on himself/herself, enjoys problem solving, views phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents: The basic skeleton of the implementation of the course will consist of a series of meetings, the content of which will be critical discussions and reflections on agreed topics related to mathematics and its teaching, sometimes raised by the guest during his lecture, critical readings of selected texts and their presentation, presentations of the results of bachelor's and master's theses.	

Recommended or required literature:

The selection of appropriate study literature will be made at the beginning of each semester, also taking into account student preferences.

Language of instruction:

Slovak

Notes:**Course evaluation:**

Assessed students in total: 3

A	B	C	D	E	FX
33.33	0.0	0.0	0.0	33.33	33.33

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD116A/22	Course title: Seminar in mathematics 6
Type and range of planned learning activities and teaching methods: Form of instruction: Seminar Recommended study range: hours weekly: 1 hours per semester: 13 Teaching method: on-site	
Credits: 1	Working load: 25 hours
Recommended semester/trimester: 6.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: The final grade of the course will be determined by the points earned for the student's discussion activity, the level and content of the student's presentations, as well as the quality of the final written work. 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 will learn to think critically, discuss, present, study a selected piece of mathematics, present undergraduate/diploma work, and build community at the same time. Referring to the matrix of learning objectives and outcomes, upon completion of the course, the student will acquire the following knowledge, skills, and competencies: V3 He/she has an overview of the methodology and epistemology of their subject specialisation. V4 He/she has relevant knowledge of mathematical analysis, algebra, geometry and didactics of mathematics as the foundations of the profession of mathematics teacher, as well as of other parts of modern mathematics, appropriately selected to his/her liking and with respect to the content of school mathematics. 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. Z4 He/she is able to present in a sophisticated manner. K4 He/she is able to seek out new technical information and process it independently. K5 He/she does not trust cheap and quick solutions to difficult problems. K6 He/she is interested in social events, willing to work on himself/herself, enjoys problem solving, views phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents: The basic skeleton of the implementation of the course will consist of a series of meetings, the content of which will be critical discussions and reflections on agreed topics related to mathematics and its teaching, sometimes raised by the guest during his lecture, critical readings of selected texts and their presentation, presentations of the results of bachelor's and master's theses.	

Recommended or required literature:

The selection of appropriate study literature will be made at the beginning of each semester, also taking into account student preferences.

Language of instruction:

Slovak

Notes:**Course evaluation:**

Assessed students in total: 1

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.

Last modification: 29.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok					
Faculty: Faculty of Education					
Course code: KMAT/Ma-BD100S/22		Course title: State Final Examination - Mathematics			
Type and range of planned learning activities and teaching methods: Form of instruction: Recommended study range: hours weekly: hours per semester: Teaching method: on-site					
Credits: 5		Working load: 125 hours			
Recommended semester/trimester: 5., 6..					
Level of study: I.					
Prerequisites:					
Requirements for passing the course: The state examination in the regular term, determined by the study schedule, may be taken by a student who has fulfilled the obligations stipulated by the accredited study programme and the Study Regulations of the KU in Ružomberok during the study control carried out in the last year of study. The state examination has the character of a colloquium.					
Learning outcomes of the course: After completing the course, the student will acquire the following knowledge, skills and competences: Basic knowledge of mathematical analysis, algebra, geometry, school stochastics.					
Course contents: Updated theses for the colloquial examination are published on the faculty's website no later than the beginning of the summer semester in a given academic year.					
Recommended or required literature: According to the literature of compulsory courses of the given study programme.					
Language of instruction: Slovak					
Notes:					
Course evaluation: Assessed students in total: 11					
A	B	C	D	E	FX
18.18	36.36	18.18	9.09	18.18	0.0
Name of lecturer(s):					
Last modification: 29.08.2022					
Supervisor(s): Person responsible for the delivery, development and quality of the study programme: doc. Mgr. Eva Litavcová, PhD.					

