CONTENS

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ ALG/22	**Name:** Algebra

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 3.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 90 points for A, 80 points for B, 70 points for C, 60 points for D and 50 points for E.
Student Load Sharing:
39% of the workload - direct teaching
21% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The student is introduced to the basic concepts of abstract algebra, is able to classify the fundamental and binary operation algebraic structures. He is aware of the concept of group homomorphism and is able to determine the core and image of homomorphism. He knows the concept of ideal, maximal ideal and prime ideal. The student understands the basic properties of polynomials. The student can decompose the polynomials into multiplied irreducible polynomials over a number of different number fields. He is familiar with the fundamentals of algebra and the connection between radicals and coefficients. He is aware of the solving formulas for second and third degree equations as well as the solving methods of binomial equations and those reducible to a lesser degree.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.

• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able self-containedly earn new mathematical knowledge and extend it.
• He/she demonstrates a high level of self-activity in solving mathematical problems.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• Elements of abstract algebra, binary operations and algebraic structures.
• Group, subgroup.
• Homomorphism, standard dividers, cyclic groups.
• Permutation groups, the parity of permutations.
• Ring, integral domain, numerical body.
• Divisibility in integral domains. Gauss rings, Euclidean rings, polynomial rings.
• Ideals, maximal and prime ideal.
• Polynomials and polynomial functions. Horner's scheme.
• Divisibility of polynomials, Euclidean algorithm.
• Roots of polynomials, decomposition of polynomial into irreducible factors.
• Polynomials over rational, real and complex number fields. The fundamental proposition of algebra.
• Symmetric polynomials. Connection between radicals and coefficients.
• Solving second- and third-degree equations, binomial equations.

Literature:
• Szendrei et al.: Absztrakt algebrai feladatok Szeged: Polygon, 2005. 512 s.
• Safarevics I.R.: Algebra: Az algebra alapfogalmai. Budapest: Typotex Elektronikus Kiadó Kft., 2009. 271 s. ISBN 978 963 279 056 5.
• Fried E.: Algebra I.: Elemi és lineáris algebra, Budapest: Nemzeti Tankönyvkiadó, 2000. 334 s. ISBN 963 19 1176 4.
Filep L.: A tudományok királynője: A matematika fejlődése, Typotex Kiadó, 2001. 510 s. ISBN 963 7546 83 9.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/BS/22	**Name:** Bachelor's Thesis Seminar
Types, range and methods of educational activities: **Form of study:** Lecture / Seminar / Practical **Recommended extent of course (in hours):** **Per week:** 0 / 1 / 0 **For the study period:** 0 / 13 / 0 **Methods of study:** present	
Number of credits: 4	
Recommended semester/trimester of study: 5.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: Observation and evaluation of the external and internal environment of a primary and secondary school in practice. Learning about and working with the pedagogical documentation of the class and the school. Observation of the creation of conditions, implementation and evaluation of lessons in upper primary and secondary schools. Carrying out a professional analysis of the lessons observed in collaboration with the practice teacher. Documenting the process and results of each lesson observed. Didactical procedures for the preparation of the written preparation (with all its components), consultation with the practice teacher. Preparation of the necessary conditions for the lesson. Implementation of the planned and prepared lesson, by using innovative strategies, as well as appropriate teaching tools from primary and secondary schools. Evaluating the lesson, using planned and selected methods and evaluation tools from the point of view of the teacher, the students (and elements of self-evaluation). Professional analysis done together with the student's practice teacher: preparation, documentation and evaluation of the preparation and its use, as well as other components of the lesson. Preparation of a portfolio of the lessons observed, with all its components, based on criteria predefined by the practice teacher, using autonomy and alternativity, based on current trends in didactics.	
Results of education: Knowledge: The student is able to: - list and explain the general requirements for the preparation of the Bachelor thesis, describe and characterize the content structure of the Bachelor thesis and its parts (introduction, main body, appendices), - explain the concepts of phenomenon and fact, list and describe ways of investigating educational phenomena, - describe in more detail the main methods of collecting and processing the data presented in the Bachelor thesis,	

- identify the basic requirements for the author of a thesis, describe and characterise the model, characteristics and formal structure of a thesis,
- list and explain the formal requirements for the Bachelor thesis,
- define the concept of an abstract, describe its structure, describe the characteristics of a quality abstract, list the most common mistakes in abstract preparation, distinguish between an abstract and an annotation, an extract, a summary and an overview,
- explain the concepts of citation, quotation, paraphrasing, compilation, plagiarism, distinguish between quotating and paraphrasing, and illustrate different citation and referencing techniques with examples,
- define and interpret in his (her) own words the basic concepts and motifs of the chosen subject area,
- be familair with the basic terms used in the thesis,
- explain thebasic terms used in an essay,
- construct (elaborate) the theoretical plane of the thesis, including all its important aspects,
- analyse and justify the conclusions of the thesis,
- critically analyse, re-evaluate and use in theory the knowledge gained.

Skills:

The student is able to:
- write a draft of his (her) own Bachelor thesis,
- explain the methodological rules for writing a Bachelor thesis,
- define the main question and the aim of the thesis, formulate hypotheses where appropriate,
- plan a timetable for the preparation of the Bachelor thesis, including its table of contents,
- work with literature (primary and secondary sources), search for information in library information databases,
- prepare the text of the Bachelor thesis, based on the knowledge acquired, by formulating ideas in a logical and precise way, producing a quality abstract, writing an introduction and conclusion, taking into account the criteria given,
- present the knowledge acquired in the field, recognising its complexity and drawing conclusions,
- apply knowledge of the ethics and techniques of citation and drafting,
- use correctly the various methods of citation and referencing and compile a bibliography correctly,
- create (develop) the practical aspects of the thesis, including all relevant aspects,
- analyse, synthesise and compare knowledge and propose solutions on this basis,
- draw conclusions and formulate practical implications through critical analysis,
- critically analyse, reassess and apply the knowledge acquired in practice,
- present, discuss and support the ideas with proper arguments, while writing the thesis,
- present, in a group of students and in the presence of the tutor, the outputs of the activity and justify their relevance and practical use,
- complete the Bachelor thesis and prepare for its public defence,
- to grade the strengths and weaknesses of the topic of the thesis and the thesis itself,
- critically evaluate the methods and procedures used in the thesis and make suggestions for their practical application,
- acquire independent knowledge in the chosen field,
- apply theoretical knowledge to teaching practice.

Competences:

The student
- is aware of the importance of respecting academic ethics and the ethical implications for his/her own student and future teaching activities,

- acts in accordance with the rules of good conduct,
- has mastered the basics of social appearance, and is dressed appropriately for the state examination,
- adheres to the wthical principles of citation
- expresses his/her beliefs and opinions in a straightforward and honest manner, while accepting that the other party has the right to form his/her own opinion,
- bears and accepts the consequences of his/her own actions.

Brief syllabus:

1. Requirements for the Bachelor thesis in the SJE guidelines.
2. A concise description of the Bachelor thesis.
3. The importance of the Bachelor thesis
4. Selection of the topic for the Bachelor thesis.
5. Preparation of a selected bibliography for the thesis.
6. Tasks and objectives of the Bachelor thesis.
7. Choosing the appropriate citation.
8. Content of the Bachelor thesis.
9. Formulating a strategy for the development of each part (chapter).
10. Working with reference books and journals.
11. Use of the Internet and online publications.
12. Preparing and carrying out the research, and getting ready for the defence of the Bachelor thesis.