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD113A/22	Course title: Stochastics for teachers
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 2 / 1 hours per semester: 26 / 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 5.	
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.	
Learning outcomes of the course: Students will gain a solid understanding of basic concepts and connections in combinatorics and discrete probability, with particular reference to their application in school mathematics. With reference to the matrix of learning objectives and learning outcomes, on completion of the course the student will acquire the following knowledge, skills and competences: V4 Have a basic knowledge of mathematical analysis, algebra, geometry, school stochastics and didactics of mathematics as the foundations of the profession of mathematics teacher. Z2 Is able to think and argue critically. K4 Does not trust cheap and quick solutions to difficult problems. K5 Is interested in the events in society, willing to work on oneself, enjoys solving problems, looks at phenomena of various kinds (natural, social, economic) with a reasonable distance.	
Course contents: Basic combinatorial functions. Basic combinatorial concepts. Finite set decompositions. Principle of inclusion and excision. Decompositions of natural numbers into addends. Partitioning into partitions. Block diagrams, Latin squares. Random experiment and its stochastic model, urn schemes. Event and its probability. Properties of probability. Axiomatics of probability theory. Conditional probability. Stochastic independence of events. Random variable and its distribution. Probability space generated by a random variable. Random vector and its distribution. Numerical characteristics of a random variable.	

Recommended or required literature:

1. Fuchs, E.: Discrete Mathematics, Masaryk University, Brno 2001.
2. Płocki, A.: Probability around us, Ružomberok 2004, 2008
3. Zvára, K., Štěpán. J.: Probability and Mathematical Statistics, MATFYZPRESS, Prague 2001

Language of instruction:

Slovak

Notes:**Course evaluation:**

Assessed students in total: 5

A	B	C	D	E	FX
20.0	20.0	0.0	0.0	0.0	60.0

Name of lecturer(s): doc. PaedDr. Martin Papčo, PhD.**Last modification:** 29.08.2022**Supervisor(s):**

Person responsible for the delivery, development and quality of the study programme:

doc. Mgr. Eva Litavcová, PhD.

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KMAT/Ma-BD117A/22	Course title: Teaching practice in mathematics 1
Type and range of planned learning activities and teaching methods: Form of instruction: Seminar Recommended study range: hours weekly: 1 hours per semester: 13 Teaching method: on-site	
Credits: 2	Working load: 50 hours
Recommended semester/trimester: 5.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: Verification of the degree of acquisition of the relevant knowledge, skills and competences of the student is carried out on the basis of continuous control during the semester teaching of the subject. The prerequisite for successful completion of the course is the completion of the required number of teaching hours and the processing of records of teaching hours and post-teaching interviews. 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: The aim of the course is to observe methodological approaches, specific features of teaching of mathematics and the basic stages of the teaching process. Furthermore, it is the observation of the work of the mathematics teacher and his/her creative component during the whole lesson. Also not negligible is the observation of the specific structure of the lesson according to the following model: emotional and cognitive sensitization, value reflection, classroom practice through experiential learning, real-life experience and connection to life. After completion of the course, the student will acquire the following knowledge, skills and competencies: - The student is oriented in real school practice, in the work of the teacher and elementary/middle school students in mathematics classes. - The student is able to link and compare the theoretical and practical components of university training.	
Course contents: 1. Theme, aim, content, methods of the educational process. 2. Lesson ideas and analysis. 3. Learning the analytical structure of the educational process.	

Recommended or required literature:

1. Petlák, E.: Pedagogicko-didaktická práca učiteľa. Bratislava: IRIS, 2007. ISBN 808901805X
2. Čapek, R.: Moderní didaktika. České Budějovice: Grada, 2017. ISBN 9788024734507

Language of instruction:

Slovak language

Notes:**Course evaluation:**

Assessed students in total: 3

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Name of lecturer(s): RNDr. Lucia Csachová, PhD.

Last modification: 25.08.2022

Supervisor(s):

Person responsible for the delivery, development and quality of the study programme:
doc. Mgr. Eva Litavcová, PhD.