Literature:

• A magyar helyesírás szabályai. 2015. Budapest: Akadémiai Kiadó. 12. kiadás. ISBN 978 963 05 9631 2
• Madarásová, J. (red.) 2000. Pravidlá slovenského pravopisu. Bratislava: VEDA. ISBN 8022406554
• Smernica rektora č. 2/2021 o úprave, registrácii, sprístupnení a archivácii záverečných, rigoróznych a habilitačných prác na Univerzite J. Selyeho. 2021. Komárno: UJS

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. RNDr. János Tóth, PhD., prof. László Szalay, DSc., Dr. habil. Kálmán Csaba Liptai, PhD., Dr. habil. RNDr. Peter Csiba, PhD., doc. RNDr. Ferdinánd Filip, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ DM/22	**Name:** Discrete mathematics

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 5.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
31% of the workload - direct teaching
29% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
At the end of the course, students will obtain an overview of the basic concepts of Set Theory, Combinatorics, Mathematical Logic and Boolean Algebra.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able self-containedly earn new mathematical knowledge and extend it.
• He/she demonstrates a high level of self-activity in solving mathematical problems.

• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• Introduction to the Discrete Mathematics, Peano axioms, principle of Mathematical induction.
• Set Theory – basic terms, set operations.
• Relations and mappings, composition of mappings, equivalence relation.
• Cardinality of sets, finite and nonfinite sets, computable sets.
• Combinatorics – combinations and variations (with and without repetition).
• Permutations (with and without repetition), combinatorial identities. Binomial and Polynomial theorem.
• Inclusion–exclusion principle, Pigeonhole principle.
• Propositions and logical operations, tautologies.
• Boolean algebra – binary Boolean functions, realization of Boolean functions by formulas.
• Equivalence of Boolean formulas, properties of elementary Boolean functions, principle of duality.
• Canonic form of Boolean functions, full disjunctive normal form.
• Functional completeness and closure, most important closed classes, Completeness theorem.
• Minimization of Boolean functions.

Literature:

• SZENDREI, Á.: Diszkrét matematika. Szeged : Polygon, 1998. 380 s. ISSN 1417-0590.
• LOVÁSZ, L.: Kombinatorikai problémák és feladatok. Budapest : Typotex, 2008. 670 s. ISBN 978-963-9664-93-7.
• LOVÁSZ, L. – VESZTERGOMBI, K. – PELIKÁN, J.: Diszkrét matematika. Budapest : Typotex, 2006. 292 s. ISBN 978-963-9664-02-9.
• DANCS I.: Halmazelmélet. Budapest: Aula, 2003. 185 s. ISBN 963 9345 52 0.
• GYÖRKE L.: Halmazok, relációk, függvények. Budapest: Tankönyvkiadó, 1969. 410 s. ISBN 0008226.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ GE1/22	**Name:** Geometry 1

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 2.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
39% of the workload - direct teaching
21% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The course deals with the topics of the Euclidean plane geometry while developing logical and creative thinking and deepening the knowledge of geometrical plane shapes. By successfully completing the course students acquire in-depth knowledge of the Euclidean geometry and gain an overview over the area they might need as future teachers of mathematics. The student knows the structure of geometry, the composition principles of plane geometry, the specified topic areas of the syllabus and he can use them in geometrical drawing tasks.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..

Competence:
• He/she is able self-containedly earn new mathematical knowledge and extend it.
• He/she demonstrates a high level of self-activity in solving mathematical problems.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
Basic concepts of geometry, matching, sorting, mutual position of linear spatial elements, congruence.
Geometrical places (point sets with specific properties).
Basic principles of solving geometrical drawing tasks.
Classification of plane shapes.
The golden ratio and its application.
Metric properties of geometric shapes.
Triangular geometry.
Circular geometry.
Central and peripheral angles.
Cyclic quadrilaterals.
Power of point over circle, power line.
Drawing tasks.
Solving Apollonius tasks (without circular inversion)

Literature:

• Hajós, Gy.: Bevezetés a geometriába, Nemzeti Tankönyvkiadó, Budapest, 1999. 596. ISBN 9631901165
• Horvay, K.: Geometriai feladatok gyűjteménye I-II., Nemzeti Tankönyvkiadó, Budapest, 1993. ISBN 9631848868
• Pelle, B.: Geometria, Tankönyvkiadó, Budapest, 1974. ISBN 9631707466
• Birkhoff, G. D.: Basic Geometry, Ralph Beatley. - NY : AMS Chelsea Publishing, 1959. - 294. - ISBN 0821821016
• Vermes, I.: Geometria, Műegyetemi Kiadó, 2003. - 270 s. - ISBN 0147845
• Reiman I.: Fejezetek az elemi geometriából, Nemzeti Tankönyvkiadó, 2002. - 206 s. - ISBN 963 9132 28 4.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. RNDr. Peter Csiba, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ GE2/22	**Name:** Geometry 2

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 3.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The successful completion of the course requires active participation of the student in seminars and preparation of homework assignments (for 30 points) and it is necessary to pass the written part of the exam (for 50 points) and the oral part of the exam (for 20 points).
The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
31% of the workload - direct teaching
29% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The student knows the relations in the axiomatic structure of geometry, including the concept of vector space, affine space or Euclidean space. He knows and understands the abstraction of the n-dimensional space and is capable of interpreting calculations in the n-dimensional space. He is able to choose the appropriate coordinate system and solve analytical geometrical tasks in it.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able self-containedly earn new mathematical knowledge and extend it.

• He/she demonstrates a high level of self-activity in solving mathematical problems.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
Vector and vector operations.
Vector space, n-dimensional affine space.
Affine coordinate system.
Linear subspaces.
Mutual positions of linear subspaces.
Ratio of length
Barycentric coordinates.
Ceva and Menelaus theorems.
Scalar product of vectors, metric properties of vectors.
Orthogonal and orthonormal coordinate systems.
Euclidean space.
Analytical determination of geometrical places (median perpendicular, bisector, circle, conic sections,...)

Literature:

• Csiba, P.: Analitikus geometria. 1. vyd. Komárno: Univerzita J. Selyeho, 2016. 173 s. ISBN 978-80-8122-195-8.
• Hajós, Gy.: Bevezetés a geometriába, Nemzeti Tankönyvkiadó, Budapest, 1999. 596s. ISBN 9631901165
• Kovács, Z.: Geometria, Kossuth Egyetemi Kiadó, Debrecen, 2002. 160s. ISBN 0013796
• Skljarszkij, D. O., Csencov, N. N., Jaglom, I. M. .: Válogatott feladatok és tételek az elemi matematika köréből 2/1 : Geometria I. (Planimetria), Tankönyvkiadó, Budapest, 1972. - 261 s.
• Baboss, Cs: Geometriai példatár 1., Koordináta-geometria, Nyugat-magyarországi Egyetem, 2010. online: http://www.tankonyvtar.hu/hu/tartalom/tamop425/0027_GEM1/ch01.html

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. RNDr. Peter Csiba, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ GE3/22	**Name:** Geometry 3

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 2 **For the study period:** 26 / 26
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 6.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (20 points), pass a written mid-year test (30 points) and take an exam at the end of the semester consisting of a written part (30 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
40% of the workload - direct teaching
20% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The student knows the properties of geometric transformations in the topic area and is able to apply them when solving geometrical tasks.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able self-containedly earn new mathematical knowledge and extend it.
• He/she demonstrates a high level of self-activity in solving mathematical problems.

• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• ongruency mappings, their types and properties, invariant elements.
• Composition of congruency mappings.
• Congruency mapping group.
• Using congruency mappings in resolving geometric drawing tasks.
• Similarity mappings.
• Central similarity.
• Similarity mapping group.
• Euclid's theorems.
• Affine transformations – axis affinity.
• Basic concepts of projective mappings.
• Solving drawing tasks using mappings.
• Circular inversion, Solving Apollonius problems using circular inversion.

Literature:
• Hajós, Gy.: Bevezetés a geometriába, Nemzeti Tankönyvkiadó, Budapest, 1999. 596s. ISBN 9631901165.
• Coxeter, H.S.M..: A geometriák alapjai, Műszaki Könyvkiadó, Budapest, 1987. - 470 s. - ISBN 963 10 6843 9.
• Coxeter, H.S.M. - Greitzer, S.L.: Az újra felfedezett geometria, Gondolat, Budapest, 1977. - 288 s. - ISBN 963 280 512 7.
• Horvay, K.: Geometriai feladatok gyűjteménye I-II., Nemzeti Tankönyvkiadó, Budapest, 1993. ISBN 9631848868
• Skljarszkij, D. O., Csencov, N. N., Jaglom, I. M. .: Válogatott feladatok és tételek az elemi matematika köréből 2/1 : Geometria I. (Planimetria), Tankönyvkiadó, Budapest, 1972. - 261 s.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. RNDr. Peter Csiba, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ KOM/22	**Name:** Combinatorics

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 1

Recommended semester/trimester of study: 6.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (60 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
80% of the workload - direct teaching
10% of the workload - homework
10% of the workload - exam preparation

Results of education:
After successful completion of this course students will obtain knowledge of basic concepts of combinatorics and will be able to solve the tasks of combinatorial type. They will know the basic properties of Pascal's triangle and the relationship between binomial coefficients. At the same time they acquire basic knowledge of classical probability.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:

Literature:
• Bege Antal, Kása Zoltán.: Algoritmikus kombinatorika és számelmélet, 1. vyd. - Kolozsvár : Presa Universitara Clujeana, 2006. - 214 s. - ISBN 978-973-610-446-6.

• Varga Tamás.: Játsszunk matematikát! 2. : Tér és sík, Valószínűség, Logika és kombinatorika - Budapest : Móra Könyvkiadó, 1976. - 120 s. - ISBN 963 11 0581 4.
• Lovász László.:Kombinatorika : az általános és középiskolai matematika szakkörök számára. Budapest : Tankönyvkiadó, 1970. - 127 s. - ISBN 0012875.
• Róka Sándor.: 2000 feladat az elemi matematika köréből. 6. vyd. - Budapest : Typotex Kiadó, 2010. - 378 s. - ISBN 978 963 279 163 0.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ KSM/22	**Name:** Chapters from High School Mathematics
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 2.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (60 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E. Student Load Sharing: 37% of the workload - direct teaching 23% of the workload - homework 15% of the workload - preparation for lectures and exercises 25% of the workload - preparation for examinations	
Results of education: After completing the course, the student will gain: Knowledge: • He/she understands specific features of mathematical thinking. • He/she is able to find argumentation gaps. Skills: • He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences. • He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving. Competence: • He/she has independent, critical and analytic thinking. • He/she is able to suggest self-containedly possible solutions of mathematical tasks.	
Brief syllabus:	
Literature: • Obádovics, Gy.: Matematika. Budapest : Műszaki könyvkiadó, 1980. ISBN 963 10 2368 0. • Számadó, L.: Matematika a gimnáziumok számára. Budapest: Nemzeti Tankönyvkiadó, 2000. ISBN 0009449. • Csernyák, L.: Matematika I. Budapest: LSI Oktatóközpont. ISBN 963 577 131 2.	

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. Kálmán Csaba Liptai, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ LA/22	**Name:** Linear algebra

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 2.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
31% of the workload - direct teaching
29% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
After successful completion of this course students will know and control the basic properties of algebraic structures and the basic concepts of linear algebra. In solving the tasks of daily practice are able to apply basic methods of linear algebra.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able to apply mathematical knowledge in wide extent.
• He/she demonstrates a high level of self-activity in solving mathematical problems.

• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• Algebraic structures.
• Vector space.
• Subspace of a vector space.
• Linear dependence and independence of vectors.
• Dimension and base vector space.
• Matrices, operations with matrices.
• Rank of a matrix.
• Linear mapping, matrix of the linear mapping.
• Composition of linear mappings.
• Matrix inversion.
• Solving homogeneous and inhomogeneous systems of linear equations.
• Determinant, basic features and applications.
• Eigenvalues and eigenvectors.

Literature:
• Szendrei, J.: Algebra és számelmélet. Budapest : Nemzeti tankönyvkiadó, 2001, s. 475. ISBN 963 19 2401 7.
• Fried, E.: Algebra I.: Elemi és lineáris algebra. Budapest : Nemzeti Tankönyvkiadó, 2000, s. 334. ISBN 963 19 11764.
• Halmai, E: Lineáris algebra, Tankönyvkiadó, Budapest,1979, ISBN = 963173417x,

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. RNDr. János Tóth, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ MA2/22	**Name:** Mathematical analysis 2

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 4.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
39% of the workload - direct teaching
21% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The student is able to determine the properties of one-variable real functions related to limits, continuity and differential calculations. He has acquired the appropriate theoretical background of differential calculus. He understands the proofs of the most important theorems of the subject and can reproduce its main motives. Acquired key concepts and methods: limits of functions, methods of determining limits, continuity, differentials, derivative function, definition of extremes, L'Hospital's rule, Taylor polynomial.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she masters the methodology of creation of mathematical models or analytical frameworks of investigaton of cognitive processes in mathematics and ways of support of hese processes.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.

• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able to apply mathematical knowledge in wide extent.
• He/she demonstrates a high level of self-activity in solving mathematical problems.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• Limits and continuity of real functions of one variable.
• The transfer principle.
• Continuity at a point and set. Uniform continuity.
• Properties of functions continuous on the bounded, closed interval.
• Differential calculus for real functions of one variable.
• Differentiability and the basic rules of differential calculus.
• Derivatives of elementary functions.
• Higher order derivatives.
• Relation of the local properties of the derivative and the function.
• Mean value formulas.
• Examining functions and defining the function graph.
• L'Hospital's rule.
• Error estimates of the Taylor polynomial and the Taylor approximation.

Literature:
• G.B. Thomas: Thomas-féle KALKULUS I. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• Laczkovich Miklós, T. Sós Vera.:Valós analízis I.II., 1. vyd. - Budapest : Typotex, 2012. - ISBN 978 963 279 731 1.
• J. Urbán: Határértékszámítás, Budapest, Műszaki Könyvkiadó 2003. 452 s. ISBN 963 16 3072 2.
• G. Denkinger, L. Gyurkó: Analízis: Gyakorlat, Budapest, Nemzeti Tankönyvkiadó 2001. 379s. ISBN 9631946134.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. Kálmán Csaba Liptai, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ MA3/22	**Name:** Mathematical analysis 3

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 5.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
39% of the workload - direct teaching
21% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The student knows and is able to apply the basic methods of integration. He gains practice in integrating rational fractional functions and learns the method of partial fraction decomposition. The student knows and is able to apply methods used with the integration of goniometric functions, irrational and transcendental functions. He understands the concept of the definite integral and knows the basic properties of the Riemann integral. He knows the Newton-Leibniz rule and has acquired practice in various application areas of the definite integral. The student is aware of the exact interpretation of convergent series. He knows and is able to apply the convergence criteria related to positive sign series. He is aware of the concept of function series and power series. He is able to determine the convergence radius and convergence range of power series, as well as identify the sum function of power series.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.

• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able to apply mathematical knowledge in wide extent.
• He/she demonstrates a high level of self-activity in solving mathematical problems.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• Undefinite integral and primitive function, primitive function of elementary functions.
• Basic integration methods: per partes, substitution.
• Integration of rational functions, partial fraction decomposition.
• Integration of goniometric functions, integration of irrational and transcendental functions.
• The concept of the definite integral, Riemann integral, basic properties.
• Riemann integrable functions. The Newton-Leibniz rule.
• Applications of the definite integral in areas, volume and arc length calculations.
• Applying the definite integral. Improper integral.
• Numerical sequences. The convergence of infinite series.
• Positive sign series. Convergence criteria. Mixed and alternating sign series, absolute convergence.
• Operations with series. Function series, convergence range, uniform convergence.
• Power series. Taylor series.

Literature:
• G.B. Thomas: Thomas-féle KALKULUS II. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• G.B. Thomas: Thomas-féle KALKULUS III. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• Laczkovich Miklós, T. Sós Vera.:Valós analízis I.II., 1. vyd. - Budapest : Typotex, 2012. - ISBN 978 963 279 731 1.
• J. Urbán: Határértékszámítás, Budapest, Műszaki Könyvkiadó 2003. 452 s. ISBN 963 16 3072 2.
• G. Denkinger, L. Gyurkó: Analízis: Gyakorlat, Budapest, Nemzeti Tankönyvkiadó 2001. 379s. ISBN 9631946134.

Language, knowledge of which is necessary to complete a course:
Hungarian, Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: doc. RNDr. Ferdinánd Filip, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ OBP/22	**Name:** Bachelor's Thesis and Defense
Types, range and methods of educational activities: **Form of study:** **Recommended extent of course (in hours):** **Per week: For the study period:** **Methods of study:** present	
Number of credits: 8	
Recommended semester/trimester of study:	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: While writing the Bachelor thesis, the student follows the instructions of the supervisor and the Rector's guidelines on the preparation, registration, access and archiving of Bachelor and Master's theses, dissertations and habilitation theses written at Selye János University. The recommended length of the Bachelor thesis is 30 to 40 pages (54 000 to 72 000 characters with spaces). The deadline for submission of the Bachelor thesis is specified in the timetable for the academic year. The Bachelor thesis is checked for authenticity in the central register of final theses. A report is drawn up on the outcome. The examination of authenticity is a prerequisite for the defence. The submission of the Bachelor thesis includes a licence agreement between the student and the Slovak Republic, represented by the University, on the use of digital copies of the Bachelor thesis. The Bachelor thesis is evaluated by the supervisor and the assessor who prepare their evaluation on the basis of the criteria provided. The supervisor mainly assesses the fulfilment of the objective, the student's autonomy and initiative in the development of the topic, the cooperation with the supervisor, the logical structure of the Bachelor thesis, the chosen methods and methodology, the professional quality of the thesis, the depth and quality of the development of the topic, the usefulness of the thesis, the applicability of its results, the work with literature, the relevance of the sources used, as well as the formal features, spelling, style and originality of the thesis. The assessor focuses on the relevance and appropriateness of the topic of the thesis, the aim of the thesis and its fulfilment, the logical structure of the Bachelor thesis, the sequencing and division of chapters, the appropriateness of the methods and methodology used, and the professional quality of the thesis, the depth and quality of the treatment of the topic, the usefulness of the thesis, the applicability of its results, the work with the literature, the relevance of the sources used, and the formal features, spelling, style and originality of the thesis. The examination board will assess the originality of the thesis, the degree of student involvement in the solution of the academic problem, the student's self-reliance and ability to solve the scientific problem - including the search for literature, the formulation of objectives, the choice of method, the selection of research material, the ability to evaluate, the ability to discuss the results, the summary and presentation of the results, and the relevance to the educational process, etc.	

The committee will also assess the ability to present the results, including answers to questions on the topic, adherence to time constraints, etc.
The State Examination Board will evaluate the examination in an informal meeting and decide the mark. The grading is a complex assessment of the quality of the Bachelor thesis and its defence, taking into account the reviews and the process of thesis defence. The committee will mark the defence with an aggregate mark. The mark may be the same as, or better or worse than, the mark given in the marks, depending on the thesis defence.
The grading scale is A - 100-91%, B - 90-81%, C - 80-71%, D - 70-61%, E - 60-50%. A student who does not achieve 50% will not receive credit.
The results of the oral and theoretical part of the examination will be announced publicly by the chairperson of the board in public.

Results of education:
Knowledge:
- The student is familiar with the structure of an academic publication,
- The student can use the resources in an independent and creative way,
- The student is able to analyse and evaluate the problem under study in his/her field of research,
- The student is able to select research methods and procedures appropriately and to apply them effectively.

Skills:
- The Bachelor thesis demonstrates the student's knowledge of the theoretical and practical aspects of the problem under study,
- The student should demonstrate the ability to work with national and international literature, to select relevant information and to use his/her ability to collect, interpret and process literature,
- The student is able to learn independently, enabling him (her) to continue his (her) studies,
- The student is able to collect and interpret relevant data (facts) in the field of his (her) study and to make decisions that take into account social, scientific and ethical aspects,
- The student is able to support the ideas presented with arguments and to draw practical conclusions and formulate proposals,
- The student is able to present the results of the Bachelor thesis,
- The student is able to respect the principles of academic integrity and ethics.

Competences:
The student is able to
- express his/her own linguistic and professional culture and approach to the professional issues encountered in the course of his/her studies, in an appropriate way
- reason and apply knowledge methodologically, both theoretically and practically,
- put knowledge into practice and to organise it,
- answer the questions of the supervisor and the assessor to the required standard and thus be able to defend their Bachelor thesis successfully.

Brief syllabus:
The procedure for defending the Bachelor Thesis is as follows:
1. The student presents his/her thesis.
2. The main points of the thesis supervisor' and opponent's reviews are presented.
3. The student answers the questions of the supervisor and the opponent.
4. Professional discussion of the Bachelor Thesis, when the student answers questions.

The presentation of the Bachelor thesis should mainly include the following points:
1. A brief justification of the choice of topic, its relevance and practical utility.
2. Explanation of the objectives of the thesis and the methods used.
3. The main content of the thesis.

4. The conclusions and proposals drawn by the student.
A copy of the thesis and its electronic presentation are provided to the student during the presentation. The student presents the thesis on his own for a minimum of 10 minutes. He/she may use computing devices.
The final thesis is available to the committee before and during thesis defence.

Literature:
KATUŠČÁK, D. Ako písať vysokoškolské a kvalifikačné práce. Bratislava: Enigma, 2004.
Aktuálna Smernica rektora o úprave, registrácii, sprístupnení a archivácii záverečných prác na Univerzite J. Selyeho – dostupné na https://www.ujs.sk/documents/Smernica_c.2-2021o_zaverecnych_pracach_.pdf

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher:

Date of last update: 03.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ RAN/22	**Name:** Equations and inequalities

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (60 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
37% of the workload - direct teaching
23% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:

Literature:
• Obádovics, Gy. J.: Matematika. Scolar, 2003. - 818. - ISBN 9639193046.
• Róka S. : 2000 feladat az elemi matematika köréből. Typotex Kiadó, 2000. - 378 s. - ISBN 963 9548 97 9.
• Reiman, I.: Matematika - 1. vyd. - Budapest : Műszaki Könyvkiadó, 1992. - 608 s. - ISBN 963 10 8578 3.

• Smida, J.: Matematikai feladatgyűjtemény a gimnázium 1. osztálya számára - 1. vyd. - Bratislava : SPN, 1986. - 187 s

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Mgr. Szilárd Svitek

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SA2/22	**Name:** Mathematical analysis seminar 2

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 4.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating.
Student Load Sharing:
39% of the workload - direct teaching
26% of the workload - preparation for lectures and exercises
35% of the workload - preparation for examinations

Results of education:
The student is able to determine the properties of one-variable real functions related to limits, continuity and differential calculations.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to apply knowledge of analysis.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:
• Limits and continuity of real functions of one variable.
• The transfer principle.
• Continuity at a point and set. Uniform continuity.
• Properties of functions continuous on the bounded, closed interval.

• Differential calculus for real functions of one variable.
• Differentiability and the basic rules of differential calculus.
• Derivatives of elementary functions.
• Higher order derivatives.
• Relation of the local properties of the derivative and the function.
• Mean value formulas.
• Examining functions and defining the function graph.
• L'Hospital's rule.
• Error estimates of the Taylor polynomial and the Taylor approximation

Literature:

• G.B. Thomas: Thomas-féle KALKULUS I. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• Laczkovich Miklós, T. Sós Vera.:Valós analízis I.II., 1. vyd. - Budapest : Typotex, 2012. - ISBN 978 963 279 731 1.
• J. Urbán: Határértékszámítás, Budapest, Műszaki Könyvkiadó 2003. 452 s. ISBN 963 16 3072 2.
• G. Denkinger, L. Gyurkó: Analízis: Gyakorlat, Budapest, Nemzeti Tankönyvkiadó 2001. 379s. ISBN 9631946134.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. Kálmán Csaba Liptai, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SA3/22	**Name:** Mathematical analysis seminar 3

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study: 5.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating.
Student Load Sharing:
50% of the workload - direct teaching
20% of the workload - preparation for lectures and exercises
30% of the workload - preparation for examinations

Results of education:
The student knows and is able to apply the basic methods of integration. He knows the Newton-Leibniz rule and has acquired practice in various application areas of the definite integral. He knows and is able to apply the convergence criteria related to positive sign series. He is able to determine the convergence radius and convergence range of power series, as well as identify the sum function of power series.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to apply knowledge of analysis.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:
• Undefinite integral and primitive function, primitive function of elementary functions.

• Basic integration methods: per partes, substitution.
• Integration of rational functions, partial fraction decomposition.
• Integration of goniometric functions, integration of irrational and transcendental functions.
• The concept of the definite integral, Riemann integral, basic properties.
• Riemann integrable functions. The Newton-Leibniz rule.
• Applications of the definite integral in areas, volume and arc length calculations.
• Applying the definite integral. Improper integral.
• Numerical sequences. The convergence of infinite series.
• Positive sign series. Convergence criteria. Mixed and alternating sign series, absolute convergence.
• Operations with series. Function series, convergence range, uniform convergence.
• Power series. Taylor series.

Literature:

• G.B. Thomas: Thomas-féle KALKULUS II. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• G.B. Thomas: Thomas-féle KALKULUS III. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• Laczkovich Miklós, T. Sós Vera.:Valós analízis I.II., 1. vyd. - Budapest : Typotex, 2012. - ISBN 978 963 279 731 1.
• J. Urbán: Határértékszámítás, Budapest, Műszaki Könyvkiadó 2003. 452 s. ISBN 963 16 3072 2.
• G. Denkinger, L. Gyurkó: Analízis: Gyakorlat, Budapest, Nemzeti Tankönyvkiadó 2001. 379s. ISBN 9631946134.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: doc. RNDr. Ferdinánd Filip, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SAL/22	**Name:** Algebra seminar

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 3.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating.
Student Load Sharing:
39% of the workload - direct teaching
26% of the workload - preparation for lectures and exercises
35% of the workload - preparation for examinations

Results of education:
The student is introduced to the basic concepts of abstract algebra, is able to classify the fundamental and binary operation algebraic structures. The student understands the basic properties of polynomials. The student can decompose the polynomials into multiplied irreducible polynomials over a number of different number fields. He is aware of the solving formulas for second and third degree equations as well as the solving methods of binomial equations and those reducible to a lesser degree.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to apply knowledge of algebra.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:

• Elements of abstract algebra, binary operations and algebraic structures.
• Group, subgroup.
• Homomorphism, standard dividers, cyclic groups.
• Permutation groups, the parity of permutations.
• Ring, integral domain, numerical body.
• Divisibility in integral domains. Gauss rings, Euclidean rings, polynomial rings.
• Ideals, maximal and prime ideal.
• Polynomials and polynomial functions. Horner's scheme.
• Divisibility of polynomials, Euclidean algorithm.
• Roots of polynomials, decomposition of polynomial into irreducible factors.
• Polynomials over rational, real and complex number fields. The fundamental proposition of algebra.
• Symmetric polynomials. Connection between radicals and coefficients.
• Solving second- and third-degree equations, binomial equations.

Literature:

• Szendrei et al.: Absztrakt algebrai feladatok Szeged: Polygon, 2005. 512 s.
• Safarevics I.R.: Algebra: Az algebra alapfogalmai. Budapest: Typotex Elektronikus Kiadó Kft., 2009. 271 s. ISBN 978 963 279 056 5.
• Fried E.: Algebra I.: Elemi és lineáris algebra, Budapest: Nemzeti Tankönyvkiadó, 2000. 334 s. ISBN 963 19 1176 4.
Filep L.: A tudományok királynője: A matematika fejlődése, Typotex Kiadó, 2001. 510 s. ISBN 963 7546 83 9.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SDM/22	**Name:** Discrete mathematics seminar

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study: 5.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating.
Student Load Sharing:
50% of the workload - direct teaching
20% of the workload - preparation for lectures and exercises
30% of the workload - preparation for examinations

Results of education:
At the end of the course, students will obtain an overview of the basic concepts of Set Theory, Combinatorics, Mathematical Logic and Boolean Algebra.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to apply knowledge of finite mathematics.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:
• Introduction to the Discrete Mathematics, Peano axioms, principle of Mathematical induction.
• Set Theory – basic terms, set operations.
• Relations and mappings, composition of mappings, equivalence relation.
• Cardinality of sets, finite and nonfinite sets, computable sets.

• Combinatorics – combinations and variations (with and without repetition).
• Permutations (with and without repetition), combinatorial identities. Binomial and Polynomial theorem.
• Inclusion–exclusion principle, Pigeonhole principle.
• Propositions and logical operations, tautologies.
• Boolean algebra – binary Boolean functions, realization of Boolean functions by formulas.
• Equivalence of Boolean formulas, properties of elementary Boolean functions, principle of duality.
• Canonic form of Boolean functions, full disjunctive normal form.
• Functional completeness and closure, most important closed classes, Completeness theorem.
• Minimization of Boolean functions.

Literature:

• SZENDREI, Á.: Diszkrét matematika. Szeged : Polygon, 1998. 380 s. ISSN 1417-0590.
• LOVÁSZ, L.: Kombinatorikai problémák és feladatok. Budapest : Typotex, 2008. 670 s. ISBN 978-963-9664-93-7.
• LOVÁSZ, L. – VESZTERGOMBI, K. – PELIKÁN, J.: Diszkrét matematika. Budapest : Typotex, 2006. 292 s. ISBN 978-963-9664-02-9.
• DANCS I.: Halmazelmélet. Budapest: Aula, 2003. 185 s. ISBN 963 9345 52 0.
• GYÖRKE L.: Halmazok, relációk, függvények. Budapest: Tankönyvkiadó, 1969. 410 s. ISBN 0008226.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SG1/22	**Name:** Geometry seminar 1
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 2.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: Successful completion of the course requires active participation in seminars, submission of assignments, and successful completion of a final written test at the end of the semester.	
Results of education: After completing the course, the student will gain: Knowledge: • He/she understands specific features of mathematical thinking. • He/she is able to find argumentation gaps. Skills: • He/she is able to apply knowledge of geometry. • He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving. Competence: • He/she has independent, critical and analytic thinking. • He/she is able to suggest self-containedly possible solutions of mathematical tasks.	
Brief syllabus: Euclidean axiomatic system of geometry, Hilbert's axiomatic system of geometry, Quasi-axiomatic construction of geometry, Measurement of distance and angle Concept of perimeter and area Calculation of perimeter and area Concept of volume and surface area of cubes and cylinders Calculation of volume and surface area of blocks and cylinders Concept of volume and surface area of piramids and cones Calculation of volume and surface area of piramids and cones Cavalieri's principle Calculation of the volume and surface of a sphere	
Literature:	

Hajós, Gy.: Bevezetés a geometriába, Nemzeti Tankönyvkiadó, Budapest, 1999. 596. ISBN 9631901165
Horvay, K.: Geometriai feladatok gyűjteménye I-II., Nemzeti Tankönyvkiadó, Budapest, 1993. ISBN 9631848868
Pelle, B.: Geometria, Tankönyvkiadó, Budapest, 1974. ISBN 9631707466
Szendrei, J.: Geometria, Budapesti Tanítóképzo Foiskola, Budapest, 1999. - 92. - ISBN 0001687
Birkhoff, G. D.: Basic Geometry, Ralph Beatley. - NY : AMS Chelsea Publishing, 1959. - 294. - ISBN 0821821016
Vermes, I.: Geometria, Műegyetemi Kiadó, 2003. - 270 s. - ISBN 0147845
Reiman I.: Fejezetek az elemi geometriából, Nemzeti Tankönyvkiadó, 2002. - 206 s. - ISBN 963 9132 28 4.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. RNDr. Peter Csiba, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SG2/22	**Name:** Geometry seminar 2
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 3.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: Successful completion of the course requires active participation in seminars, submission of assignments, and successful completion of a final written test at the end of the semester. Student load distribution: 37% of the workload - direct teaching 23% of the workload - homework 15% of the workload - preparation for lectures and exercises 25% of the workload - preparation for examinations	
Results of education: After completing the course, the student will gain: Knowledge: • He/she understands specific features of mathematical thinking. • He/she is able to find argumentation gaps. Skills: • He/she is able to apply knowledge of geometry. • He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving. Competence: • He/she has independent, critical and analytic thinking. • He/she is able to suggest self-containedly possible solutions of mathematical tasks.	
Brief syllabus: Methods of representing three-dimensional solids in the plane Free parallel projection Axonometry Perspective representation of three-dimensional solids Cube sections Sections of pyramids Development of spatial imagination Cutting a cone and a conic sections Different metric definitions of conics	

Quadratic geometric problems
Solving construction problems
Geometric Constructability

Literature:

Hajós, Gy.: Bevezetés a geometriába, Nemzeti Tankönyvkiadó, Budapest, 1999. 596. ISBN 9631901165
Horvay, K.: Geometriai feladatok gyűjteménye I-II., Nemzeti Tankönyvkiadó, Budapest, 1993. ISBN 9631848868
Pelle, B.: Geometria, Tankönyvkiadó, Budapest, 1974. ISBN 9631707466
Szendrei, J.: Geometria, Budapesti Tanítóképzo Foiskola, Budapest, 1999. - 92. - ISBN 0001687
Birkhoff, G. D.: Basic Geometry, Ralph Beatley. - NY : AMS Chelsea Publishing, 1959. - 294. - ISBN 0821821016
Vermes, I.: Geometria, Műegyetemi Kiadó, 2003. - 270 s. - ISBN 0147845
Reiman I.: Fejezetek az elemi geometriából, Nemzeti Tankönyvkiadó, 2002. - 206 s. - ISBN 963 9132 28 4.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. RNDr. Peter Csiba, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SLA/22	**Name:** Linear algebra seminar

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 2.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating.
Student Load Sharing:
39% of the workload - direct teaching
26% of the workload - preparation for lectures and exercises
35% of the workload - preparation for examinations

Results of education:
After successful completion of this course students will know and control the basic properties of algebraic structures and the basic concepts of linear algebra. In solving the tasks of daily practice are able to apply basic methods of linear algebra.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to apply knowledge of algebra, geometry.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:
• Algebraic structures.
• Vector space.
• Subspace of a vector space.

• Linear dependence and independence of vectors.
• Dimension and base vector space.
• Matrices, operations with matrices.
• Rank of a matrix.
• Linear mapping, matrix of the linear mapping.
• Composition of linear mappings.
• Matrix inversion.
• Solving homogeneous and inhomogeneous systems of linear equations.
• Determinant, basic features and applications.
• Eigenvalues and eigenvectors.

Literature:

• Szendrei, J.: Algebra és számelmélet. Budapest : Nemzeti tankönyvkiadó, 2001, s. 475. ISBN 963 19 2401 7.
• Fried, E.: Algebra I.: Elemi és lineáris algebra. Budapest : Nemzeti Tankönyvkiadó, 2000, s. 334. ISBN 963 19 11764.
• Halmai, E: Lineáris algebra, Tankönyvkiadó, Budapest,1979, ISBN = 963173417x,

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. RNDr. János Tóth, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ STE/22	**Name:** Seminar on number theory
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 1	
Recommended semester/trimester of study: 6.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating. Student Load Sharing: 80% of the workload - direct teaching 20% of the workload - exam preparation	
Results of education: The student knows and is able to apply the divisibility rules for integers. He is able to determine the greatest common divisor of two numbers using the Euclidean algorithm. He has acquired the basic knowledge regarding the distribution of prime numbers. He knows the concept of congruency and the related rules, and is able to solve a first-degree congruence. He can provide forms of numbers in any numerical system. He knows and is able to apply Euler's theorem. After completing the course, the student will gain: Knowledge: • He/she understands specific features of mathematical thinking. • He/she is able to find argumentation gaps. Skills: • He/she is able to apply knowledge of number theory. • He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving. Competence: • He/she has independent, critical and analytic thinking. • He/she is able to suggest self-containedly possible solutions of mathematical tasks.	
Brief syllabus: • Divisibility of integers. • Greatest common divisor, least common multiple.	

• Euclidean algorithm.
• Prime numbers, resolution into multiplied prime numbers.
• Distribution of prime numbers.
• Congruence. Linear gongruences.
• Fermat's and Euler’s theorem.
• Lagrange and Wilson theorem.
• Number systems
• Divisibility rules.
• Basic arithmetic functions.

Literature:

• Šalát a kol.: Algebra a teoretická aritmetika 2, Bratislava, Alfa 1986
• Freud R.,Gyarmati E.: Számelmélet, Budapest : Nemzeti Tankönyvkiadó, 2006. - 810 s. - ISBN 963 19 5888 4.
• László, B. - Tóth, J.: Bevezetés a számelméletbe, Lilium Aurum, 1999. 125s.
• Bege A.: Bevezetés a számelméletbe, Scientia Kiadó, Kolozsvár, 2002. 198s. ISBN: 973-85750-7-9

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. RNDr. János Tóth, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SUA/22	**Name:** Seminar on introduction to mathematical analysis

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating.
Student Load Sharing:
37% of the workload - direct teaching
33% of the workload - preparation for lectures and exercises
30% of the workload - preparation for written examinations

Results of education:
The students are able to identify important function features and apply them correctly when solving tasks. The students are able to calculate the limit of specific sequences and examine the question of convergence for sequences.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to apply knowledge of analysis.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:
• General function concept. Interpretation range and domain.
• Basic function properties
• Elementary functions.

• Function transformations and the representation of elementary functions. Intermittent functions.
• The composition of functions and the concept of inverse functions. Arcos and hyperbolic functions. Number sequences.
• Arithmetic, geometric and recursive sequences.
• Convergence of sequences.
• Classification of divergent sequences.
• Cauchy’s criterion for convergence.
• Limit of bounded and monotone functions.
• Partial sequences.
• Limits of noted functions. Euler's number.

Literature:

• G.B. Thomas: Thomas-féle KALKULUS I. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• Laczkovich Miklós, T. Sós Vera.:Valós analízis I.II., 1. vyd. - Budapest : Typotex, 2012. - ISBN 978 963 279 731 1ö.
• Gy.J. Obádovics: Felsőbb matematikai feladatgyűjtemény, Scolar 2003. 562. ISBN 9639193119.
• J. Urbán: Határértékszámítás, Budapest, Műszaki Könyvkiadó 2003. 452 s. ISBN 963 16 3072 2.
• G. Denkinger, L. Gyurkó: Analízis: Gyakorlat, Budapest, Nemzeti Tankönyvkiadó 2001. 379.ISBN 9631946134.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: doc. RNDr. Ferdinánd Filip, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ SZM/22	**Name:** Basics of Mathematics Seminar

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester will be held two written tests by 35 points and for the active work of student can the student obtain 30 points. Of the total of 100 points it is needed to obtain at least 90 points on the valuation A, for grade B is necessary to obtain 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. If this condition is not met, a written test will be given in the exam period to obtain max. 70 points. Points earned will be counted in the overall rating.
Student Load Sharing:
37% of the workload - direct teaching
33% of the workload - preparation for lectures and exercises
30% of the workload - preparation for written examinations

Results of education:
Students are introduced to the basic concepts of different mathematical areas while deepening the acquired knowledge so it assists them in their further studies.
After completing the course, the student will gain:
Knowledge:
• He/she understands specific features of mathematical thinking.
• He/she is able to find argumentation gaps.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving.
Competence:
• He/she has independent, critical and analytic thinking.
• He/she is able to suggest self-containedly possible solutions of mathematical tasks.

Brief syllabus:
• Propositions – basic concepts, operations with propositions. Judgment calculator – truth value.
• Sets – basic concepts, set operations, Cartesian product.
• Number sets.

• The basics of number theory – number systems, divisibility, divisibility rules.
• The axiomatic composition of mathematics.
• Proofs.
• Relations, attributes, sorting and equivalence relations.
• Explicit, implicit and parametric setting of functions.
• Cartesian and polar coordinate system.
• Real variable function.
• Elementary functions, their properties and display of their graph.

Literature:

• Reiman, I.: Matematika, Typotex, Budapest, 2011. 609 s. ISBN 978 963 279 300 9.
• Pólya, Gy.: A problémamegoldás iskolája. I. kötet, Budapest: Tankönyvkiadó, 1979. 228 s. ISBN 963 17 3844 2
• Pólya, Gy.: A gondolkodás iskolája, Budapest: Typotex, 1994. 230 s. ISBN 963 754 48 0.
• Lakatos I.: Bizonyitások és cáfolatok, Typotex Elektronikus Kiadó Kft., 1998. 254s. ISBN 9639132128

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ TGR/22	**Name:** Graph theory
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 1	
Recommended semester/trimester of study: 6.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (60 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E. Student Load Sharing: 80% of the workload - direct teaching 10% of the workload - homework 10% of the workload - exam preparation	
Results of education: The student will obtain an overview of the basic concepts of graph theory. He will be able to apply basic browsing graph algorithms, algorithms for finding minimal skeleton, the availability and continuity, and will be able to solve flow tasks, and apply them in the optimization problem solving. He obtain knowledge in theory of coloring graphs and find the minimum time required to perform a complex task. After completing the course, the student will gain: Knowledge: • He/she understands specific features of mathematical thinking. • He/she is able to find argumentation gaps. Skills: • He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences. • He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving. Competence: • He/she has independent, critical and analytic thinking. • He/she is able to suggest self-containedly possible solutions of mathematical tasks.	
Brief syllabus: • Basic concepts and results of graph theory. • Ggraph browsing algorithms.	

• Optimally lines in a graph, trees and skeletons.
• Algorithms for finding minimal skeleton, the availability and continuity.
• Solution of flow tasks, maximum flow, the cheapest rate.
• Application of theory in optimization problems solving, the role of assignments.
• Eulerian graphs and the role of the Chinese postman.
• Hamiltonian graphs and the role of traveling salesman.
• Aating and factorization.
• Coloring graphs.
• Planar graphs.
• Center and median.
• Algorithms to search centers and medians, absolute centers and medians of the graph.

Literature:

• Friedl, K., Recski, A., Simonyi, G.: Gráfelméleti feladatok. 1. vyd. Budapest : TYPOTEX, 2006. 300 s. ISBN 963 9664 01 4.
• Hajnal, P.: Gráfelmélet. Szeged: Bolyai Intézet, 2003. 308 s. ISBN 0002465.
• Hetyei, G.: Kombinatorika és gráfelmélet - Eger : MM Közoktatási és Pedagógustovábbképzo, 1988. - 84 s. - ISBN 9636734836

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ TMT/22	**Name:** Creation of mathematical text

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 4.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
Over the course of the semester, students will complete custom assignments, in which they demonstrate the necessary level of knowledge of creating a document in a typographic system. The scores for each assignment represent the difficulty of the assignment. Assignments and submission of assignments take place in the university's e-learning system.
For an A grade, at least 90 points are required, for a B grade at least 80 points, for a C grade at least 70 points, for a D grade at least 60 points, and for an E grade at least 50 points, with the student having to score at least 25 points for each part of the assignment.
Student Load Sharing:
39% of the workload - direct teaching
21% of the workload - preparation for lectures and exercises
40% of the workload - preparation of homework assignments

Results of education:
The student has acquired the necessary knowledge to create text documents in the LaTeX system. He is able to create structured documents independently and can insert charts, images and formulas into the text. He is able to create presentations.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she understands specific features of mathematical thinking.
Skills:
• He/she masters the methodology of creation of mathematical models or analytical frameworks of investigaton of cognitive processes in mathematics and ways of support of hese processes.
Competence:
• He/she is able to understand problems specific for other subjects, to cooperate with experts working in these areas and to reformulate their problems into mathematical language.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
Basic typographical rules.

Document structure.
Introduction to the use of LaTeX.
Various LaTeX environments (images, charts, graphics).
Working with mathematical formulas.
Creating simple macros.
Preparing presentations.
Elaborating a given topic, producing an original technical text.

Literature:

WETTL, F. – MAYER, GY. – SZABÓ, P.: LaTeX kézikönyv. Budapest : Panem könyvkiadó, 2004. ISBN 963 545 398 1.
RYBIČKA, J.: Latex pro začátečníky. Brno : Konvoj, 2003, s. 239. ISBN 80 7302 049 1.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: Dr. habil. RNDr. Peter Csiba, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ UMA/22	**Name:** Introduction to mathematical analysis

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
31% of the workload - direct teaching
29% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The students recognize the basic functions and sequences of mathematical analysis. He is able to identify important function features and apply them correctly when solving tasks. He knows the exact interpretation of sequence limits. He is able to calculate the limit of specific sequences and examine the question of convergence for sequences.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to apply knowledge of analysis.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able self-containedly earn new mathematical knowledge and extend it.
• He/she demonstrates a high level of self-activity in solving mathematical problems.

• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• General function concept. Interpretation range and domain.
• Basic function properties
• Elementary functions.
• Function transformations and the representation of elementary functions. Intermittent functions.
• he composition of functions and the concept of inverse functions. Arcos and hyperbolic functions. Number sequences.
• Arithmetic, geometric and recursive sequences.
• Convergence of sequences.
• Classification of divergent sequences.
• Cauchy's criterion for convergence.
• Limit of bounded and monotone functions.
• Partial sequences.
• Limits of noted functions. Euler's number.

Literature:
• G.B. Thomas: Thomas-féle KALKULUS I. kötet - 3.,javított kiadás, Budapest, Typotex 2011
• Laczkovich Miklós, T. Sós Vera.:Valós analízis I.II., 1. vyd. - Budapest : Typotex, 2012. - ISBN 978 963 279 731 1.
• Gy.J. Obádovics: Felsőbb matematikai feladatgyűjtemény, Scolar 2003. 562. ISBN 9639193119.
• J. Urbán: Határértékszámítás, Budapest, Műszaki Könyvkiadó 2003. 452 s. ISBN 963 16 3072 2.
• G. Denkinger, L. Gyurkó: Analízis: Gyakorlat, Budapest, Nemzeti Tankönyvkiadó 2001. 379.ISBN 9631946134.

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: doc. RNDr. Ferdinánd Filip, PhD., Dr. habil. Kálmán Csaba Liptai, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ UTC/22	**Name:** Introduction to number theory

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 4.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
31% of the workload - direct teaching
29% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
The student knows and is able to apply the divisibility rules for integers. He is able to determine the greatest common divisor of two numbers using the Euclidean algorithm. He has acquired the basic knowledge regarding the distribution of prime numbers. He knows the concept of congruency and the related rules, and is able to solve a first-degree congruence. He can provide forms of numbers in any numerical system. He knows and is able to apply Euler's theorem.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to abstract away from concrete form of problems, is able to formulate them in abstract general form in order to analyse and solve them.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:

• He/she is able to apply mathematical knowledge in wide extent.
• He/she demonstrates a high level of self-activity in solving mathematical problems.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:
• Divisibility of integers.
• Greatest common divisor, least common multiple.
• Euclidean algorithm.
• Prime numbers, resolution into multiplied prime numbers.
• Distribution of prime numbers.
• Congruence. Linear gongruences.
• Fermat's and Euler’s theorem.
• Lagrange and Wilson theorem.
• Number systems
• Divisibility rules.
• Basic arithmetic functions.

Literature:
• Šalát a kol.: Algebra a teoretická aritmetika 2, Bratislava, Alfa 1986
• Freud R.,Gyarmati E.: Számelmélet, Budapest : Nemzeti Tankönyvkiadó, 2006. - 810 s. - ISBN 963 19 5888 4.
• László, B. - Tóth, J.: Bevezetés a számelméletbe, Lilium Aurum, 1999. 125s.
• Bege A.: Bevezetés a számelméletbe, Scientia Kiadó, Kolozsvár, 2002. 198s. ISBN: 973-85750-7-9

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. RNDr. János Tóth, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ ZM/22	**Name:** Basics of mathematics

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 1 / 2 **For the study period:** 13 / 26
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
For the successful completion of the course students are expected to hand in homework assignments (30 points) and pass an exam at the end of the semester consisting of a written part (50 points) and an oral part (20 points). The minimum scores required to achieve for the individual grades are the following: 91 points for A, 81 points for B, 71 points for C, 61 points for D and 51 points for E.
Student Load Sharing:
39% of the workload - direct teaching
21% of the workload - homework
15% of the workload - preparation for lectures and exercises
25% of the workload - exam preparation

Results of education:
Students are introduced to the basic concepts of different mathematical areas while deepening the acquired knowledge so it assists them in their further studies.
After completing the course, the student will gain:
Knowledge:
• He/she understands abstract notions in curriculum and knows the relations among them. He/she recognizes general patterns and concepts in applied problems.
• He/she knows principles and basic methods of mathematical proofs.
• He/she manages to illustrate concepts by means of appropriate examples.
Skills:
• He/she is able to formulate logical and true mathematical statements with exact specification of their conditions and main consequences.
• He/she is able to create mathematical models of simple practical tasks and to find and adapt appropriate mathematical means and methods of their solving..
Competence:
• He/she is able self-containedly earn new mathematical knowledge and extend it.
• He/she demonstrates a high level of self-activity in solving mathematical problems.
• He/she works effectively as an individual as well as a member or a leader of a small team.

Brief syllabus:

• Propositions – basic concepts, operations with propositions. Judgment calculator – truth value.
• Sets – basic concepts, set operations, Cartesian product.
• Number sets.
• The basics of number theory – number systems, divisibility, divisibility rules.
• The axiomatic composition of mathematics.
• Proofs.
• Relations, attributes, sorting and equivalence relations.
• Explicit, implicit and parametric setting of functions.
• Cartesian and polar coordinate system.
• Real variable function.
• Elementary functions, their properties and display of their graph.

Literature:

• Reiman, I.: Matematika, Typotex, Budapest, 2011. 609 s. ISBN 978 963 279 300 9.
• Pólya, Gy.: A problémamegoldás iskolája. I. kötet, Budapest: Tankönyvkiadó, 1979. 228 s. ISBN 963 17 3844 2
• Pólya, Gy.: A gondolkodás iskolája, Budapest: Typotex, 1994. 230 s. ISBN 963 754 48 0.
• Lakatos I.: Bizonyitások és cáfolatok, Typotex Elektronikus Kiadó Kft., 1998. 254s. ISBN 9639132128

Language, knowledge of which is necessary to complete a course:
hungarian, slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher: prof. László Szalay, DSc., doc. RNDr. Ferdinánd Filip, PhD.

Date of last update: 02.03.2022

Approved by: prof. RNDr. János Tóth, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KMAT/ ŠSBc/22	**Name:** Mathematics - state examination
Types, range and methods of educational activities: **Form of study:** **Recommended extent of course (in hours):** **Per week: For the study period:** **Methods of study:** present	
Number of credits: 2	
Recommended semester/trimester of study:	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: All students who have met the requirements of the programme of study in the final year of their studies may take the state examination at the regular time according to the study schedule. In the oral state examination, the student gives an account of his/her knowledge and skills in his/her field of specialisation and the interdisciplinary connection with the relevant fields of specialisation. The student demonstrates the ability to communicate information, ideas, problems and solutions to professional and lay audience. The state examination takes the form of a colloquium in which the student's performance is assessed on a scale from A to FX. The grade counts for the overall state examination grade. The oral examination is graded on the following scale: A - 100-91%, B - 90-81%, C - 80-71%, D - 70-61%, E - 60-50%. A student who fails to achieve 50% receives no credit. The results of the state examination and the thesis defence are publicly announced by the chair of the board.	
Results of education: Knowledge: - the student has acquired knowledge in the compulsory and profile subjects of the study programme, - the student is able to define and interpret basic concepts in his/her own words, to explain and describe basic processes, to characterise and to apply academic methods of research in the areas indicated in the subject's thematic plan, - the student is able to analyse and evaluate the knowledge acquired in the subject. Skills: - the student is able to present his/her expertise, - the student is able to hand over his/her knowledge - the student is able to organise and apply the theoretical knowledge acquired, - the student has the ability to organise and apply the knowledge acquired in the course of his (her) studies. Competences: - the student is able to express his/her linguistic and professional culture in the oral examination, - the student is able to use the knowledge acquired in a wider context, - the student is able to put the knowledge acquired into practice and organise it,	

- the student is able to use his/her knowledge in a creative way while solving problems, as well as to analyse the problem and organise new solutions,
- the student is able to answer the questions of the committee at the expected level.

Brief syllabus:
- Algebra
- Number theory
- Geometry
- Mathematical analysis
- Discrete Mathematics

Literature:
Literature indicated in the information sheets of the study programme

Language, knowledge of which is necessary to complete a course:

Notes:

Evaluation of subjects
Total number of evaluated students: 0

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

Teacher:

Date of last update: 03.03.2022

Approved by: prof. RNDr. János Tóth, PhD.